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From Dockyard to Esplanade: Leveraging Industrial Heritage in Waterfront Redevelopment

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From Dockyard to Esplanade: Leveraging Industrial Heritage in Waterfront Redevelopment

Abstract

The outcomes of preserving and incorporating industrial building fabric and related infrastructure, such as railways, docks and cranes, in redeveloped waterfront sites have yet to be fully understood by planners, preservationists, public administrators or developers. Case studies of Pittsburgh, Baltimore, Philadelphia/Camden, Dublin, Glasgow, examine the industrial history, redevelopment planning and approach to preservation and adaptive reuse in each locale. The effects of contested industrial histories, planning approach, funding, environmental remediation, building materials and scale are evaluated as how they impact preservation outcomes. The case studies reveal a trend towards preservation of industrial waterfront buildings and infrastructure and demonstrate how such preservation has been leveraged to contribute to the success of re-purposed urban waterfronts.

Keywords

Historic Preservation; Industrial; waterfront

Disciplines

Architecture | Historic Preservation and Conservation

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FROM DOCKYARD TO ESPLANADE:
LEVERAGING INDUSTRIAL HERITAGE IN WATERFRONT REDEVELOPMENT

Jayne O. Spector

A THESIS

in

Historic Preservation

Presented to the Faculties of the University of Pennsylvania in
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2010

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PART 1

1. Introduction

“Today, cities are rediscovering the value of their rivers and lakes. In the mid 19th century, when railroads rendered water transportation less dominant, cities made the big mistake of literally turning their backs on the water that spawned them. Waterfront streets were abandoned. Buildings that once faced the river were converted to face away. Urban waterways were forgotten. Many became little more than sewers, serving as dumping grounds for human and industrial waste.”¹

1.1. Overview

In the last 50 years, empty dockyards, abandoned factories and fallow rail yards have been replaced by esplanades, parks, shops, aquariums and housing as cities around the world capitalize on development opportunities along urban waterfronts. As Richard Marshall observes in *Waterfronts in Post Industrial Cities*, these redevelopment projects speak to our future and to our past.² In other words, urban waterfronts represent environmental, aesthetic, economic opportunities as well as a record of our industrial and maritime culture and history.

Port cities drew much of their early power and wealth from their waterfront settings as hospitality, financial and support services grew to facilitate maritime commerce, travelers and trade. The harbor was central to the city until about the time of the Civil War when land-bound transportation came to rival that on water and the waterfront started to disappear from daily life.³ With the advent of the industrial era, waterways were urbanized, engineered

¹ Norquist, John. *The Wealth of Cities*.

² Marshall, 5.

³ Robert Stern as quoted in Buitendijk *Manhattan Water Bound*, xxiii.

and exploited as a source of power, drainage and transport. Factories and shipping companies lining the water's edge limited public waterfront access. (Figure 1) A few public piers provided ferry access, but as bridges and automobiles made ferries obsolete, the distance between the public and the waterfront grew.

Technological, economic and transportation developments through the twentieth century have redefined the relationship between cities and their waterfronts. Alternate sources of power and modes of transport as well as the shift from break bulk to containerized shipping have altered the demands on our waterways. As a result, many former industrial⁴ sites were abandoned as manufacturing and warehousing activities migrated to cheap land at the perimeter of urban areas. Factories turned to large sites within industrial parks that could accommodate one-story buildings, easy highway access and generous loading docks. Container shipping required larger ships, deeper channels and larger sites for container storage. This often culminated in the further separation of the port from the city as it rendered old dockyards and finger piers obsolete.⁵

Industry brought with it environmental degradation that became increasingly apparent in the late nineteenth and early twentieth century. Incidents like the Cuyahoga River fire, a brief

⁴ For the purposes of this thesis, 'industrial' refers to maritime, warehousing, manufacturing, refining, and milling, as well as the warehousing, power production and transport sectors that supported these concerns.

⁵ Robert Stern as quoted in Buttenwieser, *Manhattan Water Bound*, xxiii.

Sunday afternoon flare up of oil soaked debris floating on the river's surface in June 1969⁶, galvanized national attention on the industrial water pollution that led to the fire. "By association, it indicted all industrial American cities -- and a culture that for a century had generally viewed natural waterways as a means to an end."⁷ The public's growing sensitivity to environmental issues led many to question the appropriateness of industry on the urban waterfront, so close to inhabited areas.⁸ (Figure 2) This created additional incentives to move industry to less populated areas at the perimeter of cities and towns.

By the 20th-century, many middle class Americans started buying homes at the outskirts of urban areas, often following industrial employment opportunities. The population shift was further encouraged by federal mortgage programs and the creation of interstate highways. Inner cities, faced with aging infrastructure, a declining tax base and a disproportionate concentration of low-income residents had to deal with economic, social and building decay with a dwindling tool set. Continuing physical decline coupled with social unrest, accelerated the population shift from city to suburb as well as the abandonment of urban waterfronts.

After years of losing population, many downtown areas began attracting new residents in the late 20th century through a combination of tax breaks, loft-district gentrification, and environmental awareness. From 1970 to 2000, the number of downtown households

⁶ While the 1969 fire garnered great attention and made the Cuyahoga River a poster child for the environmental movement, the Cleveland press collection also has photos of fires on the river in June 1949, March 1951, November 1952, and December 1961

⁷ Scott, 1

⁸ Brown, 15

increased 8 percent to 13 percent,⁹ as residents, attracted by a critical mass of jobs, amenities and interesting architecture and physical features moved back to the city.¹⁰ These new residents created a demand for recreational access to waterfronts and the demand created a real estate market for underutilized waterfront land near the urban core. Through historical circumstance, these abandoned waterfronts were the site of former factories, warehouse and docks. Yet, many of these urban waterfronts are separated from the city core by the very rail lines built to serve industrial sites and the interstate highways constructed along the edge of many industrial districts. The elimination of ferries and reduction in waterfront employment opportunities reduced the need for the public to visit the waterfront reinforced the separation between people and the water.

Redeveloping these residual industrial lands has represented a prime opportunity to reconnect cities with their waterfronts. These new developments can serve to capture the imagination of today's creative and service economies, spur real estate development, cultivate distinct local identities and recreate the image of a city. In addition to land development opportunities and spurring economic growth, waterfront redevelopment also afford cities the opportunity to remediate brownfield, restore natural shorelines and enhance transit, pedestrian and bike connectivity to the waterfront as a prerequisite to redevelopment.

⁹ Birch, 1.

¹⁰ Birch, 16

Yet, in the rush to recreate waterfronts, redevelopment plans often copy successful physical planning models and ignore the characteristics that make a destination most appealing – it’s social and economic heritage, unique natural features and the architectural remnants or earlier eras. Ghirardelli Square in San Francisco and Faneuil Hall in Boston were instrumental in setting a new standard for historic preservation. When duplicates of Fisherman’s Wharf, Seaports and Festival Marketplaces were imagineered en masse, they lost their appeal. Land development strategies based on maximizing return on investment and emphasizing economies of scale achieved through standardization made it easier to provide the same kind of products in the same kind of settings¹¹ and tended to ignore the opportunities residing in heritage. Such superficial connection with the past and ‘ersatz historicism’¹² rarely engages the residents of a city or inspires visitors to return. Authenticity and uniqueness, in the form of native ecologies, unique geography, local culture, historic fabric and genuine diversity are key factors in attracting both workers and residents from the creative class¹³ as well as cultural tourists to a place.¹⁴

Historic preservation and interpretation efforts in many early waterfront redevelopment projects were sometimes missing altogether as a result of urban renewal and demolition. With an increasing number of reinvented waterfronts, it became clear that history could attract visitors. Baltimore’s Inner Harbor promotional literature draws attention to colonial

¹¹ Fisher, Bonnie, et. Al. *Remaking the Urban Waterfronts*, 52.

¹² Fisher, Bonnie, et. Al. *Remaking the Urban Waterfronts*, 52.

¹³ Florida, 228.

¹⁴ *Urban Land*, April 2004, Sasso

history, highlighting attractions such as Fort McHenry, The Center for Urban Archeology where visitors can see “shards of glassware and ceramics from 18th and 19th century homes,” and Fell’s Point cobblestoned streets lined with “about 350 of the neighborhood’s original structures, many dating to the early 1700’s.”¹⁵ Reimagined waterfronts often ignored the more recent industrial past that had played out on the very waterfront sites undergoing redevelopment.

As Philadelphia embarks on a redevelopment campaign along the industrial Delaware River, design and planning teams are asked to consider “cultural resources.”¹⁶ Requests for proposals ask respondents to “identify riverfront cultural and potential archeological resources, specifically those with potential for historic preservation, including structures not currently on the Philadelphia register of Historic Places and potential historic districts.”¹⁷ Such requests raise questions: what will qualify as a cultural resource; how should historic resources be treated and interpreted; and who will tell the story? A thorough understanding of how to document, analyze, preserve and reuse the rich industrial infrastructure will be key to creating an authentic place that speaks to the city’s past as well as its future.

¹⁵ Guide to Baltimore website

¹⁶ Delaware River Waterfront Corporation. *Request for Proposals: Developing a Design for Pier 11*. Issued April 2009.

¹⁷ Delaware River Waterfront Corporation. *Request for Proposals: Developing a Central Riverfront Master Plan*. Issued June 2009

1.2. Thesis

This thesis explores how waterfront redevelopment projects in a number of cities have addressed the preservation or reuse of industrial infrastructure along redeveloped waterfronts and surveys how--embracing, rather than ignoring--industrial heritage has contributed to the success of these ventures. To address this issue, I examine a selection of former industrial waterfronts that in North American and the United Kingdom and consider four questions. First, in what ways have redevelopment projects preserved and adaptively reused industrial infrastructure? Why have cities opted for preservation or demolition of industrial infrastructure? What is the trend concerning the preservation of waterfront industrial building fabric? Finally, do the case studies inform industrial era preservation strategies for future waterfront planning and redevelopment efforts?

The broad topics of waterfront redevelopment, industrial heritage, urban redevelopment and public histories have presented tempting diversions during the course of my research. The case studies, and therefore this thesis, focus on physical design and construction. It is impossible to separate physical site improvements from the overarching regional, economic, ethnographic, infrastructural and political forces that shape development. I have touched on some of these topics when they were an integral part of the case studies; however, it is beyond the scope of this thesis to investigate these important topics.¹⁸

¹⁸ The bibliography includes invaluable writings on these topics that provide a broader understanding of the issues surrounding industrial infrastructure, public history, port development, and public engagement.

1.3. Thesis Structure and Methodology

This thesis is divided into two major parts. The first part consists of three chapters that document the status of waterfront industrial preservation. The following paragraphs describe how I focused my research and analysis within this potentially broad topic.

Chapter 1 frames the issues related to preservation on the industrial waterfront. The second chapter looks at the current literature and other perspectives on the topic and sets the stage in terms of attitudes toward industry, development, historic preservation, environmental remediation and physical barriers at the waterfront. The literature review explores the work of scholars, practitioners in the field of preservation, designers, real estate developers, city planners, municipal administrators and National Park Service officials whose notions of industrial preservation and waterfront redevelopment are especially relevant to this thesis.

Sources consulted included books, journal articles, media accounts, land use plans, designer's portfolios and personal interviews.

Research for the second chapter served to inform the selection of case studies for this thesis.

Innumerable variables shape the final built form and perceived success or failure of every redevelopment project. I compiled selected attributes of many of the waterfront redevelopment projects encountered during my research within a matrix. (Fig. 3) Attributes included project location, redevelopment site, size, major developer or authority involved, the major pre-redevelopment uses, approximate year that planning for redevelopment started

and the presence of a parallel highway--all of which have a considerable impact on how these projects perform financially, socially and aesthetically.

Many attributes of redevelopment projects change over the course of planning and building. Phased construction, scope changes, political shifts and real estate sales that occur during the course of large development projects with long time horizons make it impossible to name all of the firms and agencies involved in a project or assign specific start and finish dates to these ventures as projects evolve during the course of development. In attempting to address the fluid nature of these projects, dates of planning and construction and credited planners, developers and contractors are referenced in the text. The dates and credits presented in the matrix represent the most frequent attributions found during the course of my research.

Chapter Three documents a representative selection of waterfront redevelopment projects. The criteria used to select the case studies for this thesis included: the presence of industrial and port infrastructure prior to redevelopment, proximity to the urban center, and my ability to visit the site during the course of this research. For each selected case study, I compiled a brief site history through a review of historic maps, archival images and accounts of local history. In addition, I compiled accounts of site redevelopment through journals, media coverage and interviews with people that were familiar with the project. The case studies are arranged chronologically in order to examine whether there was a discernable evolution in the approach to industrial preservation over time. The case studies include Pittsburgh

(1954), Baltimore (1964), Philadelphia (1970), Camden (1984) Dublin (1986), Glasgow (1999), and Brooklyn (2002).

The second part of the thesis analyzes the case studies to determine the effect of preserving industrial infrastructure on the form of redevelopment and makes recommendations regarding best practices. Crosscutting analyses compare the projects with regard to the factors that affect the decision to conserve, reuse or demolish industrial building fabric. These analyses integrate the findings from the case studies and demonstrate how new waterfronts have leveraged historic preservation and adaptive reuse of industrial infrastructure.

The analysis that comprises the second part of the thesis is divided into three chapters.

Chapter Four analyzes the issues illuminated by the case studies and literature to determine what factors contribute to the preservation (or demolition) of industrial infrastructure and how such preservation affects redevelopment. The fifth chapter sheds light on trends in the preservation of industrial waterfront heritage and the reasons for those trends. The final chapter reframes these findings into lessons to suggest models for the historic preservation of industrial era infrastructure in waterfront redevelopment efforts in Philadelphia and other cities. These lessons provide a framework through which planners, public officials, developers and citizens can work together to effectively preserve the physical fabric of the industrial past to create more authentic, sustainable and economically viable waterfronts.

2. Literature Review and other Perspectives

2.1. Rethinking Industrial Preservation

2.1.1. Industrial Groundswell in Landscape Architecture

In the late 1960's, renowned landscape architect and educator, Richard Haag, FASLA prepared a program for a student design competition to prepare a plan for the site of abandoned gas works on the shore of Lake Union in Seattle, Washington. The design competition was open to junior and senior undergraduate students enrolled in accredited programs of Landscape Architecture across the United States. The 130 submissions included proposals for parks, zoos and malls. Many submissions proposed opera houses that paid respect to the Sydney Opera House that was in its final stages of construction at the time. Not one of the 130 submissions proposed preserving any of the gas works structure.¹⁹

Haag apparently did not take the majority view to heart when he devised a master plan that recycled the defunct gasification plant into a new kind of public space. His plan drew a great deal of criticism nationally²⁰ as well as from Seattleites who recalled the brown clouds that emanated from the plant before it closed in 1956. This sentiment was captured in the novel *Black Hearts and Slow Dancing* excerpted in the 1995 *Seattle Access* guidebook.

¹⁹ Richard Haag. Acceptance speech for the First Annual Excellence on the Waterfront Cultural Heritage Award presented to Haag for his work at Gas Works Park, Seattle Washington: 23 Oct 2009. Phone interview, 18 January 2010.

²⁰ Brynolson, Grace. Gas Works (ugh!) reborn as a city park. *Smithsonian Magazine*. (November 1977): 117-119.

“A rust-brown smudge ballooned over Seattle, end to end, a thousand feet thick. Mac knew the locals were telling themselves that if they were getting headaches, their eyes were blood-shot, and their noses ran, it must be something else. Seattleites had a stunning town, but it grew dirtier by the minute. It was only Northwest vanity that kept people calling it fog.”²¹

Haag waged a long campaign to address opposition to his plan for saving the Seattle Gas Works²² based on such negative associations with the industrial era. His belief that the idea of building the park around the industrial ruins would be seen as appropriate “way down the road”²³ was validated. Haag’s design for Gas Works Park eventually garnered critical acclaim²⁴ and the park has become a popular destination for locals and tourists (Fig. 4)

Haag’s pioneering work at Gas Works Park preserved one of the 3500 gas works plants that had once existed in the U.S. It “features the most complete assemblage of gas manufacturing ‘sets’ conditioning and machinery in the world; the only remnant elements of this great and rampant industry remain anywhere in the world.”²⁵

Gas Works Park, along with huge shifts in economic geography that created ‘Rustbelts’ of vacant industrial complexes, paved the way for the reclamation of former industrialized sites by landscape architects around the world. Landschaftspark Duisburg Nord, designed by

²¹ Earl Emerson. *Black Hearts Slow Dancing*. 151. Cited in Lois Spritzer, ed. Seattle Access. Dunmore PA: Harper Collins, 1995.

²² Randy Hester. “Labors of Love in Public Landscape.” *Places*, 1 (1), 21.

²³ Hester, 18.

²⁴ Gas Works Park was recognized by the American Society of Landscape Architects with a Presidential Award in 1981 and has been included in exhibitions at Harvard University, UIA Barcelona and for the International Conservatoire of Parks in Paris. The site was granted Seattle Landmark Preservation Status in 2002, place on the Washington State Register of Historic Places and has been recommended for a National Historic Designation.

²⁵ Allen Hathaway, PhD, P.E., P., Geologist as quoted by R. Haag.

team led by Latz +Partners transformed a former coal and steel production plant into a public park. (Figures 5, 6) Opened in 2000, The Park and is considered an icon in the reuse of postindustrial sites.²⁶ The design for Duisburg Nord preserved much of the existing industrial infrastructure to serve as climbing walls, waterways, gardens or receptacles for toxic soils. Remediation of the site was expressed as a way to heal and understand the industrial past. The New York High Line, designed by a team led by James Corner Field Operations, is a roof garden promenade sited within abandoned elevated railway infrastructure perched 30 feet above city streets. (Figure 7) The High Line drew crowds as well as critical acclaim when it opened in the summer of 2009.²⁷

Other industrial sites used as public spaces include Ballast Point Park in Sydney Australia and Bethlehem Works in Pennsylvania. Ballast Point relies on reuse, recycling and industrial relics²⁸ as defining features for a waterfront park sited a mile and a half from the Sydney Opera House. Bethlehem Works is the only other industrial mass production steel mill besides the Carrie Furnaces in the U.S. that has not yet been demolished.²⁹ Preservation of the Bethlehem Works hinged on a development agreement with the Sands Casino and the success of proposals to build a National Industrial Museum at the site. The Sands' development agreement committed the company to spend \$560M on the 126-acre parcel in

²⁶ Weilacher, Udo. "Learning from Duisburg Nord." *Topos* 69. 2009: 94.

²⁷ Gerdts, Nadine. "The High Line, New York City." *Topos* 69. 2009: 16.

²⁸ Hawken, Scott. "Ballast Point Park in Sydney." *Topos* 69. 2009: 46

²⁹ Three pre-mass production blast furnaces are preserved in the U.S. including the Saugus Ironworks in Massachusetts, and the Cornwall and Hopewell Furnaces in Pennsylvania. The fact that a Wikipedia article has been written to provide a list of preserved industrial mass production blast furnaces can be seen as evidence of growing interest in industrial heritage.

exchange for the right to build and operate a new casino on the former steel site. The agreement also calls for preserving several Bethlehem Steel structures, including the iron foundry, the former headquarters, the annex, the elevated rail ore-moving system, the blast furnaces, the ore bridge, the high house, the gas blowing engine house and portions of the massive No. 2 machine shop.³⁰ The preserved mill structures are to be used as public space backdrop for Bethlehem's growing arts and entertainment sector and as the National Museum of Industrial History.³¹ (Figures 8, 9)

The phenomenon of using obsolete and degraded sites for new public open spaces was recognized in an exhibit held at the New York Museum of Modern Art in 2005.

Groundswell: Constructing the Contemporary Landscape highlighted urban sites reclaimed from obsolescence or degradation in cities seeking to remake and redefine themselves in the postindustrial era.³² These landscape projects address the ecological and economic regeneration of former industrial sites³³ and give urban wastelands a second life by converting them into engaging public spaces that attract visitors and help cities brand themselves.³⁴

2.1.2. Industrial Building Reuse

Beyond serving as physical framework for landscape, industrial buildings have also proven to be popular structures for adaptive reuse as residential lofts, museums and commercial spaces.

³⁰ The No. 2 machine shop was the largest industrial building in the world when it was built in 1890

³¹ National Trust for Historic Preservation. "11 Most Endangered: Bethlehem Steel Plant" Preservation Online,

³² Reed, Peter. Groundswell exhibition press release.

³³ Stilgenbauer, Judith, 8.

³⁴ Saffron, Inga. "The New Industrial Parks." Philadelphia Inquirer 1 May 2005, 1D.

Such building conversions have been attractive to developers seeking tax credits. Financial incentives such as the U.S. Federal Historic Preservation Tax Incentives Program, have spurred thousands of rehabilitation projects representing billions of dollars in private investment.³⁵ Other nations have created a wide array of financial incentives and grant programs that support building preservation.³⁶ These programs have proven to be a most successful and cost-effective paths to community revitalization.

The phenomenon of preservation-led redevelopment of industrial districts including LoDo in Denver, SoHo in New York, and the Pearl District in Portland suggest that industrial infrastructure can serve as a viable framework for physical planning and regeneration of urban centers. These loft districts share a relatively comfortable architectural scale and are often less than six stories high with 19th and early 20th century detailing that makes them attractive for residential redevelopment. Artists, students and urban pioneers as inexpensive living and working spaces located on the outskirts of up market districts yet still within reach of urban amenities, transit systems and infrastructure initially inhabited these districts. The restoration and adaptive reuse of larger, iconic 20th century industrial era buildings has been explored as an architectural phenomenon. Books on the subject provide a broad survey of case studies and explore the financial, technical, structural and environmental issues of

³⁵ A Guide to the Federal Historic Preservation Tax Incentive Program for Income Producing Properties. http://www.nps.gov/hps/tps/tax/incentives/essentials_1.htm

³⁶ See: McCleary, Rebecca. "Financial Incentives for Historic Preservation: An International View." MS Thesis. University of Pennsylvania, 2005.

individual building restoration.³⁷ Monographs on the architecture of adaptive reuse of specific industrial buildings such as Renzo Piano's conversion of the Fiat Factory into a cultural and commercial complex and Herzog & De Meuron's work at Tate Modern are increasingly popular. The most publicized projects transform industrial fabric for contemporary uses, taking a physical, rather than historicist approach.

There is clearly a growing body of work dealing with the documentation, restoration and adaptive reuse of individual industrial buildings. Single buildings represent a small portion of the complex, community, transportation, utility, machinery, staging, and storage infrastructure that supported industrial processes³⁸--few resources that deal with preservation or reuse of industrial complexes or communities as urban form.

2.1.3. Industrial Complexes and Communities

Richard Francaviglia writes, "Heritage landscapes are associated with recognized patterns of activity in place and time . . . They are manifestations of human activity in space...the essence of what gives character to and defines place."³⁹ The idea of complexes or communities as opposed to simply a building expands the conception of industrial preservation to accommodate "recognized patterns of activity in time and place."⁴⁰ Industrial landscapes may include land consumed by transportation services, such as rail yards, harbor

³⁷ See Rabun, Kincaid, Powell and Henehan.

³⁸ Dyden and Muller, 42; Dixon, Elk & Weber, 1.

³⁹ Francaviglia, Richard V. "Selling Heritage Landscapes," in Alanen and Melnick, eds., *Preserving Cultural Landscapes*, 49.

⁴⁰ Muller, "Industrial Preservation", 3.

facilities and canals; energy production such as furnaces, generators, power lines and hydroelectric dams; industrial waste operations such as sewage treatment facilities or wastewater holding ponds; and significantly, by adjacent communities that housed the workforce.⁴¹

The National Park Service recognized an early industrial landscape with the designation of the Lowell National Historical Park in Lowell, Massachusetts.⁴² Lowell presents an example of the preservation of an industrial community that included a complex of circa 1820 buildings, power canals, workers residences and facilities that illustrate the emergence of a new industrial society.⁴³ Unlike industrial loft districts or iconic adaptive reuse showpieces, Lowell's preservation-based redevelopment was driven by public history rather than real estate market forces. Cathy Stanton, an educator and ethnography specialist at the National Park Service, documented the part that public historians played in the preservation and interpretation of Lowell in *The Lowell Experiment: Public History in a Postindustrial City*. Stanton identified the roll of "culture-led redevelopment" as a tool that Lowell used to reinvent itself after deindustrialization. Here, committed citizens argued that the form of an industrial city could be significant to the culture of a nation. It was a new idea and preceded UNESCO's program to recognize World Heritage Cities by over a decade.⁴⁴ These efforts

⁴¹ Muller, "Industrial Preservation", 4.

⁴² Budurow, 72.

⁴³ Frenchman and Lane, 3

⁴⁴ Stanton, *The Lowell Experiment*

were responsible for the transformation of the Lowell Mills from derelict factories into a revenue-generating heritage site.

Mill Ruins Park, in Minneapolis, Minnesota, interprets the land use history of the Charles A. Pillsbury and William D Washburn flour milling and sawmilling complexes along the side of the Saint Anthony Falls on the Mississippi River. Scott Anfinson, an archeologist with the state of Minnesota has written extensively on the park, a result of an archaeological study that uncovered the remains of mills, railroads, bridge footings and power canals built in the 1850's beneath abandoned railroad grades, gravel piles and parking lots.⁴⁵ The explorations began in 1983 in order to determine the presence of archeological sites along the route of a proposed roadway.⁴⁶ The excavations for the park began in 1998 and continued through 2001, exposing tailraces, and mill structures that made the complex visible to the public. (Figure 10) The excavated ruins create assets for education, tourism and commercial development and since the creation of the park, "what was skid row has become a gold coast."⁴⁷

Granville Island in Vancouver, Canada presents an example of the adaptive reuse of a complex of industrial structures as a catalyst for the rebirth of Vancouver's downtown. The 35-acre island emerged from dredge spoils in 1915 and was quickly populated by corrugated tin-clad machine shops, mills and factories. (Figure 11) As postwar demand for industrial

⁴⁵ Anfinson, 322.

⁴⁶ Anfinson, 322.

⁴⁷ Anfinson, 329.

output declined, the site slowly deteriorated until it was redeveloped in the 1970s by the Canadian federal government with minimal investment. This industrial reclamation retained most of the tin-clad structures and transformed an industrial site into a mixed-use development with a public marketplace, entertainment venues, residences, artist studios and light industry, complete with indoor and outdoor public spaces. The island benefits from the scale and character of not only the former industrial buildings but also from the preserved railroad tracks and overhead piping left from the island's industrial days. (Figure 12)

Granville maintains high occupancy rates and is heralded as one of the most successful public spaces in the world by the Project for Public Spaces.

2.1.4. The NPS and Industrial Preservation

In the last century, the U.S. National Park Service (NPS) has served as the lead agency for the conservation and interpretation of America's natural and cultural heritage. The issue of evaluating the integrity of massive multi-faceted industrial sites and their interrelated communities has far-reaching implications for historic preservation.⁴⁸ The nature of production and shipping requires that these sites evolve over time to accommodate new forms and new technology. Industrial buildings are constantly becoming obsolete.⁴⁹ As such, it is rare to preserve these systems intact, yet, often a plant gate, a particular industrial

⁴⁸ Dyden and Muller, 42.

⁴⁹ Budurow, 70.

building or an equipment stand may be enough to inspire a sense of cultural or historic identity and connection to the former plant.⁵⁰

The Historic American Engineering Record (HAER) was established by the NPS, the American Society of Civil Engineers and the Library of Congress in 1969 to address the destruction of industrial and engineering heritage and to define a basis for determining what assets should be preserved.⁵¹ Since its inception, HAER has documented close to 2000⁵² sites, a large percentage of which have since been lost.

The National Maritime Initiative, an office within the NPS, is conducting a Maritime Heritage of the United States Theme Study. The primary focus of this study is to gather information on the history, significance, appearance and integrity of large historic vessels, lighthouses, shipwrecks and hulks. As of 2006, only five of over 170 identified assets were sites of industrial interest, including the Alexandria Historic District in Virginia, J.C. Lore Oyster House in Solomon's Maryland, Lowell's Boat Shop in Amesbury Massachusetts, Rudolf Oyster House, in Sayville, New York, and the Kake Cannery in Kake, Alaska.

In 1991, Congress authorized the NPS to conduct a theme study on American labor history: to identify key sites in labor history; to nominate districts, sites, buildings and structures that best illustrate that history; and to prepare a list of the most appropriate sites for historic designation. The *Labor History Theme Study* was published in draft form in 2003. It lists

⁵⁰ Ibid.

⁵¹ HAER webpage <http://www.nps.gov/history/hdp/haer/index.htm>

⁵² O'Connor, director HAER, Email correspondence, issued 29 January 2010.

nine sites as appropriate for designation under this program, most of which deal with labor and union history. Two of the sites, the Kake Cannery in Alaska and Harmony Mills in Cohoes, NY represent places of manufacture.⁵³ Recent efforts to gain designation for industrial sites have met with NPS resistance largely due to issues of feasibility and cost.⁵⁴

National Heritage Areas (NHA's) are places where natural, cultural, historic and scenic resources combine to form a cohesive, nationally distinctive landscape arising from patterns of human activity shaped by geography.⁵⁵ NHA's are designated by Congress and operate as partnerships between the NPS and local communities. NHA's extend the NPS mission of resource preservation and interpretation without direct ownership or management. Several heritage areas address pre-20th century industrial themes, while two focus on 20th century industry – the Motor Cities Automobile National Heritage Area at the Ford Rouge Complex in Detroit, and the Rivers of Steel National Heritage Area in Pittsburgh.⁵⁶ Recently the U.S. Committee for the International Council on Monuments and Sites suggested that the Motor Cities NHA pursue world heritage designation “before the German’s, French or Italians beat us to it.”⁵⁷

⁵³ United States Department of the Interior National Park Service. *Draft Labor History Theme Study*, 145.

⁵⁴ Budurow, 72.

⁵⁵ Barrett, 11. This definition was articulated by Denis P Galvin, former deputy director of the NPS in testimony before the House Resource Subcommittee on National Parks and Public Lands on October 26, 1999.

⁵⁶ Alliance of National Heritage Areas. *National Heritage Areas* (Brochure) December 2008.

⁵⁷ Conversation with Gustavo Araoz, executive director of US/ICOMOS, 11 October 2003 as recorded by Budurow.

Fewer than 10% of the 2,400 National Historic Landmarks in the US relate to industrial processes, business, energy or extraction and mining themes.⁵⁸ No National Register (NR) Bulletin provides guidelines for evaluating or registering industrial or port infrastructure. Dyden and Muller relied on information provided in NR Bulletin 42 (*Guidelines for Identifying, Evaluating and Registering Historic Mining Properties*) and NR Bulletin 38 (*Guidelines for Evaluating and Documenting Traditional Cultural Properties*) to guide their assessment of integrity of industrial communities.⁵⁹ National Register Bulletins that address harbor and port infrastructure are limited to *Guidelines for Documenting Aids to Navigation* (NR Bulletin 34).

European nations have actively sought international recognition of their industrial resources through a variety of channels. One of these is United Nations Educational, Scientific and Cultural Organization (UNESCO), which recognizes the significance of industrial heritage as an important aspect of world civilization. Yet, despite the international significance of U.S. industry, not one industrial site has been nominated or designated as a UNESCO world heritage site.⁶⁰

⁵⁸ Budurow, 72.

⁵⁹ Dyden and Muller, 38

⁶⁰ Budurow, 70

2.2. Urban Waterfront Redevelopment

There is no comprehensive theory of waterfront redevelopment and research on the topic tends to cover only a handful of large projects in world cities.⁶¹ No scholarly journals, or trade magazines specifically address the complex set of issues involved in waterfront development despite the fact that the first generation of such projects were started almost half a decade ago. Baltimore's Inner Harbor is the most celebrated of early projects followed by a plethora of similar developments that established an international trend and textbook methodology for repurposing waterfronts.

Most books on the topic of waterfront redevelopment address a limited group of cities and projects - Boston, Baltimore, Sydney, London, and notably, New York. *Manhattan Bound: Planning and Developing Manhattan's Waterfront from the Seventeenth Century to the Present* (1987) by Ann Buttenwieser addresses the evolution of waterfront development in one city. The book traces the development and redevelopment of New York's waterfront over 200 years, focusing on the master plans that have guided the ever evolving development of the shoreline and examining the conflicting interests of shippers, manufacturers, merchants, and preservationists. *The New York Waterfront* edited by Kevin Bone, documents the rise and fall of the waterfront's architectural, technological, industrial, and commercial existence over the past 150 years. This compilation of informative texts written by critics and scholars provides meticulous analysis of a variety of archival documents and records. The book, illustrated with

⁶¹ Brown, 18.

drawings, historic photographs, aerials, maps and architectural plans, details and sections culled from a variety of sources along with newly commissioned photographs by Stanley Greenberg, depicts the past, present and future of the New York waterfront.

Ann Breen and Dick Rigby, co-founders of the Waterfront Center, provided some of the earliest documentation and analysis of the waterfront development trend as it played out in many locations, nationally and internationally. Starting in the early 1980's, Breen and Rigby compiled conference proceedings, wrote position papers and published books assessing the urban waterfront phenomenon, presenting a wide range of project examples and distilling general themes and prospects for the future.

The Urban Land Institute (ULI), a nonprofit research and education organization dedicated to creating better places, has also focused on the topic of waterfront redevelopment among many other real estate issues. The ULI has convened forums, conferences and panels to educate its membership and local leaders as well as to exchange information and lessons learned. Articles in the organization's monthly publication, *Urban Land*, share information from public and private sector members about land development. Some of the articles on waterfront redevelopment have covered topics ranging from financing, land use mix, programming, security, sustainability, and capturing local authenticity through preservation. *Urban Land* has presented case studies that cover waterfront redevelopment projects in places like New Bedford, Detroit, Chattanooga, Aalborg, (Denmark), and Hamburg (Germany) along with more renowned waterfronts in Seattle, Barcelona, and Baltimore.

In the last decade, a growing list of comprehensive books have been written on the topic of waterfront redevelopment with a multi-city focus on post-industrial waterfronts including *Waterfronts in Post-Industrial Cities* and *America's Waterfront Revival*. Neither of these publications and few journal articles provide more than a cursory discussion of the role of historic preservation or the integration of redundant industrial infrastructure within waterfront redevelopment.

2.3. Historic Preservation in Waterfront Redevelopment

By the 1960's, waterfront redevelopment projects were conceived in an atmosphere of growing appreciation of historic structures. This appreciation was fed in part by dissatisfaction with the 'Modern Movement' as expressed by Jane Jacobs in *Death and life of Great American Cities*. The National Historic Preservation Act of 1966 provided funding for state programs that served to foster preservation. In 1976, historic tax credit legislation for the rehabilitation of commercial buildings altered the business equation for developers – demolishing historic buildings to make way for new construction was no longer automatically considered the most economical model.

The preservation ethic is one of the factors that contributed to cities reclaiming their waterfronts according the Ann Breen and Dick Rigby. They point to the formation of a New Bedford, Massachusetts organization called the Waterfront Historic Area League (WHALE) in the early 1960's as a prime example of the preservation movement at work on the waterfront. The league's mission was to protect the remaining historic buildings on New

Bedford's waterfront, home to a whaling industry and subsequently to textile manufacturing, from being razed as part of an urban renewal program. In 1963, they financed a building survey and, within three years, a 14-block area was placed on the National Register. The league, enlisting help from the National Trust and funds from the Community Development Block Grant program, was responsible for saving many old buildings from the wrecking ball, retaining the fishing industry, and establishing a craft fair that helped to reacquaint 20,000 people with the waterfront and the changes that were taking place there.⁶² Breen and Rigby point to similar moves to preserve community character on the waterfront. Their examples include, reusing the Old Port Exchange in downtown Portland, Maine for shops and offices; turning an old cotton exchange in Wilmington, North Carolina into a cluster of shops; and adapting an old torpedo factory to artist's studios and shops in Alexandria, Virginia.⁶³

In "History at Water's Edge,"⁶⁴ Barry Shaw provides an analysis of the evolving approach to preservation on urban waterfronts. Baltimore's Inner Harbor, as one of the early waterfront redevelopment projects, provided for some radical restoration of historic fabric that was scheduled for demolition. The low value of land, uncertain rate of return and difficulties inherent in dealing with large industrial estates rendered private developers risk-averse and unwilling to cover major costs involved with protection, preservation and restoration of

⁶² Breen, Ann & Rigby, Dick. *Waterfronts: Cities Reclaim Their Edge*. New York: McGraw Hill, 1994, 15.

⁶³ Breen & Rigby. *Waterfronts*, 15.

⁶⁴ This appeared as chapter within Marshall's book, *Waterfronts in Post Industrial Cities*.

historic structures. Later projects included the adaptive reuse of historic buildings at Faneuil Hall and Ghirardelli Square to serve commercial uses. Later schemes, like the renovated warehouses at the Old Port in Maine, went beyond physical form and recognized the value of old buildings as symbols of community memory and the comfortable scale of historic streets and urban patterns as a stage for quality public spaces. New leisure-oriented waterfront developments often use historical associations as a form of brand image.⁶⁵ “Building on existing assets creates sustainable development and recognizes the importance of character and diversity to establishing identity.”⁶⁶ While these writing all evidence the growing importance of preservation on the waterfront, none focus on the impact and challenges specific to the preservation of industrial era infrastructure.

2.4. Industrial Heritage on the Waterfront

Recent waterfront master plans and civic visioning reports have increasingly referenced the industrial past of many sites slated for redevelopment. The overview for New York’s East River Waterfront Esplanade and Piers Project states that, “Traditional esplanade elements have been reinterpreted into unique designs that hearken back to this waterfront’s industrial past”⁶⁷ and launches into a discussion of customized railings, bar stool seating, site lighting, and hexagonal pavers – none of which speak to the industrial past of the site. Architectural renderings of the Esplanade (Figure 12) show tall ships, not power plants or electric lines.

⁶⁵ Barry Shaw. “History at the Water’s Edge” *Waterfronts in Post Industrial Cities*. New York: Spon Press, 2001. 160-161.

⁶⁶ Shaw, 170

⁶⁷ New York City Department of City Planning. “West River Waterfront Esplanade and Piers Project Overview”

Such evidence reflects the status of preservation, reuse and interpretation of industrial infrastructure within waterfront development--it is much discussed, yet less frequently implemented.

2.4.1. **Gentrification: The Pull and Push of the Working Waterfront**

The helter-skelter of ropes and the patina of rust are part of a genuine working waterfront and contribute gritty, authentic character to industrial waterfronts.⁶⁸ To lose viable businesses to the forces of gentrification eliminates the traces of the cultural landscape that make industrial waterfronts locally unique. Successful strategies for retaining viable industry while redeveloping underused lands is critical to the creation of authentic, viable waterfronts.

While the word 'postindustrial' often describes the economy of late 20th century, one could make a case that a more accurate description of the era would be 'less industrial.' The industrial sector continues to be important source of employment, economic output and tax revenues. According to a recent study commissioned by the Philadelphia Industrial Development Corporation the Industrial sector in Philadelphia is responsible for one out of every five jobs in the city, contributes \$323 million annually to the city's coffers, and has a total economic output of over \$64 billion.

Historically, industries such as ports, fishing fleets, shipbuilding, warehouses, mills, factories, grain silos, concrete terminals, coal and salt piles, wastewater treatment plants and tank farms dominated urban waterfronts. These industries are often noisy, noxious and built to be

⁶⁸ Breen & Rigby. *Waterfronts*, 26.

functional, rather than attractive. As some industries abandoned the waterfront, cities saw large parcels of inexpensive waterfront land as an opportunity for mixed-use developments. The proposed offices, museums, shops, galleries, marinas, and especially condominiums and hotels can lead to gentrification and are often viewed as incompatible with the normal functioning of industrial businesses that remain.

While gentrification is related to redevelopment on a broader level, the effects are particularly relevant to the topic of industrial waterfronts. A viable, working waterfront presents a firsthand view of industry--not a reflection of a distant past. One of the most basic paths to leveraging industrial heritage in waterfront redevelopment is to retain viable industry and marine enterprises. Gentrification affects ongoing waterfront manufacturing and shipping establishments in two major ways. First, complaints from new residents and business owners can lead to operating restrictions that threaten the viability of waterfront businesses. Gentrification presents a second hurdle in the form of rising property values. Redevelopment projects, like Baltimore's Inner Harbor, can result in a dramatic increase in the value of waterfront land. This can place an economic burden on industrial and marine enterprises that depend on cheap land as part of their business equation.⁶⁹

Waterfront industries are a vital economic resource, providing good paying jobs, generating a market for support services, supplying energy, and contributing to waterfront character. The Providence Working Waterfront Alliance posits that mixed-use redevelopment "will come at

⁶⁹ Breen & Rigby. *Waterfronts*, 25.

the expense of existing successful taxpaying businesses, good blue collar jobs, and a regional economic resource that will never be rebuilt. The costs to the region could be immense, as thousands of port-related jobs could be lost and heating and energy costs would increase due to the expense of transporting these resources from other ports.”⁷⁰

Yet, reserving waterfronts exclusively for maritime and industrial uses is no longer realistic; most cities lack the volume of enterprises that once lined their waterfronts. San Francisco grappled with this issue in 1991 when the city port authority initiated a land use planning process. The first phase of the process, determining existing land uses, revealed that working maritime businesses comprised one third of the waterfront land uses.⁷¹ As a result, the Port of San Francisco Waterfront Land Use Plan, adopted in 1997, reserves approximately two thirds of the Port’s property for maritime uses and identifies “Mixed Use Opportunity Areas” for other activities that can thrive in waterfront settings.⁷²

The matter of waterfront gentrification is a planning issue. Waterfront ecological restoration, urban livability, and sustainable technologies all appeal to the imagination of urban planners, developers and residents while potentially displacing concerns and questions about how existing waterfront industries fit within these planning schemes.⁷³ Despite concerns about

⁷⁰ <http://providenceworkingwaterfront.org/>

⁷¹ Brown, 46

⁷² Port of San Francisco. Waterfront Land Use Plan. San Francisco Port Commission, Republished, June 2004. Overall Goals and Plan Highlights <http://providenceworkingwaterfront.org/index.php/blog/>

⁷³ Hagerman, 285.

incompatibility, no studies document industries lost to the forces of gentrification or the effect of mixed-use waterfront redevelopment on adjacent industrial uses.

Anecdotal evidence suggests that the problem may not be as widespread as members of the Providence Working Waterfront Alliance assert. Operators of the both Fairhaven Shipyards and the Arrowac Fisheries in Tacoma, Washington have not seen much conflict with the new uses. Su Dowie, Director of Planning and Operations for the Foss Waterway Development Authority in Tacoma tells of upscale condominiums built near shipyards, fishing fleets, and manufacturing plants and reports that new residents have had few complaints. Owners of gentrified businesses such as the Colophon Cafe that overlooks the Fairhaven Marine Industrial Park indicate that the hustle and bustle of the maritime and industrial businesses is actually a drawing point for many of their guests. Developer Ted Mischaikov said he and other developers are straightforward with potential condominium owners and retailers about Fairhaven's waterfront activity--it is not the best location for people looking for the peace and quiet of a rural setting.⁷⁴

A mix of productive, cultural, leisure, retail and residential functions often represents the keystone of the success to developing the waterfront. Developments that relied solely on large commercial and entertainment structures or vast residential districts lack complexity and

⁷⁴ Jensen, 1.

interest, and reveal an embarrassing poverty of intent.⁷⁵ Rinio Bruttomesso asserts that including a variety of activities linked to previous and original uses preserves meaningful traces of the identity of places. He advocates retention of productive activities, compatible with the renewed context, capable of offering visual contrasts and economic diversity.⁷⁶

2.4.2. Environmental Sustainability: Land, Water and Resources

“Industrial sites are daunting reminders of humanity’s dual capacity for destruction and creation that engenders both nuisances and progress.”⁷⁷ Insuring the environmental sustainability of redeveloping industrial waterfronts hinges on three strategies: protecting or improving water quality; cleanup of contaminated industrial brownfields⁷⁸; and conserving resources by reusing existing structures and developing where urban infrastructure already exists. Paradoxically, the environmental degradation of industrial sites often served as an early catalyst for redevelopment. Pressure from environmentalists and environmental legislation, such as the 1972 Clean Water Act, shuttered less profitable industries or forced them to move abroad where restrictions were less stringent. As the conditions of waterways improved, more developers saw the attraction of urban waterfronts.

⁷⁵ Bruttomesso, Rinio. “Complexity on the urban waterfront.” from Marshall. *Waterfronts in Post Industrial Cities*. New York: Spon Press, 2001. 43.

⁷⁶ Bruttomesso, 44.

⁷⁷ Budurow, 70.

⁷⁸ According to the USEPA, Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off green spaces and working lands

Properties sited on polluted waterways were neither economically nor environmentally viable.⁷⁹ In the mid-20th century, the U.S. launched major federal initiatives to address pollution. The National Environmental Policy Act of 1969, the Clean Air Act Amendments of 1970, and the Water Quality Improvement Act of 1970 the Resource Conservation and Recovery Act (RCRA) in 1976 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, commonly known as ‘Superfund’), in 1980 all represent a fundamental shift in values. Federal water cleanup spending accounted for \$50 billion in federal grants between 1972 and 1992 and constituted one of the largest public works programs ever undertaken. By the 1980’s there were reports of fish species returning to rivers that had been barren for years.⁸⁰ The resulting improvement in water quality made waterfront property more desirable and attractive to developers.⁸¹

Industrial waterfront properties face continued challenges related to environmental and economic sustainability. Careful assessment and the implementation of detailed cleanup programs involving the removal, remediation or sequestration of contaminated soils and groundwater are standard prerequisites to redevelopment. The Brownfields Revitalization and Environmental Restoration Act of 2001, as well as Environmental Protection Agency funds, contributed more than \$4 billion to brownfield cleanups. Waterfront brownfields in Brooklyn, Pittsburgh, Richmond, Memphis, Cincinnati, and more recently Los Angeles all

⁷⁹ Bruttomesso, 46.

⁸⁰ Breen and Rigby, 14.

⁸¹ Bruttomesso, 46.

underwent remediation and redevelopment. Numerous smaller municipalities also have used creative financing and government resources to reinvigorate their waterfronts.⁸²

While the remediation and recycling of derelict industrial lands to new uses has become a widespread practice, brownfield redevelopment schemes often fall short of creating rich, varied environments. Remediation has taken a toll on many waterfront sites, demolishing, excavating and capping not only contaminants, but also a rich material culture. While brownfield remediation has become increasingly complex, there are enormous opportunities for new approaches to restoring and integrating these sites into the urban fabric.⁸³

Natural phenomenon, such as flooding, severe tides, climate change, and rising sea levels present additional challenges to conserving or reusing industrial waterfront properties.

Preventing and correcting flood damage takes a variety of forms--the most sustainable being regulating new building on the floodplain and in wetlands, according to the Federal Emergency Management Association.⁸⁴ Historic structures located within floodways are often exempted from some of these regulations; however, consideration should be given to mitigation measures that can reduce the impacts of future flooding.⁸⁵

2.5. The Interstate Legacy

One of the major physical impediments to connecting rediscovered waterfronts to urban centers are the highways that were built in the mid 20th century as a result of the Federal

⁸² Pelaseyad. "Riverfront Brownfield Redevelopment."

⁸³ Hough, Michael from Kirkwood, Niall. *Manufactured Sites*, xii.

⁸⁴ www.fema.gov/fima/floodplain

⁸⁵ United States. Department of Homeland Security, FEMA. *National Flood Insurance Program: Floodplain Management Bulletin Historic Structures*. FEMA P-467-2. Washington, D.C.: FEMA, 2008.

Highway Act of 1956. These highways often parallel waterfronts, providing easy access to industrial-era factories, warehouses and ports, forming a barrier between the city center and the waterfront. This common urban typology requires careful attention in many waterfront redevelopment plans.

Within the last decade, many cities have sought to do away with these highways to re-establish connection to their waterfronts. In San Francisco, damage from the 1989 Loma Prieta earthquake forced the closure and subsequent demolition of San Francisco's incomplete and controversial Embarcadero Freeway that ran along the waterfront. The demolition opened up San Francisco's Embarcadero area to new development when a ground-level boulevard replaced the elevated structure. On the east coast, Boston initiated the 'Big Dig' to reroute a three and a half-mile section of Interstate 93 into an underground tunnel through the heart of the city. The Big Dig created acres of street-level deck parks over the highway, producing a green swath between the more consolidated urban fabric of the historic city and the redeveloping waterfront.

Olympic Sculpture Park in Seattle, designed by a team led by Weiss/Manfredi Architects, takes a different approach to crossing the highway and railway that separate the city center from the waterfront. The park, constructed on a former industrial site and cut from north south by the major arterial of Elliot Avenue and the Burlington Northern Rail Road tracks, weaves a sculptural pathway from the city through highway and railway infrastructure to the

waterfront 40 feet below.⁸⁶ (Figure 14) Weiss/ Manfredi rejected “the standard paradigms: neither the idea of the untouched site, awaiting the architect’s free standing monolith, nor its opposite, the privileged ‘natural’ or ‘historical’ site to which any architectural invention must defer, are legitimate for contemporary work. Instead, it is necessary to work from a definition of landscape that incorporates infrastructure (rail lines, highway off ramps, utility lines), history (geologic, political, cultural) and natural systems (water, vegetation, toxicity).”⁸⁷

The park, like a number of other bridges and pedestrian ways in Seattle, takes a ‘threading the needle’ approach to getting people from the city streets down to the water rather than demolishing the highway. (Figures 15, 16) Many walkways go under highway overpasses, bridge over rail lines, and include complex systems of stairways and elevators to bring pedestrians to the waterfront. Attention to the details along these walkways, such as lighting, planting, site furnishings, and public art yield another layer of interest and complexity in these pedestrian connections to the waterfront.

⁸⁶ Weiss, Marion, Manfredi, Michael. “Olympic Sculpture Park in Seattle” *TOPOS Water Design and Management* Volume 59 (2007) 38.

⁸⁷ Weiss Manfredi partnership statement as quoted by Gastil, 177.

3. Case Studies

The following case studies include a brief industrial history, and a summary of the major post-industrial redevelopment planning and implementation for each location. These sections set the stage for a more in-depth look at the approach to the preservation of industrial infrastructure within each redevelopment project. The case studies are arranged chronologically, based on the time planning for redevelopment was started in order to reveal evolution in the approach to industrial heritage.

3.1. Pittsburgh, 1947⁸⁸

3.1.1. Industrial era history

Pittsburgh⁸⁹, the second largest city in Pennsylvania, sits at the confluence of three rivers where the Allegheny and Monongahela Rivers converge to form the Ohio River. (Figure 17) The strategic location was the site of Fort Duquesne, and Fort Pitt. The War of 1812 cut off the supply of British goods, stimulating American manufacture. By 1815, the city was producing significant quantities of iron, brass, tin and glass products.

The iron industry in Pennsylvania goes back to 1716 when colonists set up primitive forges to make necessities like knives, plow points and nails.⁹⁰ Steel production began in 1873, when founded the Edgar Thomson Steel Works in North Braddock,

⁸⁸ Pittsburgh's city planning agency endorsed and funded redevelopment for Point State Park in 1947 as one of the initiatives of Pittsburgh's Renaissance Plan which was in effect from 1946 -1973. See Davis, 46.

⁸⁹ The section more precisely deals with Pittsburgh and the surrounding Monongahela Valley, home to the massive steel industry of the southwest Pennsylvania region.

⁹⁰ White, 115.

which eventually evolved into the Carnegie Steel Company. The U.S. Steel Corporation was formed in 1901 and by 1928 Pittsburgh area steel mills were producing one quarter of the nation's steel.⁹¹ The Pittsburgh⁹² prototype of the fully integrated 'Big Steel Corporation' served as a worldwide model for steel mills in Canada, Europe, the former Soviet Union and China.⁹³ Integrated steel mills take up hundreds of acres and consist of complexes of mammoth furnaces, foundries and conveyances necessary to produce a full range of finished steel products including structural sections, strip, plate, wire and rod products from raw materials. A vast railway system, freight yards and miles of harbor for transporting raw materials and finished products served the steel mills of the Monongahela Valley. In addition to steel mills, the Pittsburgh area was home to Pittsburgh Plate Glass, Alcoa, Westinghouse and H.J. Heinz, all of which experienced growth through the 1960's.

Starting in the 1970's, the oil crisis, economic recessions, foreign competition, high labor costs, overexpansion and outmoded machinery conspired to diminish the demand for Pittsburgh's steel. The reduced demand had catastrophic effects in the region. From 1979 to 1987, more than 67,000 jobs in basic steel and 63,000 jobs in heavy manufacturing were lost in the Pittsburgh area. Companies closed within days, sometimes overnight, leaving behind eerie, ghost town-like plants where coats still hung on hooks and lunch boxes waited to be

⁹¹ White, 115.

⁹² While Pittsburgh is central to the steel story, many of the mills were located in Southwestern Pennsylvania outside of the Pittsburgh city limits. For this thesis, reference to the Pittsburgh steel industry includes mills within a 50-mile radius of the city.

⁹³ "Rivers of Steel" Library of Congress The American Folk life Center website
<http://lcweb2.loc.gov/diglib/legacies/PA/200002936.html>

opened.⁹⁴ As steel mills began to go cold, the closures caused a ripple effect as support industries, mines, railroads and retail all lost business. Pittsburgh's economy has made a transition to one based on high technology, advanced manufacturing and diversified services such as finance, health care and tourism.⁹⁵

3.1.2. Redevelopment

Following World War II, Pittsburgh launched a clean air and civic revitalization plan known as "Renaissance"(1946-1973, forged under the leadership of Mayor David Lawrence.

Lawrence gained the support of the Allegheny Conference on Community Development and financier Richard King Mellon.⁹⁶ It was one of the first efforts to combine the resources of municipal and private groups to plan urban growth.⁹⁷ In addition to the groundbreaking work in environmental planning, Renaissance focused on the replacement of industrial sites and rail yards with new commercial buildings. While the plan had no specific focus on waterfront redevelopment, one of the most iconic building projects that took place as a result of the Renaissance Plan was the creation of Point State Park at the tip of Pittsburgh's Golden Triangle where the three rivers meet. The park was a modern urban park waterfront park designed by internationally known, locally based landscape architects Stotz & Griswold.⁹⁸

⁹⁴ Bradley-Steck, 1.

⁹⁵ Rivers of Steel” Library of Congress The American Folk life Center website <http://lcweb2.loc.gov/diglib/legacies/PA/200002936.html>

⁹⁶ Fitzpatrick, 4.

⁹⁷ Stern, 1.

⁹⁸ Stern, “Pittsburgh Forges Ahead” The DCNR website indicates that the park commemorates and preserves the strategic and historic heritage of the area during the French and Indian War (1754 - 1763)

Point State Park was completed in 1974 as Baltimore's Inner Harbor Plan was still being implemented.

3.1.3. Preservation & Adaptive Reuse

Pittsburgh's record on historic preservation has evolved since the early days of the Renaissance urban renewal plan that rescued Pittsburgh from the maw of pollution, floods and decay. In doing so, Renaissance efforts swallowed more than 1,000 acres of land, razed more than 3,700 buildings, relocated more than 1,500 businesses and uprooted more than 5,000 families.⁹⁹ The *Saturday Evening Post*, *Time* and *Life* magazines all published stories of Pittsburgh's transformation. In 1956, Harvard invited Mayor Lawrence to speak at their invitational conference on Urban Design along with a roster of distinguished speakers including Jose Luis Sert and Richard Neutra.¹⁰⁰

The redevelopment of Pittsburgh's famed 'Point' (Figure 18) began with a wrecking ball slamming into the 103-year old Penn Avenue warehouse in May 1950. Mayor David Lawrence, who grew up in the Point neighborhood, a tangle of iron factories, machine shops, railroad yards, gambling houses and a refuge for the city's working-class Irish,¹⁰¹ presided over the initial demolition and declared "This is a great day of Pittsburgh."¹⁰²

⁹⁹ Fitzpatrick, "The story of urban renewal", 1.

¹⁰⁰ Lawrence, David. "Pittsburgh's Mayor Discusses Urban Design at Harvard Conference" *Charrette*. May 1956.

¹⁰¹ Fitzpatrick, "The story of urban renewal", 1.

¹⁰² Fitzpatrick, "The story of urban renewal", 1.

The Penn Avenue warehouse was the first of 133 buildings to crumble near The Point, leaving 59 acres flat and empty. (Figure 19) It took two decades to fill the space with office towers, hotels, underground garages and luxury apartments. (Figure 20) Two bridges were demolished at the Point's apex to make way for the new state park and fountain. The success of the Point project was responsible for elevating Lawrence from mayor to governor, landing Richard Mellon on the cover of *Time* and thrusting Pittsburgh into the national spotlight.¹⁰³ Fortune magazine declared "Pittsburgh is the test of industrialism everywhere to renew itself, to rebuild upon the gritty ruins of the past a society more equitable, more spacious, more in human scale."¹⁰⁴ In his 1956 speech at Harvard University, Lawrence described the redevelopment of Point State Park and the adjacent Gateway Center that were to fill the 59 acres of cleared land as follows. (Italics added)

"The Point Park will be an ever-present reminder of an adventurous frontier past. It will outline the boundaries of Fort Duquesne, reconstruct the Monongahela bastion of Fort Pitt, house a historic museum which will call to memory the French and Indian wars; the great British statesman from whom we take our name, William Pitt, Earl of Chatham; and the great American patriot who chose our location, George Washington. *Good urban design, as I see it, should not break completely with the past.*

The plantings in the park will be the native species--the flora which existed in the river bottoms of Western Pennsylvania 200 years ago. *Nothing in the park will commemorate any man or happening of the last 156 years.* The park has a very mundane, practical use. It helps us modernize traffic circulation around our business district. The park will have a great aesthetic value. It opens our downtown vista to a sweep of land and water, to growing things and earth. It will have recreational value. The fountain pool will be artificially frozen in winter for skating. The banks of the rivers--walls of the park--will be in part, bleachers for aquatic shows and boat races.

¹⁰³ Fitzpatrick, "A Story of Urban Renewal", 3.

¹⁰⁴ Fitzpatrick, "A Story of Urban Renewal", 3.

Having recaptured something of the past in Point Park, we move directly toward the future in adjoining Gateway Center. Gateway is a 23-acre redevelopment project, non-Federal, in which the Equitable Life Assurance Society is the redeveloper and the Urban Redevelopment Authority of Pittsburgh the public agency.

It is a business district relieved from the tyranny of land, and the pressure to cover every inch of ground to bring a maximum return. The redevelopment project, together with Point Park, *has eliminated a street pattern and a lot pattern laid out in 1794*. Land coverage that had been close to one hundred per cent, excluding streets and alleys, is now less than 30 per cent. The atmosphere of Point Park has been projected into the city's premium business district”

Lawrence's speech captures common attitudes towards city planning and historic preservation in the mid 20th century. Starting with a clean slate (with the exception of a few relicts from the colonial period) planners created grand plazas, skyscrapers, highways and parking in the name of urban renewal and slum clearance.

The design of Point State Park called for moving the existing bridges that touched down close to the end of the point upriver in order to create a useful park space at the apex of Pittsburgh's point. In an effort to mitigate the effect of the new overpass, the planners engaged the architectural firm of Skidmore Owings and Merrill to design the arched highway overpass that cut through the center of the park. Lawrence promised that the interchange would “not be the standard highway engineering with its all too common insensitivity to any value except the movement of traffic.” The team created an arched concrete span that was over 200 feet long in an attempt to create an ‘unobstructed’ view of the park from the city.¹⁰⁵

¹⁰⁵ Lawrence, David. “Pittsburgh's Mayor Discusses Urban Design at Harvard Conference” *Charrette*. May 1956.

The low concrete span provides an inspiring view of gateway center from surrounding hills or for aerial photos, but blocks views between the city and the park. (Figure 21)

As a pioneer of mid century urban renewal, Pittsburgh became a lightning rod for critics of the movement. Jane Jacobs portrayed the Gateway Center as uninviting. (Figure 22) She lauded the Allegheny Conference's cleanup work, but she also said Pittsburgh had severed its Downtown from the rest of the city with parking lots and highways.¹⁰⁶ Such reaction against redevelopment also inspired the city's fledgling historic preservation movement. In 1964, Arthur Ziegler formed the Pittsburgh History & Landmarks Foundation with architectural historian James D. Van Trump. The group campaigned against demolition of the old Pennsylvania Railroad station at the entrance of the Strip District. Ziegler redeveloped 52 acres of railroad buildings on the south shore of the Monongahela River, turning them into a mixed-use redevelopment dubbed "Station Square." The preserved station and train sheds now house offices and retail space. Public spaces feature machinery from the former Clinton Furnace, which operated near the Station until 1927. (Figure 23) Ziegler worked on the preservation of many other Pittsburgh buildings after Station Square and was instrumental creating the National Trust's Main Street program.¹⁰⁷

In 1977, Pittsburgh launched the Renaissance II Plan that focused on cultural and neighborhood development rather than downtown renewal. Despite the shift away from

¹⁰⁶ Jacobs as quoted by Fitzpatrick, 10.

¹⁰⁷ Fitzpatrick, 10.

mid-century urban renewal models and the region's strengthening historic preservation movement most of the steel mills were demolished as the industry imploded in the late '70's and early 80's. Edward Muller, a professor at the University of Pittsburgh, who has written extensively on history of Southwestern Pennsylvania suggests a couple of reasons for the demolition of the mills. "Pittsburgh has done very little industrial preservation along its riverfronts since steel mills and associated industries do not tend to have as adaptable architecture and materials as some other industries. Further, the psychology of the extreme deindustrialization that coursed through the city encouraged civic leaders to sweep away the past and present a "new" image to the world."¹⁰⁸ Lisa Schroeder, Executive Director of RiverLife, echoes Muller's observations. "In an extraordinary 30-year history of brownfield redevelopment, the community only now has developed value/nostalgia for existing infrastructure. It's complicated, because the disappearance of the steel mills exacted such social/economic trauma that the urge for a long time was to wipe out the infrastructure and start anew. In addition much of it was so toxic that it had to be disposed."¹⁰⁹

Yet, some remnants of Pittsburgh's industrial past are still standing. Towering 92 feet over the Monongahela River, constructed of 2.5" thick steel plate and lined with refractory brick, Carrie Furnaces 6 and 7 are extremely rare examples of pre World War II iron-making technology. (Figure 24) Built in 1907, the furnaces produced iron for the Homestead Works from 1907 to 1978. These furnaces reached their peak production in the 1950's and 1960s

¹⁰⁸ Edward Muller as quoted from 12 Feb 2010 email correspondence with author.

¹⁰⁹ Lisa Schroeder as quoted from 1 December 2009 email correspondence with author.

when they were producing 1000-250 tons of iron a day. Since the collapse of the region's steel industry in the 1970s and 1980s, these are the only non-operative blast furnaces in the Pittsburgh District to remain standing¹¹⁰. A quarter century of neglect has left the structures unstable and subject to damage from snow loads and winds.

The Rivers of Steel National Heritage Area serves to interpret and preserve some of these last remaining relicts of the once-dominant steel industry. This National Heritage Area, dedicated by Congress in 1996, covers seven counties in southwestern Pennsylvania, including the city of Pittsburgh, known as the Pittsburgh Industrial District. The nonprofit Steel Industry Heritage Corporation (SIHC) seeks to bolster the regional economy by promoting tourism and economic development based on the region's industrial history. To advance this effort, SIHC created Rivers of Steel, a program that conserves and manages the historic, cultural, natural and recreational resources of steel and related industrial heritage in southwestern Pennsylvania, and preserves the region's industrial legacy for future generations. Five regional journey organizations form the core of the Rivers of Steel program. SIHC provides each regional journey organization with technical assistance, and help with securing funding for project development for landings, attractions, historical sites, and programs based on industrial and cultural themes.¹¹¹ Currently, the Rivers of Steel organization has bills in Congress to create the Homestead Works National Park. The proposed park would be located on 38 acres surrounding the Carrie Furnaces and the Pump

¹¹⁰ Rivers of Steel website. <http://www.riversofsteel.com/preservation>

¹¹¹ Ibid.

House, the site of the bloody 1892 Homestead Steel Strike, one of the most infamous strikes in American labor history.¹¹²

In addition to the Rivers of Steel National Heritage Area, and the pioneering adaptive reuse of Station Square there are other examples of adaptive reuse of industrial era waterfront structures in Pittsburgh. These include the lofts at the Armstrong Cork Factory (Figure 25), and the Heinz Lofts. Such examples of adaptive reuse are not as numerous as brownfield redevelopments built on the site of demolished mills. The Waterfront mixed use development in Homestead is a big-box retail complex with offices and a small residential section set in the midst of large parking lots built on the site of the former Homestead Steel Mill site. The redevelopment involved removing the entire mill infrastructure with the exception of a waterfront gantry crane that remains between two pad site restaurants (Figure 26) and preserved the aforementioned Carrie furnaces and Pump House. A dozen reconstructed brick smokestacks (Figure 27) serve as a place-making element for the 260 acre-complex to remind visitors of the steel mill that once stood there.

The South Side Works is a new urbanist redevelopment on the site of the former J & L steel mill. The Hot Metal Bridge was the only relict of the former steel works preserved in the redevelopment scheme. South Side interprets the site's industrial heritage through interpretive signs prepared by the Rivers of Steel organization. (Figure 28) The standard issue new urbanist architecture does not reference industrial forms or take advantage of the unique

¹¹² Interview with Nathan Strum, Business Development Specialist, Allegheny County, 17 Feb 2010

aesthetic possibilities of steel or metal as a building element beyond standard window frames, signs and street furnishings. The names of the parking garages, Hot Metal Parking, Ingot Parking, Ladle Parking and Furnace Parking (Figure 29), are feeble references to the site's industrial history.

3.2. Baltimore, 1964¹¹³

3.2.1. Industrial era history

Baltimore, the largest city in the State of Maryland and a major U.S. east coast port, is located at the tidal headwaters of the Patapsco River. (Figure 30) The Barons Baltimore founded the city in 1729 as a tobacco-exporting port.¹¹⁴ By the late 19th century, Baltimore had become one of the largest oyster suppliers and America's leader in the canning industry due to its connection to the Chesapeake Bay's fishing fleet, the fertile farmland around the bay, and the ability of Baltimore's entrepreneurs to invent new machinery.¹¹⁵ After a devastating fire in 1904 (Figure 31) the streets were widened, urban infrastructure was improved, factories expanded and new oil refineries were added to the port functions. In 1921, the McCormick Company started construction of a new corporate headquarters on the harbor--a nine-story building, complete with printing plant, analytical lab, machine shop, cafeteria, and railroad siding, overlooking the inner harbor of Baltimore.¹¹⁶

Baltimore's industrial economy expanded steadily, reaching a peak around World War II. Throughout the 1950's and 1960's Baltimore lost population to outlying counties and industry followed their employees, vacating the city's multi-story brick factories for new

¹¹³ Wallace McHarg, Roberts & Todd were commissioned to prepare a master plan by the Charles Center Inner Harbor Development Corporation in 1963. The City of Baltimore announced the Inner Harbor Master Plan in September 1964.

¹¹⁴ Craig-Smith and Fagence, 16.

¹¹⁵ City of Baltimore Comprehensive Master Plan, 28

¹¹⁶ McCormick & Company Inc., official website <http://www.fundinguniverse.com/company-histories/McCormick-amp;-Company-Incorporated-Company-History.html>

industrial parks with quick access to the newly designed highway system.¹¹⁷ Port functions moved seaward to accommodate the move to larger ships and containerization.¹¹⁸

3.2.2. Redevelopment

In 1958, The Greater Baltimore Committee, a regional organization of business leaders, in cooperation with the city government called for a plan to transform the heart of Baltimore. The city was losing population and no offices had been built in the city since 1929. To implement the plan, the city created a public-private partnership known as the Charles Center Management Corporation that commissioned the world-class planning firm, Wallace, McHarg, Roberts and Todd, to execute the project.¹¹⁹ The plan for the Charles Center, consisted mostly of new office buildings with a hotel, and residential towers incorporated among existing buildings. The Charles Center plan was such a great success that the city embarked on redevelopment plans for the 300-acre Inner Harbor in 1964. The Inner Harbor plan, overseen by the renamed Charles Center Inner Harbor Management Corporation called for a thirty-year redevelopment program that would incorporate offices, residential development, pedestrian links to the city center and recreational cultural and entertainment facilities focusing on the piers around the harbor basin. The plan set approximately 87 acres of land around the harbor aside for public open space.¹²⁰

¹¹⁷ City of Baltimore Comprehensive Master Plan, 37

¹¹⁸ Craig-Smith and Fagence, 16.

¹¹⁹ City of Baltimore Comprehensive Master Plan, 38

¹²⁰ Craig-Smith and Fagence, 19.

The Inner Harbor as we know it today would not have existed without the Baltimoreans that organized to oppose the destruction of harbor-front neighborhoods that would have resulted from the construction of I-95. A Planning Commission study published in 1960 proposed running the highway through Federal Hill with a bridge to Little Italy. (Figure 32) As a result of the protests, the highway was rerouted to the south of Locust Point and the bridge concept was replaced with a tunnel in order to preserve Fort McHenry as well as harbor-front neighborhoods and pedestrian access to the harbor.¹²¹

Baltimore continues to improve the Inner Harbor adding new attractions and updating existing facilities on a regular basis. A new plaza at Pier 3, the Harry & Jeanette Weinberg Waterfront Park will provide a new forecourt for the National Aquarium. The plaza design incorporates native plants and a wave-inspired paving pattern and that breaks with the pier apart from the surrounding brick paving.¹²²

The Inner Harbor is a watershed project in terms of the use of visionary urban planning to turn around economic development. By 1995, thirty years after planning for the Inner Harbor commenced, more than \$2.5 billion has been invested in the area. One fourth of the funds came from the public sector, (75% federal funds) the remainder from private investment. Tourism statistics from the Maryland Department of Economic and

¹²¹ City of Baltimore Comprehensive Master Plan, 38

¹²² See Jost, Daniel, 26 – 35 for a full description of the updated pier garden by Rhodeside and Harwell.

Employment Development (1989) indicate that visits to the Inner Harbor grew from 125,000 annually in 1980 to more than 4 million by the late 1980's.¹²³

The Inner Harbor Master Plan of 1964 was substantially implemented within 20 years with three times more development than was shown on the original plan. By 1990, the major attractions built in 1979–1981, the Science Center, the National Aquarium and the convention center had all built major expansions and the Inner Harbor area itself was expanding outward in all directions.

Careful planning and regular improvements have undoubtedly contributed to the draw of the Inner Harbor. The geography of the harbor --small, intimate, adjacent to the central business district and without a highway looming over the scene--is also uniquely responsible for the success of this space. To ensure the continued success of the Inner Harbor Baltimore has hired an urban design team led by Cooper, Robertson & Partners to provide a new plan for the area with the goal of strengthening connections between the waterfront and the central business district, preserving and enhancing public spaces and improving traffic flow and parking options.¹²⁴ (Figure 33)

3.2.3. Preservation & Adaptive Reuse

Baltimore's great fire of 1904 destroyed much of the 18th and 19th century infrastructure of the city. The city demolished almost all of the buildings within the Inner Harbor and

¹²³ Craig-Smith and Fagence, 21.

¹²⁴ Millspaugh, Martin. "The Inner Harbor Story" *Land*. April 2003

constructed entirely new infrastructure of piers, bulkheads, roads, utilities and parks in the process of building the Inner Harbor.¹²⁵

Martin Millspaugh was the chief executive officer of the Charles Center Inner Harbor Development Corporation from 1965–1985. Millspaugh indicated that there was little concern about preserving the historic structures, beyond five buildings that could contribute to the redeveloped Inner Harbor (The News American, McCormick Spice Company, Baltimore Copper Paint Company, and Christ Lutheran Church). He has witnessed a shift in the attitude toward preservation, citing the case of the former power generating plant located on Pier 4.¹²⁶

Baltimore's Pier Four Power Plant on Pratt Street was one of the first successful restorations of an industrial era building in the context of a mixed-use waterfront redevelopment. The structure was designed by the architectural firm of Baldwin and Pennington between 1900 and 1909 and was listed on the National Register of Historic places in 1987. It was slated for demolition in the original Inner Harbor master plan¹²⁷. The decision was reconsidered and the structure was converted to the harbor's principal entertainment venue. It was initially

¹²⁵ City of Baltimore Comprehensive Master Plan, 39

¹²⁶ Millspaugh, Martin. (Answers to a questionnaire from Seoul, South Korea, May 2006)
http://www.globalharbors.org/advice_to_a_city.html

¹²⁷ Millspaugh, Martin "The Inner Harbor Story" *Land*, April 2003.

home to a failed Six Flags indoor theme park and was replaced by a Hard Rock Café, Barnes and Noble bookstore, and an ESPN sports bar.¹²⁸ (Figure 34)

The McCormick & Co. headquarters building, which was retained in the original Inner Harbor plan, was later demolished in 1989 after one of the city's fiercest and most celebrated preservation battles between the Rouse Company and preservationists.¹²⁹ The site of the former McCormick spice factory remains as a surface parking lot as development plans fell through.¹³⁰ Such demolitions left few examples of industrial buildings within the circumscribed Inner Harbor development area. As a result, the original Inner Harbor redevelopment area appears to be largely a product of 1970's era urban design with wide concrete and brick esplanades, and large, simple structures with few plaza-level windows and doors. (Figure 35) The public spaces benefit from the more complex rigging of tall ships, fleets of paddleboats and crowds of visitors that enliven the undifferentiated ground plane.

There are better examples of industrial preservation downriver of the Inner Harbor on the north and south sides of the waterway. On the north side of the harbor, industrial buildings and warehouses in the densely knit Fell's Point neighborhood were restored as offices, restaurants, museums and hotels. Fell's Point is well known for its cobblestone streets and pre-industrial residences which may account for the preservation mindset that has worked to preserve the mostly brick industrial buildings scattered throughout the district. The

¹²⁸ Millsbaugh, Martin "The Inner Harbor Story" *Land*, April 2003.

¹²⁹ Worden, Amy. "Wrecker's Ball Levels Baltimore Spice Factory" *The Washington Post* 25 May 1989.

¹³⁰ Sernovitz.

renovation and preservation of individual buildings within a densely settled neighborhood and around the harbor (Figure 36) has largely prevented the establishment of large surface parking lots around the restored buildings that has been critical to preserving the cohesive urban fabric in the Point. (Figure 36)

Farther east in the Canton neighborhood is the home of the mixed-use redevelopment of The Can Company. The long-vacant American National Can Company was founded on the Canton site in 1895 as one of Baltimore's major canning companies. In its prime, the American Can Company employed as many as 800 Baltimoreans. American Can merged with the National Can Company in the late 1980's, and the American factory was closed. In 1994, the renamed American National Can Company sold the eastern 5.2 acres of the 9.5-acre site to Safeway, which demolished all of the buildings and constructed a new 50,000 square foot supermarket and 300-space parking lot. In 1997, The Can Company LLC acquired the remaining 4.3 acres, which included 300,000 square feet of the most historically significant buildings on the site, and began a fast track construction process to allow its first and largest tenant, DAP Products, Inc., to relocate its 40,000 square foot world headquarters to the site in March 1998. Developer Struever Bros. Eccles and Rouse (SBER) restored the Can Company in accordance with the Secretary of the Interior Standards. The project included:

- Restoration of industrial steel sash windows which had been in filled, bent or broken and reglazing 15,000 panes of glass

- Repairing and repointing brick wall using mortar the replicated the strength, composition, color and texture of the existing mortar
- Construction of new corrugated metal and built-up roofs for all five buildings maintaining one of the defining features of the site.
- Salvage and restoration of virtually all of the distinctive stacks, ventilators and monitors on the roofscape
- Completing the Brownfields Voluntary Cleanup Program of the Maryland Department of the Environment dealing with excess lead solder from can production deposited the courtyard, PCB spills and other ground pollution typical of sites of manufacturer.¹³¹

The redevelopment provides 60,000 square feet of retail and restaurant space and 140,000 square feet of office space. The SBER website touts the historic aspects of the site to promote leasing, asserting, “The Can Company demonstrates that historic preservation and economic development are not mutually exclusive. Rather, The Can Company shows that historic preservation can create a dynamic and unique community center and that a historic symbol of the industrial past can become a new economic engine for the future”¹³² (Figures 37, 38)

¹³¹ Information on the Can Company renovation was derived from The Can Company website hosted by SBER <http://www.thecancompany.com/canhistory.htm>

¹³² The Can Company website hosted by SBER <http://www.thecancompany.com/canhistory.htm>

A visit to The Can Company in early 2010 revealed few vacancies in the lee of an economic downturn. Unlike the restoration of individual industrial and warehouse properties in Fell's Point, the Can Company is not as well integrated into the neighborhood. Surrounding parking lots and four-lane Boston Street that make it easy to visit the site by car also serve to separate it from the neighborhood. New waterfront condominiums on the harbor side of Boston Street have severed the visual and shipping connection that once existed between the factory site and the harbor.

On the more remote and actively industrial south side of the harbor, Tide Point office complex offers another example of the adaptive reuse of a former factory complex. The 1931 Proctor and Gamble soap plant is adjacent to the port neighborhood of Locust Point. The 15-acre campus includes 400,000 square feet of office space in five buildings, named after Proctor & Gamble brands: Tide, Ivory, Cascade, Joy and Dawn. The buildings house offices and a medical center as well as support services like a health club and daycare center (currently vacant). The renovation preserved the original building facades with "hints of the once thriving soap manufacture plant that once fueled the economic growth of old town Baltimore."¹³³ (Figures 39, 40)

The Baltimore Immigration Memorial occupies a space at the northeast corner of the Tide Point complex adjacent to an active tank farm, and faces a wide waterfront

¹³³ Information on Tide Point renovation was derived from the Tide Point website hosted by SBER <http://www.tide-point.com/overview/index.html>

esplanade and dock that is the home of one of Baltimore's dragon boat teams. The memorial takes the form of a multi-level garden that overlooks the harbor created from the sculptural forms of leftover footings, slabs and stairs that appear to be the remnants of a former storage area. The large, simple forms create a visually engaging and enigmatic transition between the refurbished factory buildings and the adjacent tank farm. A few signs tell the story of Baltimore's history as a major port of entry for immigrants but nothing at the site or on the memorial's website speak to the design intent or physical fabric of the memorial. (Fig. 41, 42)

Slightly to the west of Tide Point is the Baltimore Museum of Industry. The Museum, founded in 1977 as a project of the Mayor's Office of the City of Baltimore, preserves and interprets the City's rapidly disappearing industrial heritage.¹³⁴ In 1981, the Museum moved into the historic Platt Oyster Cannery building (c.1870) on the south side of the Baltimore Harbor. The Museum's setting close to shipyards and the Domino Sugar Refinery reinforces the importance of industry to the city. (Figure 43)

¹³⁴ Baltimore Museum of History Mission & History <http://www.thebmi.org/index.cfm/cID/1246>

3.3. Philadelphia, 1970; Camden 1984¹³⁵

3.3.1. Industrial era history

The cities of Philadelphia and Camden face each other across the Delaware River, 88 miles upstream from the Atlantic Ocean.¹³⁶ (Figure 44) Philadelphia, the largest city in Pennsylvania, was chartered in 1701 and first settled on land located between the Delaware and Schuylkill Rivers.¹³⁷ Camden was incorporated in 1828 as a relatively small city in New Jersey. The city was first known as ‘Cooper’s Ferry’ for the ferry service that established the city’s long-lasting economic connection to Philadelphia. The ports of Philadelphia and Camden established a single regional, maritime economy and commercial hub centered on the industrial waterfronts of the two cities.¹³⁸ (Figure 45)

The regional association with manufacturing commenced in the 18th century and blossomed dramatically in the 19th century. Philadelphia was the largest city in the 13 colonies, and profited vastly from its location as the linking point between highly productive farm districts and ports around the world. Merchants built fortunes importing fruits of the land and farm

¹³⁵ In 1960, the Philadelphia City Planning Commission adopted a comprehensive twenty- year plan that included recreational facilities at Penn’s Landing. The Cooper’s Ferry Development Association was founded in 1984 as a private non-profit corporation dedicated to carrying out economic development projects within the City of Camden.

¹³⁶ Pennsylvania Board of Commissioners of Navigation for the Delaware and its Navigable Tributaries: Sproule George F. *The port of Philadelphia, its facilities and advantages*, 5.

¹³⁷ This case study focuses on the Delaware riverfront as waterway that serves both Camden and Philadelphia. The Schuylkill River, just two miles to the west of the Delaware at the Center of Philadelphia has its own development and redevelopment history which is beyond the scope of this thesis.

¹³⁸ Brown, 78.

supplies, and exporting Pennsylvania wheat, and South Jersey produce throughout the colonies and across the seas.¹³⁹

By the end of the 19th century, the Delaware River within a 30-mile radius of Philadelphia (from Trenton, New Jersey to Wilmington Delaware) was home to big names in heavy and light industry, including Roebing, Cooper-Hewitt, Disston, DuPont, Baldwin, Nice, Cramp, Rohm & Haas, Morse, RCA Victor, Campbell, Lenox, and Jack Frost.¹⁴⁰ The Philadelphia-Camden metropolis once boasted the world's largest manufacturing company in Baldwin Locomotive; the world's largest saw works in Disston & Son, the nation's largest single employer in the Pennsylvania Railroad, and the world's leading producer of recorded music in Victor Talking Machine/ RCA-Victor.¹⁴¹

Camden was an ideal site for the Campbell's Soup Company whose sprawling factory was fed by a carpet of tomato farms stretching across southern New Jersey. Along with RCA and Campbell's, the New York Shipbuilding Corporation, Esterbrook Pen Company and the Port of Camden were responsible for almost two-thirds of the industrial jobs in Camden.¹⁴²

(Figure 46) Unlike Camden and the steel towns in the Pittsburgh region, Philadelphians were employed by a wide array of small to medium sized mills, plants and factories. The

¹³⁹ Scranton, Philip B. *Workshop of the World*, 1990.

¹⁴⁰ Stutz, 147.

¹⁴¹ Ed Cunningham, as quoted in for Camden County Historical Society interview.

¹⁴² Ed Cunningham, as quoted in for Camden County Historical Society interview

diversity of Philadelphia's industry in the 19th and early 20th century was renowned and lent to Philadelphia's reputation as the "Workshop of the World."¹⁴³

Vast transportation, power and public utility networks supported local manufacturing and refining. Canals and rails allowed for the transfer of raw materials and finished products, whether anthracite coal brought from the mountains via the Schuylkill Canal, or bulk tonnage handled at the Reading Railroad's sprawling Richmond Yards. The westward expansion of the Pennsylvania Railroad helped Philadelphia compete with New York City in domestic commerce as both cities fought for dominance in transporting iron and coal resources from Pennsylvania. In 1907, the City of Philadelphia established the Department of Wharves, Docks and Ferries to oversee the construction and maintenance of port facilities. Dredging programs and new piers accommodated steam ships with much greater depth and to facilitate the rapid transfer of cargo to railroads, wagons and trucks.¹⁴⁴ (Figure 47) To meet the power needs of the industrial sector, the Philadelphia Electric Company engaged architect John Windrim to design stately classic electrical plants. Three of these plants are located on the Delaware River: Chester Station (1918) is located to the south of Philadelphia, the Delaware Station (1917), and the (Port) Richmond Station (1925) are both located in Philadelphia.¹⁴⁵ (Figures 48, 49)

¹⁴³ Scranton, Philip B. *Workshop of the World*, 1990.

¹⁴⁴ Copass, 21-23.

¹⁴⁵ Saffron, "Last Days for Electric Plant?" *The Philadelphia Inquirer* 22 Aug. 2010. Accessed 27 Nov 2010 <http://changingskyline.blogspot.com/2008/lastday-for-electric-plant.html>.

The completion of the first bridge¹⁴⁶ between Camden and Philadelphia in 1926, with ramps touching down a half mile inland on each side of the river, initiated a shift in development away from the waterfront and led to a demise of the ferry service. The opening of the Walt Whitman Bridge in 1957 stimulated more car and truck-based suburban development further accelerating the decline of the urban waterfront.¹⁴⁷

As the U.S. industrial base declined in the mid-20th century, industries in Philadelphia and Camden followed suit. As a result of Philadelphia's diverse industrial base, the city's economic decline was slow and steady, spread over half a century. Camden, which relied on fewer large companies for the majority of its employment base, experienced a more rapid and widespread economic decline as industries shuttered their doors or moved elsewhere.

Technological trends in the shipping industry, such as the shift to containerization and the ever-increasing size and draft of ships, made many of the finger piers in the ports of Camden and Philadelphia obsolete. By the 1960's maritime operations had moved to new container facilities that the two state port authorities had built to the north and south of the center city, where larger parcels of land were available. As a result, Philadelphia and Camden were both left with large expanses of abandoned industrial lands on their central waterfronts.¹⁴⁸

The construction of interstate highways shaped the waterfronts of Camden and Philadelphia in different ways. The center city section of Interstate 95 in Philadelphia was routed along

¹⁴⁶ This bridge is known as the Ben Franklin Bridge today.

¹⁴⁷ Brown, 79.

¹⁴⁸ Brown, 79.

the edge of the river. Residents of the nearby Society Hill neighborhood forced planners to depress the central section of roadway to preserve sight lines. Even with this modification, Interstate 95, along with the parallel Christopher Columbus Boulevard effectively isolates a small sliver of the riverfront from the rest city. In Camden, the U. S. Department of Transportation required that the new Interstate 676 be directly connected to the two Delaware bridges; this resulted in the highway being routed almost a mile inland from Camden's waterfront. The move left Camden with an intact waterfront district connected to the historic downtown core.¹⁴⁹

3.3.2. Redevelopment

The period between 1970 and 2006 saw the most intense planning and redevelopment efforts in Camden and Philadelphia in more than a half century. Both states relied on a tourism-based regional economic development strategy and benefited from the Port Authority's substantial investment program in waterfront redevelopment projects.¹⁵⁰ The waterfronts in both Camden and Philadelphia were controlled and influenced by a confusing array of state, regional and local governmental units and quasi-governmental agencies with overlapping powers and jurisdictions.¹⁵¹ Despite these similarities, waterfront redevelopment in Camden and Philadelphia followed significantly different courses.

¹⁴⁹ Brown, 80.

¹⁵⁰ Brown, 95.

¹⁵¹ Brown, 85.

In 1960, the *Plan for the City of Philadelphia*, prepared by the City Planning Commission under the direction of Planning Director Edmund Bacon, proposed a large new park to be known as Penn's Landing¹⁵² for 39 acres of the deteriorating central waterfront.¹⁵³ In 1963, the city drafted the first master plan for the waterfront site. This resulted in the construction of a number of public improvement projects in the 1960's and 1970's in order to create a waterfront venue for the upcoming Bicentennial celebration and encourage private investment.

In 1970, Philadelphia established the Penn's Landing Corporation, a quasi-public agency, to manage the publicly owned land on the central waterfront on behalf of the City of Philadelphia and the Commonwealth of Pennsylvania. Additional planning and zoning efforts in 1982 and 1983 recommended continued port, residential and commercial development and the implementation of a continuous walkway along the Delaware River. In 1984, the city commissioned another master plan that resulted in the construction of a public amphitheatre (completed in 1986). Planners and six private developers created at least eight other plans for Penn's Landing--none of which were implemented.

One half century after announcing the initial plan for Penn's Landing, a seaport museum, a boat basin, two hotels, a high-rise condominium, and a stand-alone restaurant and festival pier were added to the earlier amphitheater and concrete plaza. Still, no unified plan for the

¹⁵² Penn's Landing is bounded by Front Street to the west, the Delaware River to the east, Spring Garden Street to the north, and Washington Avenue to the south.

¹⁵³ City of Philadelphia Planning Department, *Plan for the City of Philadelphia*, 1960, 245.

area has been adopted.¹⁵⁴ Since its inception, the Penn's Landing Corporation considered only high density commercial and residential projects that promised substantial contract and tax revenues. This prescriptive approach, which focused much attention on Penn's Landing at the expense of comprehensive planning for the entire waterfront failed repeatedly.¹⁵⁵

Starting in 2003, the *Philadelphia Inquirer* and Penn Praxis, the clinical arm of the University Of Pennsylvania School Of Design, hosted a series of public meetings that resulted in the creation of *A Civic Vision for the Central Delaware*, a plan for the redevelopment of the Central Delaware Riverfront. As a result of the renewed focus on redevelopment and the poor record of the Penn's Landing Corporation, a new non-profit 501C group, the Delaware River Waterfront Corporation was chartered in 2009. The new group is responsible for the planning, design, development and management of the central Delaware riverfront in Philadelphia between Oregon and Allegheny Avenues.

Camden got off to a later start in planning waterfront redevelopment. In the early 1980's the Campbell Soup Company and RCA each contributed \$100,000 and engaged the American City Corporation, a subsidiary of the Rouse Corporation to draft a waterfront master plan. They also formed a stakeholder group called the Greater Camden Movement that included the City of Camden, Cooper Hospital and Rutgers University along with Campbell's and RCA. The plan was completed in 1983 and the stakeholder group created the Cooper's Ferry

¹⁵⁴ Brown, 87.

¹⁵⁵ Brown, 88.

Development Association in 1984 to implement it. The new agency served as master developer for approximately 150 acres of waterfront.¹⁵⁶

The Cooper's Ferry Development Association abandoned their initial prescriptive strategy which favored high-density commercial and residential projects and adopted a more flexible and opportunistic approach to waterfront planning. Cooper's Ferry Executive Director, Tom Corcoran recalled that his agency "transitioned from a prescriptive approach to a more flexible and 'opportunistic' approach through four major iterations of their master plan since 1983. While Philadelphia continued to have difficulty developing their ideal high-density project, Camden moved towards providing lower density entertainment, sports and tourism attractions that couldn't be found elsewhere in the surrounding suburbs."¹⁵⁷ By 2006, an aquarium, children's garden, concert venue, minor league ball park and office buildings, in concert with major infrastructure improvements funded largely by the state of New Jersey and the Port, formed the thin veneer of Camden's redeveloped waterfront.

3.3.3. Preservation and Adaptive Reuse

Philadelphia and Camden possess a rich history of industry along their joint waterfront.

Archeological evidence of shipbuilding and waterfront industry have been discovered below the surface of Philadelphia's waterfront parking lots including the remains of 18th and 19th

¹⁵⁶ Camden waterfront under the jurisdiction of the Cooper's Ferry Development Corporation spans the area from the Ben Franklin Bridge at the north to the Clinton Street to the south and is composed of undeveloped land owned by the Camden Redevelopment Authority, the Delaware River Port Authority and the NJ Economic Development Authority.

¹⁵⁷ Tom Corcoran as quoted by Brown, 88.

century wharves, slipways and creeks that were filled in to create more land extending out towards the Delaware River shipping channel.¹⁵⁸ To date, two areas along the Delaware River--one between Vine and Callowhill Streets to the east of Water Street and the second between Water Street and Delaware Avenue from South Street to Fitzwater Street have yielded valuable information on historic shipping industry infrastructure. (Figure 50)

Little remains of the factories, rail yards and piers that once lined the Camden waterfront in the area now managed by the Cooper's Ferry Development Corporation. With the exception of three relict piers at the foot of Cooper Street and another pier at the foot of Pearl Street, the closest historic structure to the riverfront is the RCA Nipper Building, two blocks inland. The RCA Nipper Building was converted into luxury loft apartments and renamed 'The Victor'. (Figure 51) The Delaware River Port Authority funded the \$8 million remediation for the building conversion. The cost of remediation of the Victor site is one likely reason that many of Camden's waterfront properties were demolished. Acres of surface parking lot now serve as an environmental cap for the industrial contaminants found on many of these sites. These parking lots separate the city core from the waterfront and accommodate tourists who visit the thin strip of waterfront attractions. As a result, most patrons visit the state-funded, privately owned attractions and leave Camden without enriching the local economy.¹⁵⁹

¹⁵⁸ Yamin, 120.

¹⁵⁹ Katz, 1.

Philadelphia started on waterfront renewal demolition almost 20 years before Camden. In 1962, the piers between Market and Spruce Streets were rebuilt as a wide plaza space for new waterfront development at Penn's Landing¹⁶⁰. This first step in the implementation of a much larger plan, replaced gritty piers and warehouses with concrete plazas and brick esplanades to accommodate Philadelphians and tourists seeking entertainment and recreational opportunities. Piers 3, 5, 9 and 11 to the north of Market Street, built by the Department of Wharves, Docks and Ferries between 1901 and 1923, were also slated for demolition in the original plans for Penn's Landing.¹⁶¹ Thanks, in part to the slow pace of redevelopment around Penn's Landing, Piers 3 and 5 were listed in National Register of Historic Places in 1983 and converted into residences soon thereafter. The adaptive reuse of these piers conformed to the Secretary of the Interior Standards for Historic Properties. The renovation and preserved the inshore and outshore façades, the structural expression on the north and south façades, cargo hoists, the web-like roof structure, the plate girder frame of the second floor, and the bollarded outdoor apron.¹⁶² Although automobiles, rather than rail cars, now enter through the pier's landward façades, the large doors convey a sense of their original function. (Figure 52)

The National Register nomination for Piers 3 and 5 did not include Pier 9, nor is the structure locally designated. Consequently, plans to alter or demolish the pier do not have to

¹⁶⁰ Independence Seaport Museum Chronology. http://www.phillyseaport.org/About_Us.shtml

¹⁶¹ Copass, 2-3.

¹⁶² Copass, 78.

undergo any review process. Pier 9, which is historically significant as part of the World War I port development initiatives, retains its original appearance and has. The lack of historic designation for Pier 9 is not uncommon for industrial era structures along the Delaware waterfront. With over 500 local historic listings in Philadelphia, not one bridge, power plant, crane, factory or pier is listed as a National or Local Historic Landmark on the Delaware Riverfront. This is not for lack of trying on the part of preservationists. Local interest in preserving the Philadelphia Electric Company's Port Richmond and Delaware power generation stations persists. The Richmond plant (Figure 53) was nominated for historic designation in 2008. The Philadelphia Historical Commission, against the recommendation of its own staff and the Preservation Alliance for Greater Philadelphia, denied the nomination.¹⁶³ Rumors that Exelon, the current owner of the site, would demolish the Delaware station increased in 2008 when the company demolished a 1954 addition to the north side of the plant. Though the company reportedly holds demolition permits for the Port Richmond building, Exelon has not indicated any intention of demolishing the structure.¹⁶⁴

The Delaware River Waterfront Corporation (DRWC),¹⁶⁵ has identified the “post-industrial landscape—vacant and underutilized land along the Delaware River once occupied by railroad

¹⁶³ Saffron, Inga. “Last Days for Electric Plant?”

¹⁶⁴ Davison, John. “Peeking at a powerful past” Plan Philly 18 June 2008. <http://planphilly.com/node/9117>

¹⁶⁵ The DRWC succeeded the Penn's Landing Corporation in 2008 to design, develop and manage the central Delaware River waterfront between Oregon and Allegheny Avenues.

and shipbuilding yards, factories and other port-related industrial facilities”¹⁶⁶ as one of the most distinguishing characteristic of the riverfront. Yet, none of the remaining buildings within the Central Delaware area, including: the Delaware Power Plant, Pier 9, Municipal Piers 38 and 40 at Carpenter Street, and the Wm. Cramp & Sons Ship and Engine Building Company at Richmond Street and Girard Avenue have been afforded any protection or official recognition as historic assets. The DRWC is not seeking or supporting the systematic designation of these last remnants of industrial-era infrastructure. It is possible that the DRWC is empathetic with some of the long-time residents of the riverward neighborhood who see these buildings as “dirty old power plants and factories”¹⁶⁷ or the they fear that the designation will scare off potential developers concerned about the additional costs and permitting delays involved with developing a historic property.

If Philadelphia is reticent about preserving their riverfront power plants, they can look to national success stories of power plant conversions like the Tate Modern in London. Closer to home, the Chester Station, on the Delaware Riverfront in Chester, Pennsylvania, presents another excellent example of a successful adaptive reuse of a power station. Like the Delaware and Richmond Stations in Philadelphia, the Chester Station was designed by John T. Windrim. The first turbogenerator was installed in 1918¹⁶⁸ by the Philadelphia Electric Company (PECO). The station was closed in 1982 when PECO moved to nuclear power

¹⁶⁶ Delaware River Waterfront Corporation. *Request for Proposals Developing a Central Delaware Riverfront Master Plan*. Philadelphia, Pennsylvania June 2009: 4

¹⁶⁷ Phone interview with Shanta Schachter, Deputy Director of New Kensington Community Development Corporation, 11 March 2010.

¹⁶⁸ Wainwright, 380.

plants. Rather than demolishing the building, PECO sold the 60-acre property and plant for \$1 with the provision that the new owner tackle the interior environmental cleanup.

In 2001, the property underwent a \$55 million conversion to offices as the centerpiece of a \$300 million redevelopment called the Wharf at Riverton.¹⁶⁹ The conversion, involved a projected \$10 million cost to remove hazardous materials from the building. Blackney Hayes Architects reconfigured the interior to accommodate offices while retaining significant historic elements and the renovation garnered an award from the Preservation Alliance of Greater Philadelphia. (Figure 3.3.11)

The plant's major tenant, Synogy Inc., relocated from Conshohocken to Chester and received ten-year tax abatement under a state program to stimulate job creation in deteriorated areas.¹⁷⁰ The building is currently 100% occupied and the restoration catalyzed the development of a new soccer stadium on an adjacent parcel. Residences and commercial development are also planned for the area, encouraged by the success of the power plant rehabilitation and the re-alignment of off ramps from the Commodore Barry Bridge and Interstate 95 for easier access to the site.¹⁷¹

Perhaps the richest extant historic waterfront complexes on the Delaware in Philadelphia are military complexes. Both the Frankford Arsenal, to the north of center city and the

¹⁶⁹ Milford. NY Times, 16 December 2001.

¹⁷⁰ Milford. NY Times, 16 December 2001. Hardy, 1.

¹⁷¹ Interviews with Michael Donahue VP , Synogy Inc. 5 February 2010. Mike Altschuler, facilities manager for Buccini Polin.

Philadelphia Navy Yard to the south, are listed on the Philadelphia and National Register of Historic Places. Both sites offer examples of the reuse of military-industrial facilities that have retained most, though not all, of their buildings and infrastructure. The Arsenal Business Center and the Philadelphia Navy Yard are both are being marketed to light industrial, institutional and office tenants who have reused much of the historic building fabric. The Navy Yard also includes shipyard and boat repair facilities used by the Aker Company and the Navy, as well as a cruise ship terminal that take advantage of the historic shipyard and port facilities.

The Frankford Arsenal served as a U.S. Army ammunition plant from 1816 until 1977. It was a center of small arms ammunition design and development and the manufacture of fire control and range finding instruments. The majority of the property was sold to a for-profit private development consortium and renovated in 1983 as the Arsenal Business Center.

(Figure 54) The 86-acre center offers 1.4 million square feet of industrial/office/flex space in available for lease.¹⁷² The riverfront portion of the arsenal was conveyed to the Pennsylvania State Fish and Boat Commission¹⁷³ and converted to a commercial marina and park. No connection currently exists between the Arsenal Business Center and the marina.

Twenty-five years after the initial renovation, the Arsenal retains its general character as a military and industrial site but suffers from deferred maintenance and the lack of a long-

¹⁷² Jenk, Torben. "Frankford Arsenal" from Workshop of the World website. Accessed 16 Feb 2010 <http://www.workshopoftheworld.com/frankford/arsenal.html>

¹⁷³ Kingsbury, Garrie. L. and Ray, Robert. M. *Reclamation and Redevelopment of Contaminated Land: Volume I. U.S. Case Studies*. Springfield, Virginia, EPA, 1987. Project Summary, 2.

range master plan to direct physical and operational improvements. As a result, the Arsenal Business Center has gained tenants in a 'catch as catch can' manner rather than working to attract an ideal mix of tenants. Leasing properties to two charter schools makes it difficult to attract office park and light industrial tenants willing to pay the rates required to capitalize the necessary site improvements.

The site suffers from a crowded layout that prevents efficient circulation and necessitates remote parking, presenting another obstacle to attracting higher-paying tenants. A physical master plan that addressed the circulation and parking problems would require strategic demolition focusing on non-contributing structures to create sites that are more appealing for tenants. Additional plans to convert the northern portion of the site to retail uses were hampered by the remote location and poor site access, further reducing possible revenue streams for the site.

By contrast, the Philadelphia Industrial Development Corporation (PIDC), a private, not-for-profit Pennsylvania Corporation, founded by the City of Philadelphia and the Greater Philadelphia Chamber of Commerce, manages the 1200-acre Philadelphia Navy Yard. The non-profit corporation has been able to obtain grants for some redevelopment activities. In 2005, PIDC engaged a team of real estate, development, planning and design professionals to create a master plan for redevelopment and tenant attraction at the historic Navy Yard.

The master plan organized the yard into five districts¹⁷⁴ relating to architectural styles and business development plans for each area.¹⁷⁵ The plan entailed spending \$10 million for strategic demolition of mostly non-contributing structures that would allow for better circulation, parking, and site layout.¹⁷⁶

Since 1876, the site served as a U.S. Navy shipyard and Naval Station. Starting with a single Georgian-style house, the yard developed along a street grid that began in the heart of Philadelphia, located three and a half miles to the north on Broad Street. At its peak in World War II, the yard employed 60,000 people and included almost 300 buildings. Over 50 warships were built and over 1200 ships were repaired at the Yard. Large brick warehouses, and smaller residential quarters set amid parade grounds, a regular street grid and dockyards create the unique urban fabric of the Navy Yard.

Today, the Yard is home to office, industrial, shipbuilding, distribution, port and research facilities and continues to undergo new construction and restoration of its historic buildings and public places. (Figure 55) PIDC has found the restorations to be significantly more expensive than new construction. Mark Seltzer, of PIDC, noted, “Historic renovations of properties to office space comes in around \$250/SF regardless of the size. The two new LEED-certified office buildings that Liberty built at the front gate at the Navy Yard came in under \$200/SF, so the premium for historic renovations is around 25% when compared to

¹⁷⁴ The districts include: shipyard, historic core, corporate center, research park and future mixed development

¹⁷⁵ The Navy Yard Website <http://www.navyyard.org/>

¹⁷⁶ Interview with Thomas Dalfo, PIDC VP of real estate services, 29 March 2010.

new construction.”¹⁷⁷ The figures are a little misleading. They did not include the design, permitting and implementation costs for demolition and disposal to make way for the new construction.¹⁷⁸ The environmental cost of landfill, depletion of building materials, transportation of demolition debris and new building materials are not reflected in this comparison.

Once restored, the historic buildings are attractive to tenants seeking unique character and enjoy a comparable occupancy rate with new construction. Since the historic buildings have set floorplates that can be small (3,000 SF) to large (400,000 SF) with little in the middle range, the size of the leasable spaces can be a big factor to some prospective tenants, that need to build to suit to get the size and layout they require.¹⁷⁹

Urban Outfitters set a benchmark for the adaptive reuse of buildings at the Navy Yard when they moved to the site in 2005. Urban Outfitters founder, Richard A. Hayne, explained that the company’s campus isn’t merely a collection of isolated loft buildings that happen to have great industrial-age bones; it’s part of a ready-made city with a civilized street grid and a deeply grooved texture. “It’s a real place,” Hayne explains. “It’s not Williamsburg, Virginia, pretending to be a real place, or a suburban version of what the past is supposed to look

¹⁷⁷ 29 March 2010 email communication from Thomas Dalfo, VP of Real Estate Services at PIDC quoting Mark Seltzer.

¹⁷⁸ 5 April 2010 email communication from T. Dalfo, VP of Real Estate Services at PIDC clarified that demolition was completed under a separate budget and that no hard and soft costs associated with demolition were reflected in the construction cost estimates for new construction.

¹⁷⁹ 29 March 2010 interview with Thomas Dalfo, VP of Real Estate Services at PIDC.

like.”¹⁸⁰ Haynes and his architect, Jeffrey Scherer, of MS&R worked to decipher the mother lode of industrial artifacts left on the site such as Egyptian-style cast-iron columns, 2,000-pound overhead cranes, and walls decorated with the graffiti musings and naive paintings of Navy carpenters. They worked to respect the layered history rather than strive for smooth perfection.¹⁸¹ (Figure 56)

¹⁸⁰ Saffron, “A stitch in time”

¹⁸¹ Saffron, “A stitch in time”

3.4. Dublin, Ireland, 1986¹⁸²

3.4.1. Brief Industrial era history

Dublin is located on Ireland's central east coast at the mouth of the River Liffey that forms the central spine of Dublin. (Figure 57, 58) While the Guinness brewery, founded in 1759, is responsible for Dublin's most beloved export, the city's economy was built on maritime trade rather than production. Dublin's location, on a major river with direct access to the Irish Sea and the oceans beyond, was of fundamental importance to the development of the Docklands during the wealthy years of Georgian Dublin.¹⁸³ Dublin is Ireland's largest port¹⁸⁴ and the city's quays, locks, canals and bridges tell the story of Dublin's maritime heritage.

The formation of the historic Docklands was the result of the opening of the Custom House (James Gandon, architect) in 1791, which catalyzed development in the city. One of the most impressive infrastructure developments to facilitate Dublin's shipping industry was the construction of the Grand Canal Docks in 1796. These large-scale docks and related locks cover 35 acres and represent the first purpose-built docking facilities for sea-going vessels.¹⁸⁵ Considerable business transpired along the handsome docks, quays, warehouses and

¹⁸² The Urban Renewal Act of 1986 marks the first serious attempts by any Irish government to be pro-active and pre-empt urban development.

¹⁸³ Bunbury, 3.

¹⁸⁴ Moore, 16.

¹⁸⁵ Moore, 24-25.

railway tracks built alongside the water. By the 20th century, the inner city docklands were home to the largest working class community in Ireland.¹⁸⁶

Entrepreneurs took advantage of the strategic location of the Docklands and by the beginning of the 20th century coke works, chemical factories, slaughterhouses, refineries and gasworks occupied key locations around the ports. The gasworks were built near the port to satisfy production requirements for imported coal, coke and large quantities of water.

Dublin's developing chemical industry used the byproducts of gas production.¹⁸⁷ While economically important, the unattractive nature of the gas and chemical industry marginalized the Docklands and reinforced the separation between the city and the bay, a process that has continued to the 20th century.¹⁸⁸ (Figure 59)

The decline of the boat building and repair industry and the containerization of cargo reduced labor requirements and by the 1950s, large numbers of Dubliners were unemployed. The docklands went into rapid decline. The decommissioning of the gasworks resulted in higher unemployment and the demolition of large portions of the Docklands infrastructure.

3.4.2. Redevelopment

The Urban Renewal Act of 1986 marked the first serious attempt by any Irish government to be proactive and preempt urban development. It reversed earlier government policies

¹⁸⁶ Bunbury, 3.

¹⁸⁷ Moore, 32.

¹⁸⁸ Moore, 33.

favoring suburbanization and encouraged development in the urban core.¹⁸⁹ The seeds of change were planted with the creation of the Custom House Docks Development Authority and the creation of the International Financial Services Centre.¹⁹⁰ Dublin experienced unprecedented economic growth as the result of concerted efforts to attract financial, pharmaceutical and information technology firms. These new businesses provided Dublin an important link to the rest of the world and a source of employment for the city's educated populace. In 1997, the task of developing and improving the Docklands was assigned to the Dublin Docklands Development Authority.¹⁹¹

The Docklands redevelopment area covers 1,300 acres¹⁹² to the north and south of the River Liffey on the eastern side of the city. The Docklands were historically disconnected from the heart of Dublin due to industrial use and economic segregation. The redevelopment area consists of both established and new neighborhoods as well as vacant, undeveloped and underutilized industrial sites. Dublin's economic boom fed the demand for high-quality office and residential space. The Docklands redevelopment accommodated that demand and transformed the industrial landscape along the eastern portion of the city's waterways.¹⁹³

¹⁸⁹ Moore, 93 -101.

¹⁹⁰ Bunbury, 3.

¹⁹¹ Moore, 66-109 "The Politics of Planning Docklands"

¹⁹²2008 Dublin Docklands Master Plan, 15.

¹⁹³ 2008 Dublin Docklands Master Plan, 143.

3.4.3. Preservation & Adaptive Reuse

The Dublin Docklands 2008 master plan cites the legacy of architectural and cultural heritage related to Dublin's transport, maritime and power generation history. The plan recognizes that historic structures provide unique glimpses into the maritime and industrial infrastructure that shaped the city since the early 18th century. There is broad municipal support for preservation and many buildings and features within the Docklands are included on the Dublin City Council's Record of Historic Structures. In addition, the Docklands master plan calls for the reconnection of historic streets and "so far as is practicable, require the retention or reuse of other buildings, structures and features which have defined the character of the area"¹⁹⁴

Within the Grand Canal Dock and Campshires¹⁹⁵ historic stone paving, quay walls, railways and marine hardware such as mooring hooks and cleats have been preserved in place or reused as paving elements or street furnishing. (Figures 60, 61) A few of the masonry warehouses bordering the quays and Grand Canal Docks are still in place, offering a contrast to the 21st century construction that dominates the area. (Figures 62, 63)

Later industrial- era structures such as the 1912 Scherzer Bridge, (Figure 64) and the Sheriff Street Lift Bridge, built to provide vehicular and vessel access over the Royal Canal, continue to be used for their original purpose. The Clayton Gasometer at Barrow Street, completed in 1871 has recently undergone an unusual adaptive conversion to residential flats.

¹⁹⁴ 2008 Dublin Docklands Master Plan, 15.

¹⁹⁵ A campshire is a stretch of land between a quay and a road. Warehouses are sometimes sited on campshires.

The preservation of 'Stack A' a former bonded tobacco warehouse, near the Custom House Quay and docks, presents an example of the challenges to reopening historic waterfront buildings to the public. Stack A is architecturally significant as a brick warehouse with one of the finest iron roofs in Europe. It is also culturally significant in that it was the only building in mid-19th century Dublin large enough to host the historic banquet for the Irish Crimean War Veterans. Plans for renewal of the building in 1987 proposed a range of public and commercial uses including a museum, winter garden and nightclub/ bar area. From a preservation standpoint, the goal for reuse was to ensure the historic fabric would be conserved and remain accessible to the public.¹⁹⁶ After twenty years of, unsuccessful proposals and failed efforts to rezone Stack A as an entirely commercial development, the building was recently been opened to the public. The refurbished building was dubbed 'chq' and is now an exhibition and event venue with upscale restaurants. (Figure 65) In 2008, the Irish Planning Institute recognized the conservation and refurbishment of the chq building at the Custom House Quay with a conservation award.¹⁹⁷ Yet, the exclusive nature of the development means that many Dubliners will have little opportunity to enjoy this remarkable testament to nineteenth century innovation.

The Docklands have been home to innovative adaptive reuse projects. Developer, Liam Carroll worked with architects, O'Mahony Pike, to create a cylindrical, nine-storey apartment

¹⁹⁶ Moore, 216.

¹⁹⁷ 2008 Dublin Docklands Master Plan, 177

block within the framework of a 1885 gasometer that was on the historic register¹⁹⁸ The resulting building, renamed 'The Alliance' has become the focal point of the Gasworks development within the Grand Canal area of the Docklands.¹⁹⁹ (Figure 66)

On the other side of the equation, many listed historic structures in the Docklands have been lost altogether such as Campion's Public House at 47 North Wall Quay. Campion's House that was demolished after the Dublin Docklands Development Authority granted a demolition permit despite its protected status.²⁰⁰ Going beyond individual buildings, the quality of the public spaces at the Docklands stand in stark contrast to Dublin's City Center where narrow, winding medieval streets contrast with wider, more formal Georgian developments. A steady rhythm of front doors and shop fronts line the streets with a messy mixture of uses and finely scaled detailing that encourage street-oriented urbanism. The Docklands developments do not exhibit the vitality of central Dublin's diverse and visually engaging streets and squares. This is, in part, due to the scale of the former shipping and industrial buildings and infrastructure in the area compared to the older city center to the west of the Docklands. The urban design guidelines in the 2003 Master Plan reinforce the change in character between the historic center and the Docklands by discouraging any attempt to replicate Dublin's historic fabric. This includes creating any spatial hierarchy that would serve to distinguish semi private and public spaces. The 'Urban Design Framework'

¹⁹⁸ Gasometers, also known as 'Gasworks' of Gas Holders', consist of a steel framework and tank that rose or fell depending on the amount of natural or coal gas inside. The gas was used for lighting and domestic cooking and the structures were familiar sights in industrialized cities

¹⁹⁹ The Alliance at the Gasworks website. <http://www.thealliance.ie/>

²⁰⁰ 2008 Dublin Docklands Master Plan, 15.

prescribed by the 2008 DDDA Master plan advises, “division between semi-private and public spaces should be minimized and preferably avoided to promote proper integration of spaces.”²⁰¹The elimination of residential dooryards and institutional thresholds, grand stairways and small stoops in favor of more undifferentiated public space in new development eliminates the rich hierarchy of space that is common in the neighborhoods and older industrial developments surrounding the Grand Canal Dock. (Figures 67, 68) and has a palpable effect on the texture of public space at the Docklands.

The Dublin Docklands Development Authority worked with design firm, West 8 to prepare *Campshire Vision*, a plan in response to the perception that the character of the Docklands is somewhat sterile and underused by the public. The *Campshire Vision* draws from successful models in other cities and proposes a fairly generic-sounding strategy based on ‘Making Connections’, ‘Creating Designations’ and ‘Animating the Water’.²⁰² One can only hope that the physical implementation of these strategies will yield more unique and vibrant solutions than the generic solutions suggest.

²⁰¹ 2008 Dublin Docklands Master Plan, Urban Design Framework, 143-186

²⁰² Docklands Campshire Vision Plan. <http://www.ddda.ie/index.jsp?n=485&p=100>

3.5. Glasgow, Scotland, 1999²⁰³

3.5.1. Brief Industrial era history

Glasgow, the largest city in Scotland, is situated on the River Clyde in the west central lowlands. (Figure 69) Since the 18th century, Glasgow has been prominent in international commerce as an industrial powerhouse and a hub of trade for the importation of agricultural products from the Americas. Glasgow produced and exported textiles, chemicals, engineered goods and steel during the industrial period. By 1879, the city was producing a quarter of all of the locomotives sold around the world. The Glasgow area was also well known for shipbuilding. (Figure 70)

Like many industrialized cities, Glasgow's economy suffered the impact of the post World War I recession and the Great Depression and recovered economically with the outbreak of World War II. The post war boom lasted through the 1950's when lack of investment and growing overseas competition led to economic decline and deindustrialization. As a result of the low standard of living and a reputation for razor gangs and football violence, Glasgow suffered from a negative image as a dirty, dangerous place. This reputation hampered efforts to generate a tourist industry and to attract businesses and investment.²⁰⁴

²⁰³ Glasgow Harbor Ltd., a privately funded development company and subsidiary of the port operator, Clydeport was formed to redevelop a large area of land at Merklands Quay, Meadowside Quay, Castlebank, Pointhouse Quay and Yorkhill Quay. These areas formed a substantial part of the former Glasgow Harbour complex serving the city during its shipping and industrial heyday. See McConnell: 8.

²⁰⁴ Glasgow City Council website.

<http://www.glasgow.gov.uk/en/AboutGlasgow/History/Cultural+Renaissance.htm>

3.5.2. Redevelopment

Where Baltimore reinvented itself through waterfront redevelopment on the Inner Harbor, Glasgow reinvented itself through the arts. Glasgow focused on cultural heritage as a path to economic revival. In 1983, the city opened the Burrell Collection, in Pollock Park to display over 9000 artifacts collected by Sir William Burrell. The collection remains as one of the premier tourist attractions in Scotland. The *Miles Better* campaign (1983 - 1989) effectively promoted the city and paved the way for the subsequent awarding of the Garden Festival and the Year of Culture events. In 1985, the Scottish Exhibition and Conference Centre (SECC) opened on the former 64-acre Queen's Dock site. The creation of this excellent facility also marked the beginning of the redevelopment of the Clyde waterfront.

The Glasgow Garden Festival of 1988 was a hugely influential showcase event that did much to boost Glasgow's pride, enhance the city's image nationally and internationally, and to persuade the public that Glasgow was a promising place in which to invest live and work.

The 1990 Year of Culture was a magnificent success for Glasgow that further transformed the city's image in the eyes of the world. The same year, Glasgow was the first British city to employ the arts as a catalyst for urban regeneration--a revolutionary model that has since been replicated worldwide. The positive economic repercussions of this successful policy are still being realized.²⁰⁵

²⁰⁵Major portions of the redevelopment section were based on the Glasgow City Council website at <http://www.glasgow.gov.uk/en/AboutGlasgow/History/Cultural+Renaissance.htm>

The Clyde Waterfront is an “ambitious urban renewal project”²⁰⁶ promoted and managed by a strategic partnership comprised of the Scottish Government, Scottish Enterprise, Glasgow City, Renfrewshire and West Dunbartonshire Councils. Its purpose is to promote the economic, social and environmental regeneration of 13 miles of the River Clyde from Glasgow city centre to Dumbarton with the goal of restoring the River Clyde as the focal point for enterprise in Scotland.²⁰⁷

3.5.3. Preservation & Adaptive Reuse

Glasgow’s city center and redeveloped neighborhoods like Merchant Square offer a rich integration of old and new structures. Infrastructure elements, like the raised rail line that parallels the river at some points, is lined with shops. (Figure 71) Such infill creates a comfortably scaled streetscape that leads to pleasant crossing points to get between the city center and the river. Glasgow’s effective incorporation of historic buildings and infrastructure in the city center does not carry through to the waterfront.

Dimitra Babalis analyzed Glasgow’s approach to incorporating industrial riverfront heritage in its redevelopment plans for Glasgow. His assessment describes a familiar post-industrial waterfront landscape – one that was largely derelict and disconnected from the surrounding city.²⁰⁸ Many of the granaries and important industrial structures had been demolished.

²⁰⁶ Clyde Waterfront website <http://www.clydewaterfront.com/currentdevelopments.aspx>

²⁰⁷ Clyde Waterfront website <http://www.clydewaterfront.com/clydewaterfront.aspx>

²⁰⁸ Babalis, 1.

(Figure 72) Babalis notes that only two notable landmarks were preserved - an industrial era pump house at Yorkhill Quay, Figure 72) and a tall ship named “The Glenlee”.

As Delores Hayden observes, “together, the natural and built environments form the cultural landscape of a city” yet, “we are increasingly attuned to rescuing the natural qualities of places”²⁰⁹ Bilabas attests to the ample efforts that were employed to restore the ecology of the Clyde’s shorelines and wetlands and to create habitat.²¹⁰ Much of Glasgow’s cultural history that could have been conveyed through conservation of the built environment and adaptive reuse of structures has been largely lost to demolition. Lessons about the history and industrial heritage of Glasgow are now relegated to museums a few scant of preserved industrial infrastructure.

A scattering of historic structures, including many of the old stone quay walls and an occasional riverfront warehouse (Figure 74, 75) have been retained along the waterfront in Glasgow and Clydebank. A more innovative work of industrial preservation and interpretation is evident in the revival of the Titan crane that has been a working heritage facility since 2007. The crane was one of five Titans designed by William Arrol for the Clyde shipyards. An elevator allows visitors to ride to the top for a view of Glasgow Harbor and have a firsthand look at a piece of Glasgow’s shipbuilding past.²¹¹ Additional funding was

²⁰⁹ Hayden, 99.

²¹⁰ Babalis, 7.

²¹¹ In a similar move, the famous cranes at Belfast’s Harland and Wolff shipyard where the Titanic was built have been listed as historic monuments to ensure their preservation. The cranes, known as ‘Samson’ and ‘Goliath’ were built between 1969 and 1974. Actual shipbuilding in the H&W yard has ceased and only ship

secured to light the crane that is listed as a ‘Category A’ historic resource, putting it on par with Edinburgh Castle.²¹²

The Clyde Waterfront planning documents stress efforts to “preserve and evaluate maritime heritage’, and ‘reflect the historic background of the site.”²¹³ The development patterns and physical fabric of the current redevelopment bear little witness to the success of these efforts. Large apartment blocks, big box stores and pad site restaurants (Figure 76) do not evoke Glasgow’s former industrial heritage, nor are they sympathetic to the richer textures of the historic city center. The Clyde Waterfront website promises that “recycling architectural features such as the signage on the granaries, cobblestones and maritime paraphernalia, which will be featured in the completed development—bringing the past into the future, and making the Clyde a source of pride once again.”²¹⁴ With the exception of recycled docking cleats and cobblestones incorporated as seats, bollards and paving in the esplanades, (Figure 77) little of the built industrial heritage was preserved in the redeveloped waterfront.

Despite the paucity of historic industrial structures along the Clyde, the well-produced *Clyde Heritage Guide*²¹⁵ brands the river as rich source of industrial heritage providing web links to heritage stories, and trails. Richly illustrated with archival photographs, the guide presents the river’s history with a strong focus on the industrial heritage of shipbuilding, mill towns,

repair and maintenance is currently carried out at the site. Many of the buildings and docks around the cranes are due for redevelopment in mixed use project known as the ‘Titanic Quarter’

²¹² Titan Clydebank, History. <http://www.titanclydebank.com/history.aspx>

²¹³ Babalis, 3-4.

²¹⁴ Clydeport website “History” http://www.clydeport.co.uk/index.php?site_id=3&page_id=8

²¹⁵ The Clyde Heritage Guide is available at <http://www.clydewaterfrontheritage.com/fileaccess.aspx?id=3924>

and factories but neglects to mention that few traces of industrial heritage remain on the redeveloped waterfront. The Clyde Waterfront partnership may have recognized the lost opportunity to integrate industrial fabric within the redevelopment scheme for large barren area around Queens Dock and Yorkhill Quay. It is possible that the *Clyde Heritage Guide* represents an honest effort to present a 'you are standing on the site of a formerly vibrant working landscape' approach to place history. While this may be the case, one is left with the nagging suspicion that the guide is enticing visitors to the city with an industrial heritage that is better viewed on a website than on site at Queen Dock, Yorkhill Quay or Princess Dock.

3.6. Brooklyn, 2002

3.6.1. Brief Industrial era history

The Brooklyn waterfront borders the eastern shore of New York's East River. (Figure 78)

Historically, the lower portion of the river, that separates Manhattan from Brooklyn, was one of the busiest and most important channels in the world, particularly during the first three centuries of New York City's history. The waterfront was an active port area with an elaborate system of piers, railways and storage facilities. Indeed, at one time, Brooklyn had so many waterfront warehouses that it was known as "the walled city."²¹⁶ Red Hook and Erie Basin still have active shipping channels and waterfront areas continue to accommodate industry and residences.²¹⁷ In recent years, the decline of inland warehousing and rail facilities that store and move materials that arrive by ship, has threatened the shipping industry in Brooklyn and driven increasing amounts of port activity to the New Jersey side of the harbor.²¹⁸

The shores of the East River as well as Brooklyn's creeks have a long history of industrial use including the manufacture of dyes, glass cast iron, and machinery as well as the refining of sugar and petroleum. By the 1970's, industries faced competition, environmental regulations, shifting demands along increased competition for real estate in gentrifying neighborhoods. Some industries closed or moved out of the city leaving vacant factories and

²¹⁶ Martin, 114.

²¹⁷ Pollara, Gina, "Afterword" chapter in Bone, 278.

²¹⁸ Pollara, Gina, "Afterword" chapter in Bone, 280.

warehouses along the waterfront. In other cases, Brooklyn maintains a very vital industrial base along corridors like the Gowanus Canal.

3.6.2. Redevelopment planning

In the 1980's the scarcity and high price of Manhattan real estate drove artists, residents and businesses to relocate in Brooklyn's working class neighborhoods and industrial districts.

Concerns about pollution, access to the waterfront and development decisions drove citizens' groups to join forces with local officials to plan the future of the waterfront using

community-based planning as set out in section 197-a of the New York City Charter.²¹⁹ In

1998, the Downtown Brooklyn Local Development Corporation, a community-based non-profit, selected the firm Urban Strategies, Inc. to lead the effort to assemble a framework for

future development for the waterfront area from north of the Manhattan Bridge to South of the Brooklyn Bridge, including the area around piers 1-5. The vision for the waterfront was

set forth in an "Illustrative Master Plan" released in 2000. The zoning for the piers changed

from manufacturing to parkland and in 2001, the Port Authority announced plans to

transfer land parcels, including Piers 1-5 to the city for the 70-acre proposed Brooklyn

Bridge Park. The current plans for the park now include Pier 6.

²¹⁹ Section A 197-a authorizes community boards and borough boards, along with the Mayor, the City Planning Commission, the Department of City Planning, and any Borough President, to sponsor plans for the development, growth, and improvement of the city, its boroughs and communities. Once approved by the Commission and adopted by the City Council, 197-a plans guide future actions of city agencies in the areas addressed in the plans.

Farther south Piers 7-12 located in Brooklyn's Red Hook and Erie Basin still accommodate active shipping. Here, development plans have considered the current industrial uses and shipping operations.²²⁰ In 1996, the City Council adopted the 197-a plan for Red Hook. The plan's goals are to "minimize conflict between industrial and residential communities" and to "preserve and expand industrial and maritime activity where it is solidly positioned."²²¹ The *Strategic Plan for the Redevelopment of the Port of New York*, drafted by a team created by the New York City Economic Development Corporation, identified places for public access and open space along the waterfront, "ensuring the port redevelopment plans do not negatively impact surrounding facilities and the natural environment."²²²

The Red Hook area has attracted artists and craftspeople to the brick warehouses and small townhouses that line the cobblestone streets along the waterfront since the 1990's. Major retailers have also taken up residence on the waterfront. Fairway Market, known for its fresh fruits and vegetables as well as prepared food, is located on the first two floors of an 1869 coffee warehouse. (Figure 79) The upper floors are luxury apartments with views of the harbor and Statue of Liberty. IKEA also built a store on a former waterfront industrial site. In return for required zoning changes, city planning officials required IKEA to provide waterfront access and to build and maintain a public esplanade.²²³

²²⁰ Pollara, Gina, "Afterword" chapter in Bone, 278.

²²¹ 197-a Plan for Red Hook, Brooklyn.

²²² New York City Economic Development Corporation press release, 15 Jan 1998.

²²³ Ulam, 111.

3.6.3. Preservation & Adaptive Reuse

Little of the port and industrial infrastructure on piers 1-6 is left beyond the peninsular piers themselves. Inland, rezoning announced in 2003 integrates a complex combination of residential, light industrial, commercial and mixed uses tailored to the demographics of the area that, thus far, has worked to preserve some upland industrial infrastructure.

Upland preservation includes two old warehouses. The four-story Empire Stores warehouse, which once held coffee & tea, and the Tobacco Warehouse are both nationally recognized as historic landmarks and are among the few surviving examples of their type. The Empire Stores house the park's administrative offices, display space, and restrooms.²²⁴ The Tobacco Warehouse, on the upland portion of the Empire Fulton Ferry Park, was built in the 1870's as a tobacco custom inspection center. The now roofless structure was stabilized for public use and is opened to the public when it has not been rented for weddings, corporate functions and private parties.²²⁵

In August 2009 the Brooklyn Bridge Park Development Corporation and the New York State Office of Parks, Recreation and Historic Preservation announced an agreement to salvage and reuse building materials from the former National Cold Storage Warehouses on upland of Pier 1.²²⁶ (Figure 80) The National Warehouses were built between 1875 and 1915 for the storage of perishable foods. The agreement will allow for the deconstruction of

²²⁴ New York Magazine <http://nymag.com/listings/attraction/empire-fulton-ferry-state-park/>

²²⁵ Brooklyn Bridge Park Conservancy

²²⁶ Johnson. Brooklyn Bridge Park Development Corporation Press Release, 25 Aug 2009.

the complex to ensure the preservation of select wood, brick and ornamental details to be recycled in the park. Over 70% of the longleaf yellow pine that served as the structural timber for the warehouses will be used for park benches, picnic tables and maintenance buildings. Over 10,000 bricks were salvaged for reuse in the rehabilitation of the Empire Stores or elsewhere in the park.²²⁷

Commissioner Carol Ash asserted, “The reuse of these historic elements respects the value of the original building while moving forward in the next step in the development of the City’s green spaces. Integrating these materials throughout Brooklyn Bridge Park, and especially in the rehabilitation of the Empire Stores, is an appropriate way to honor the industrial heritage of the Brooklyn waterfront as it is transformed into a wonderful recreational resource for the next generation of New Yorkers.”²²⁸ Brooklyn Bridge Park Development Corporation President Regina Myer characterized the National Warehouse agreement as a sustainability effort saying, “BBPDC is committed to incorporating green building practices throughout Brooklyn Bridge Park, through the reuse of materials from the National Cold Storage Warehouses . . .”²²⁹

South of the Brooklyn Bridge Park, IKEA’s Erie Basin Park makes a connection to the site’s history as the Todd Shipyards--one of New York Harbor’s main ship repair facilities for over a century. The selected site was located in heavy manufacturing zone and required planning

²²⁷ Johnson. Brooklyn Bridge Park Development Corporation Press Release, 25 Aug 2009

²²⁸ Johnson. Brooklyn Bridge Park Development Corporation Press Release, 25 Aug 2009

²²⁹ Johnson. Brooklyn Bridge Park Development Corporation Press Release, 25 Aug 2009

commission approval for the necessary rezoning to accommodate the proposed retail use. In return for rezoning, the planning commission required IKEA to create an esplanade keyed to the shipyard's industrial maritime history.²³⁰ Lee Weintraub, the landscape architect for Erie Basin Park, sought to blur the boundaries between public park and working waterfront in his design relying on the shipyard infrastructure and context as to create the spatial framework for the park.²³¹ The Hughes Shipyard, still alive with tugboat and barge traffic, offers the sights and sounds of the working waterfront, just across a small inlet from the park.

Weintraub consulted with Pino Deserio, the former manager for the shipyard, to learn how the yard functioned and how the equipment and tools left around the site were used. Deserio also maneuvered the four massive gantry cranes into place to become an integral part of the new park. (Figure 81) Weintraub displayed the tools, bollards, cleats and ropes found on the site in groupings that serve both to interpret the maritime gear and to create a visual attraction. (Figure 82) Large concrete blocks, once used to stabilize ships, feature the names of vessels repaired at the former shipyard (Figure 83) Most of the piers were rebuilt, yet the dilapidated sections of piers which were left untouched due to a lack of funds is one of the most effective parts of the park.²³² The rotting beams and rusty metal sitting just inches from the new metal railing brings the contrast between the gritty past and the new waterfront park into sharp focus. (Figure 84)

²³⁰ Byles, "Erie Basin Park"

²³¹ Ulam, 112.

²³² Ulam, 115.

IKEA's site design also proposed to fill a 700-foot-long dry dock, known as Graving Dock No. 1 (circa 1860). The proposal to fill the dock was controversial. It was one of only two such facilities in New York and was listed on the Preservation League of New York's 'Seven to Save' landmarks list. The New York Municipal Arts Society filed a lawsuit against the U.S. Army Corp of Engineers, arguing that the dock merited National Landmark status.²³³ In the end, IKEA won the right to fill the graving dock. Today recycled cobblestones in asphalt parking lot to demarcate the outline of the former graving dock and a small segment was preserved near the water's edge. (Figures 85, 86)

The IKEA site and Erie Basin Park occupy one of Red Hook's most important maritime sites and embody significant maritime industrial heritage. The precise value of that heritage and the validity of altering the unique spatial framework were contested during the redevelopment of this freshly post-industrial swath of land. "You have to make a judgment," Weintraub said, "whether Brooklyn has gotten equal value for the zoning change that yielded the blue box." With its views of Erie Basin's barges and wharves—enhanced by a new dock for free water-taxi service—Brooklyn's maritime heritage, while it lasts, is in many ways more public than ever.²³⁴

²³³ Ulam, 114.

²³⁴ Johnson. Brooklyn Bridge Park Development Corporation Press Release, 25 Aug 2009.

PART 2

4. Issues: Grappling with Industrial Narratives and Artifacts

“The real question for me is not whether to build an IKEA store . . . (one that will provide much needed jobs for residents of nearby housing projects); nor is it the projected car traffic that some locals equated with Armageddon. . . . The problem is: Why did the developers have to put a big blue box in the middle of one of our nation’s greatest 19th century marine warehouse complexes? Why just in the moment when New Yorkers are beginning to rediscover their rich waterfront history . . . (especially evident in Brooklyn from Greenpoint to Red Hook), . . .are they chipping away at this spatial structure? Indeed, at one time Brooklyn had so many waterfront warehouses that it was known as the ‘walled city’ Thus, preserving the continuity of buildings is important in telling the story of this once-great economic power.”²³⁵

A dense industrial landscape shaped the scale and character of 19th and early 20th century urban waterfronts. The same landscape also barred public access to the shoreline, contaminated soils, polluted waterways and provided millions with a means of livelihood. Like an industrial glacier, this landscape has been in a long recession and left behind a scattered moraine of docks, pilings, cranes, tanks, warehouses, factories, refineries, mills, power plants, and railroads. Some of this infrastructure is critical to active waterfront businesses, such as the Aker Shipyard in Philadelphia and the Westway Terminal in Baltimore. Other components of our industrial infrastructure, such as the Carrie Furnace on the Monongahela River, and the Richmond and Delaware electric stations on the Delaware River, will never return to active industrial use.

The building fabric that remains still yields stories - good and bad - about the industrial heritage of each city. The steel mills of Pittsburgh, the canneries of Baltimore, the factories of

²³⁵ Martin, 114.

Camden, the docklands of Dublin, the shipyards of Glasgow and the warehouses of Brooklyn's harbor all left a distinctive physical and cultural imprint on each of these cities. In some cases the imprint has almost disappeared, in other cases the imprint is more discernable. Understanding, interpreting and managing the record of our recent industrial heritage presents unique challenges because of the scale of the resources and the inherent conflicts of the stories.²³⁶

This section looks at the most common issues that surfaced as cities dealt with the scattered remnants of industrial infrastructure along their waterfronts. How has the story of industry affected preservation efforts? How have building materials and scale of industrial structures affected ongoing use. Finally, is it possible to mitigate the effect of highway infrastructure that creates a physical or psychological barrier between cities and their waterfronts? The variety and nature of these issues that faced each city shaped their approach to addressing industrial heritage.

4.1. Telling the Story

Interpreting our industrial heritage means grappling with difficult stories of labor uprisings, economic injustice and environmental degradation, along with triumphs of technological advances, economic gains and city building. Pittsburgh's steel industry provides a rich source of all of these stories. By the time big steel collapsed in 1970's, workers resented owners, owners despised labor, pollution had affected the public health and political leaders were

²³⁶ Budurow, 85.

desperate for new economic engine. As historian Edward Muller acknowledged, Pittsburgh had soured on steel. Plants were closed and demolished along the 80-mile long steel valley of the Ohio and Monongahela Rivers in preparation for their metamorphosis as industrial parks, high-tech centers and even amusement parks.²³⁷ That steel touched the lives of so many for so long contributed to widely varying opinions of the industry.

In 1999, the Andy Warhol Museum in Pittsburgh launched an exhibit entitled “The Architecture of Reassurance: Designing the Disney Theme Parks” and asked locals to consider their heritage: “Should a city that no longer makes steel promote itself as the Steel City? How does history get transformed into myth? Does the city’s myth need to be crafted out of popular consensus, or can one voice speak for many? Can different myths collide, and can a city speak with many tongues? Who profits from translating a myth into a real geographic place—from making Pittsburgh’s “story” into a theme park?”²³⁸

Two decades after the steel mills started to close, the answers to these questions reveal mixed emotions. Charlie Humphrey has fantasy of the North Shore as “a kind of ersatz, industrial park. Just as Colonial Williamsburg has a fake colonial environment, we would have a fake industrial environment.” A roller coaster coal-car ride could careen from one end to the other.”

²³⁷ Bradley Steck, 1.

²³⁸ Gangewere, R. Jay “Theme City: Imagining Pittsburgh”

Jeannie Pearlman, director of Three Rivers Arts Festival opined, “I don’t want to celebrate a sanitized view of the past. People died in the mill, people were underpaid all the time, women couldn’t get jobs, and people of color couldn’t get jobs. It wasn’t that sweet.”

John Dymun worked in a Pittsburgh steel mill when he went to college. “It was another world--the scale, the smell, the molten steel, the cranes, the sirens and whistles.” Dymun believes you could translate that powerful experience through high technology, with 3-D IMAX or virtual reality, to draw people into it today.”²³⁹

In the face of such conflicting memories, industrial structures and memoirs can represent tombstone or tribute. Such contested stories do not explain the almost total demolition of Pittsburgh’s industrial infrastructure. Sites of conflict and conscience--battlefields, asylums and prisons--have all been preserved and thoughtfully interpreted. The mills of the Mon Valley are every bit as important to the story of our nation as the battlefield at Gettysburg and the Martin Luther King National Historic Site. They were demolished because the money and will existed to convert the land to other uses. In some cases, where no immediate redevelopment pressure existed, buildings were cleared in the hope that a clean site would attract redevelopers that might build a new economic engine for the Valley abandoned by steel. Other factors, including the scale, and material of these structures, discussed in subsequent sections also contributed to the extensive demolition of these industrial sites.

²³⁹ All three quotes from: Gangewere, R. Jay “Theme City: Imagining Pittsburgh”

Compensating for demolition: Narrative as a replacement for Material Culture

Decades after the widespread mill closings, Pittsburgh is still working on telling the story of steel. With just one set of furnaces left at the old Homestead Works, industrial heritage has been largely relegated to programs, archives and historians. The Rivers of Steel National Heritage Area uses such resources to tell the industrial history of the greater Pittsburgh area. Their website offers chances to ‘Tell us your story’, ‘Search the archives’, or ‘Visit the Homestead (paving) Labyrinth’. There is no information about how to find or tour working or vacant mills. Ron Baraff, an archivist working for Rivers of Steel, confirmed that access to the Carrie Furnace, has been restricted by Allegheny County, the current owner of the site, due to safety concerns.²⁴⁰ In fact, visitors to the Pittsburgh area will have a hard time finding old mill sites. Ron Baraff offered, “There are some artifacts and 10 interpretive panels sprinkled around the Homestead (Waterfront) site as well as the Pump House. The South Side Works did not retain any of the original buildings. The only original structure is the Hot Metal Bridge. However there are a few interpretive panels.”²⁴¹ With very few exceptions, the massive industrial forms that stood along the Pittsburgh’s rivers can only be experienced through books, archival photos and interpretive panels.

In another effort to tell the story of local industry, the Mon Valley Progress Council is planning a Monongahela Valley Industrial Museum to tell the story of coke, coal, steel,

²⁴⁰ While the Carrie furnaces are central to the planned Homestead Works National Park the projected cost of preservation is prohibitive

²⁴¹ 16 February 2010 Email from Ron Baraff

boatbuilding, glass, and other industries. Planners envision the museum as a place where “local communities can share their heritage in a common museum to enhance the story of The Making of America”²⁴²

Similar to Pittsburgh, an astounding amount of Glasgow’s industrial fabric has disappeared. The office towers of Glasgow’s International Financial Services District along with acres of parking lots and wide swaths of lawn have erased most traces of the city’s shipyards and granaries. Yet, the Clyde Heritage Guide creates an impression of that much of the city’s built industrial heritage still graces the river’s banks. Like Pittsburgh, Glasgow also has plans for an Industrial Museum that will celebrate “Glasgow’s colorful industrial past.”²⁴³ Both Pittsburgh and Glasgow have ostensibly compensated for their rapid, widespread demolition of industrial fabric with well-developed industrial heritage programs, guides and websites and archives.

4.2. Building Materials

The scale and building materials used for industrial structures also have a major impact on preservation and adaptive reuse. The case studies and literature review indicate that brick, stone and frame structures of moderate scale stand a better chance of being preserved or reused than large-scale metal or concrete structures. The Cork Factory, Tide Point the Can Factory, The Victor, Custom House Quay, Fairway Market and the Empire Stores are all brick structures built in the late 19th and early 20th century. Many of these restorations

²⁴² Woford, 1.

²⁴³ Oliver, 1.

benefit from the architectural pioneering in industrial loft redevelopment. They also benefit from the scale inherent to modular units of brick or stone.

Steel can serve as a useful frame for adaptive reuse projects. The steel structure of the original dock is clearly expressed in the residential reuse of Piers 3 and 5 in Philadelphia. The new residential units built within the gasometer framework in Dublin present another example of industrial steel framework used to create the framework for a new building.

Unlike the tracery steel framework of Piers 3 and 5 and the gasometer, the case studies do not offer examples of monolithic steel structures like the steel mills being well preserved or reused. Edward Muller posited that steel mill structures were easy candidates for demolition after the furnaces went cold, not only due to their contested history, but also because their size and material was not adaptable to reuse.

Gas Works Park, Duisburg Nord and the New York Highline present a few examples of preserved large-scale industrial structures that are largely steel and/or concrete. All of these examples have been re-imagined as landscape or monuments within the landscape rather than as ventures that convert industrial structures into salable or leasable real estate. Gas Works Park and Duisburg Nord are both supported by local and state governments as public parks. The City of New York and the non-profit group, Friends of the High Line, support the High Line. Proposals for preserving the Carrie Furnaces will depend on their designation as a National Historic Park. Without a market for large-scale industrial

structures, the preservation of such large-scale industrial structures as public landscapes or monuments depends on public or non-profit support.

4.3. Living with Layers

Brooklyn's DUMBO²⁴⁴ neighborhood has branded itself based on the highway infrastructure that passes over restaurants, lofts and the waterfront park. The shipyard infrastructure of cranes, dry docks and warehouses creates a unique address for Philadelphia's Navy Yard.

Yet, in most cases, cities have sought to bury or remove transportation or industrial infrastructure in order to obliterate unsightly reminders of modern necessities or our recent industrial past. Pittsburgh demolished the Point, Camden obliterated all traces of industry and piers along its central waterfront and more recently, Boston buried an interstate below acres of new parkland. Each one of these projects was expensive for its time and place.

Boston will be paying for the Big Dig until 2038, which has led the state to divert money from repair of deteriorating road and bridges to debt payment.²⁴⁵

These cases raise two questions on the topic of dealing with the infrastructure that stands between cities and their waterfronts. The first question is a financial one, best left to economists and government officials. Can we afford to sweep roadways, railways and factories away to recreate an idealized connection to the water? The second question is--can

²⁴⁴ DUMBO is a acronym for Down Under the Manhattan and Brooklyn Overpasses that refers to the neighborhood on the Brooklyn side of the Brooklyn and Manhattan Bridges

²⁴⁵ Murphy, Sean. "Big Dig's red ink engulfs state" *The Boston Globe* 17 July 2008

operational and redundant infrastructure become assets that inspire creative approaches to urban design challenges?

Two practicing designers have answered the second question eloquently through built projects and writings. Peter Latz, who led the design team for Duisburg Nord wrote:

“For the last 200 years the ideal image of nature has been a symbolic, transformed and man-made landscape typified by idealized areas of agricultural production. Such idealization led to the creation of unique parks, but as symbols of a past romantic ideal, these landscapes cannot now be restored. These cultural landscapes are as lost to us now as are the social dreams of nineteenth-century Romanticism, and can therefore only fail as ideals for a contemporary landscape. The tasks of dealing with run-down industrial areas and open cast mines require a new method – one that accepts their physical qualities but also their destroyed nature and topography. This new vision should not be one of “re-cultivation,” for this approach negates the qualities that they currently possess and destroys them for a second time. The vision for a new landscape should seek its justification exactly within the existing forms of demolition and exhaustion. We have to ask ourselves which spaces from among the dilapidated and redundant places we want to use and occupy, and which of those have to be changed by the mark of a cultural intervention or the remediation of historical contamination.”²⁴⁶

Latz advocates adaptation to and preservation of our industrial heritage and presents a new paradigm for parks that accepts the “the physical qualities [and] also their destroyed nature and topography”²⁴⁷ of industrial sites. Rather than borrow an agrarian aesthetic he proposes that landscape should respond to industrial forms and necessities of the remediation process. The design of Latz’s Duisburg Nord expresses both extant industrial forms and a variety of carefully selected remediation strategies to create a park that connects contemporary visitors with industrial heritage.

²⁴⁶ Kirkwood, 158. Quoting Peter Latz

²⁴⁷ Kirkwood, 163.

On a smaller scale, the preserved footings of storage tanks and machinery that supported the soap-making plants at Tide Point evoke the industrial past of the site at the half-acre Baltimore Immigration Memorial. The simple rectangles, cylinders and pipe railings form a multi-level garden overlooking both the harbor and the adjacent working tank farm providing an effective visual link to the refurbished soap factory. Choosing an industrial framework rather than an agrarian one for the park is appropriate as a link to immigrants who took up many more jobs in factories than farms.

The Weiss/ Manfredi approach to transportation infrastructure at the Olympic Sculpture Park in Seattle bears similarities to Latz's approach to industrial sites. The sculpture park clearly expresses the Weiss/Manfredi theoretical approach "to work from a definition of landscape that incorporates infrastructure (rail lines, highway off ramps, utility lines), history (geologic, political, cultural) and natural systems (water, vegetation, toxicity)."²⁴⁸

Working with and around the layers of industrial, transit and utility infrastructure served to distinguish connections between city and waterfront in Seattle and Glasgow. In Glasgow, the rail lines that rise over streets leading to the River Clyde were transformed from a liability to an asset by adding shops below the infrastructure. The approach has the potential for creating inhabited streetscapes rather than ominous, looming overpasses on the path between city and waterfront. In Seattle, pedestrian walkways, much simpler in conception than Weiss Manfredi's Olympic sculpture park, weave below highways, over railroads and down to the

²⁴⁸ Weiss Manfredi partnership statement as quoted by Gastil, 177.

river. The level of thought and care that goes into painting the infrastructure, installing wayfinding signage, planting the edges and selecting artwork for these walkways pays off in making them inviting pathways to the waterfront. Based on the literature review and case studies, operational and redundant transportation and industrial infrastructure can serve as assets that inspire creative approaches to connecting cities to their riverfronts.

5. Trends: Toward Preservation

All of the cities examined had to deal with slightly different sets of issues as they grappled with changing demands on their waterfronts. In response, each city charted a different course based on local assets, contemporary planning trends and its own unique history. Yet, while there are differences in these six waterfronts and how they were redeveloped, some trends, common themes and advantages related to preserving industrial infrastructure emerge.

The case studies reveal a shift from the wholesale demolition and clearing of acres of building fabric based on the urban renewal model to more considered approach to preservation, reuse and compatible infill. The following analysis demonstrates the evolution toward consciously preserving industrial infrastructure in waterfront redevelopment, beginning around 1964 with the preservation of a handful of buildings in the Inner Harbor plan.

Early planning and redevelopment efforts in Pittsburgh, which kicked off in the late 1940's in the Point area, were the first major example of a modern urban-renewal program. Fifty-nine acres of the downtown, including freight houses, rail yards and factories at the confluence of the Monongahela and Allegheny Rivers were demolished to make way for the Gateway Center high-rises, highways, arenas and Point State Park. The project was a major urban renewal success story of its time. Today, the metallic office towers and wide plazas of Gateway Center seem dated and sterile in comparison to adjacent downtown streets lined with doorways and windows of buildings from different eras.

Gateway Center and Point State Park's 20th century design represents Pittsburgh's desire to transform itself from a mill town to a modern city. Yet, the colonial heritage of the Park is preserved in the Fort Pitt Block House (1764) and Monongahela Bastion which houses the Fort Pitt Museum. The museum staff and Block House docents²⁴⁹ actively interpret the colonial period at the Point supported by models, dioramas and signs devoted to the frontier period. Despite the important role that manufacturing and railroads played in the development of the city and the presence of these uses on the site, the 54-page Point State Park Interpretive Plan focuses squarely on the pre-industrial era and natural features related to the river and plantings. Traceries of Fort Duquesne, Fort Pitt and the original river shore are prominent in the park plan. (Figure 87) The current planning powers in Pittsburgh seem to be holding true to Mayor David Lawrence's 1956 vision that "Nothing in the park will commemorate any man or happening of the last 156 years."²⁵⁰ The railroads, warehouses, powerhouses and factories demolished to make way for the park are not included as sub stories in the interpretation plan. Even the design of the celebrated concrete arch bridge that carries a highway over the park fails to deliver the promised visual connection between the city and the Point. The arch is heavy and opaque and blocks more views than the truss and cable bridges that float between Pittsburgh's rivers. Ironically, these steel bridges, and not the celebrated concrete arch bridge create a recognizable visual brand for Pittsburgh and create

²⁴⁹ The Block House is administered separately from the museum by the Pittsburgh Chapter of the Daughters of the American Revolution. The Fort Pitt Museum is administered by the Pennsylvania Historical and Museum Commission.

²⁵⁰ David Lawrence, 1956 speech at Harvard University.

the most salient reminder of the local steel industry that made the bridges possible in Pittsburgh and around the world.

Baltimore followed suit in redeveloping the Inner Harbor in the early 1960's demolishing all but six buildings and replacing most of the pier infrastructure in original 83-acre redevelopment area. In later years, as waterfront redevelopment spread from the Inner Harbor eastward to Fell's Point on the north side of the harbor and Locust Point on the south side of the harbor, demolition was more selective. A smaller-scale approach to redevelopment resulted in the preservation or adaptive reuse of 19th century warehouses and 20th century manufacturing plants alongside colonial residences and shipyards. Old piers and pilings remain providing texture and grit to offset sleek new infill and tidy restorations.

The early stages of waterfront redevelopment in Philadelphia and Camden, in the 1970's and 1880's, bear a striking resemblance to the development evolution seen in Pittsburgh and Baltimore. The extensive demolition that commenced with the first round of redevelopment at Penn's Landing ceased when Piers 3 and 5 were added to the National Register of Historic Places in 1983. The piers were converted into residences soon thereafter. The slow progress of development at Penn's Landing and lack of funds for rebuilding has thus far protected Piers, 9, 38 and 40 as well as ruins and relict structures such as Pier 53. (Figure 79) Due to a more aggressive redevelopment schedule and the availability of funds for infrastructure improvements, little historic fabric remains along Camden's waterfront.

The redevelopment of the Brooklyn waterfront features the most carefully considered approach to the preservation of industrial infrastructure. The community-led planning for the Brooklyn waterfront created under the New York City requirements of Section A 197-A authorize community and borough boards, along with the Mayor, the City Planning Commission, the Department of City Planning, and any Borough President, to sponsor plans. Brooklyn's rezoning scheme integrates a complex combination of residential, light industrial, commercial and mixed uses tailored to area demographics. This approach has worked to preserve neighborhood form. In Red Hook, a new the Fairway Market, café, and 45 residential units have been housed in an adapted 19th century waterfront warehouse. The developer of the Fairway Market project, Greg O'Connell also restored Pier 41 and the Beard Street Warehouse, as light manufacturing and office space.

The proposal to demolish warehouses and a 19th century graving dock to build an IKEA store in Brooklyn drew widespread protest. IKEA demolished warehouses and a historic dock to build their store and preserved six acres of shipyard infrastructure as a concession. In contrast to the bucolic public park created on Pittsburgh's formerly industrial Point, the New York City Planning Commission specifically called for a waterfront space keyed to the shipyard's industrial maritime flavor. The park the New York Planning Commission requested was not a playing field, not a park based on a 19th century agrarian aesthetic, and not a ecological restoration of a long-ago shoreline, but a landscape that would incorporate the docks, cranes and tools of the former shipyard.

While industrial buildings, docks and machinery continue to be demolished to make way for new development, the cases studies reveal the preservation of these structures is being taken more seriously. There is a growing appreciation of industrial heritage in the eye of the public. A number of factors contribute to the appreciation and preservation of industrial structures. These factors include changes in planning methodology, shifting financial incentives, improvements in environmental remediation technology, the appeal of the sustainable aspects of preservation and the perspective gained through our increasing distance from the industrial era and our dwindling industrial assets. All of these factors present reasons for developers and municipalities to consider industrial preservation to meet economic, aesthetic or idealistic goals. More to the point, these factors reveal the value of preserving industrial infrastructure in waterfront redevelopment.

5.1. The Planning Factor

While Camden's case seems to present an argument against the trend towards more selective demolition of historic industrial-era structures, it also offers some clues to additional factors that affect the decision to demolish or preserve. One major factor that favored demolition in Pittsburgh, Baltimore, Philadelphia and Camden was the 'Top Down' approach to urban planning exemplified by David Lawrence's Urban Redevelopment Authority in Pittsburgh, the Charles Center/Inner Harbor Management Corporation in Baltimore, Edmund Bacon in Philadelphia and the Greater Camden Movement. These authorities and celebrated urban planners followed the example that Robert Moses, New York's master builder of the 20th

century, set. Moses shaped the modern city with large scale planning gestures that cleared neighborhoods, changed shorelines and favored highways. These projects often demanded a clean slate upon which to realize new urban design visions. This approach frequently resulted in widespread demolition of architecturally diverse neighborhoods and the creation of large-scale developments like Gateway Center in Pittsburgh and Penn Center in Philadelphia.

Reacting against the demolition of neighborhoods, proposed highway construction and the anti-urban scale and setting of massive building on vacant plazas, community, activists and preservationists sought to inject themselves into the planning process. As a result, urban planners and site designers grappled with integrating their plans with irregular infrastructure and beloved buildings that injected a dose of irregularity in their plans.

The more complex and intimate pedestrian scale that results from such community-led planning efforts are evident in the Fell's Point and Federal Hill neighborhoods in Baltimore. Here, residents succeeded in having their community listed on the National Register of Historic Places to prevent the use of federal funds for proposed highway projects. The ongoing preservation and adaptive reuse of historic homes, warehouses and factories in these neighborhoods has worked to retain urban fabric, increase real estate values, and support independent retail and restaurant trade.

Loft district development in places like New York's SoHo and Denver's LoDo has had an effect on the planning and development in every one of the case studies, such as the Strip

District in Pittsburgh and Northern Liberties in Philadelphia. This phenomenon has demonstrated the benefits of consolidated and richly layered urban fabric to zoning authorities, urban planners and real estate developers. As a result, mixed-use districts, form-based codes, vertical zoning and adaptive reuse have all become more familiar tools and models for more integrated development models that favor preservation, adaptive reuse and sensitive infill over wide spread demolition.

5.2. The Financial Factor

Most large-scale demolition and redevelopment projects only go forward with the help of significant government funding or incentive programs. The funding factor is apparent in the early Pittsburgh, Baltimore and Camden projects where federal dollars available through funding sources like Community Development Block Grants and Urban Development Action Grants funded large-scale urban renewal projects.

Later federal initiatives have supported the funding of preservation. The Federal Historic Preservation Tax Incentive program²⁵¹, established in 1976 has encouraged private sector rehabilitation of certified historic structures through a 20% tax credit. Other financial incentives that support preservation include tax deductions for charitable contributions of partial interests in certified historic properties and state-based tax incentives for historic preservation. The restoration of the Cork Factory in Pittsburgh was funded in part by a Historic Façade Easement credit, Pentrust Historic Tax Credits and Federal Historic Tax

²⁵¹ See <http://www.nps.gov/history/tax.htm> for additional information on the

Credits totaling \$11.8 million comprising 15% of the project funding. Tide Point in Baltimore, Piers 3 & 5 in Philadelphia, the Victor Building in Camden and Fairway Market Warehouse in Brooklyn were all funded, in part, through the Federal Historic Preservation Tax Incentive program.

Government funding and incentives alone are not the only financial reason that developers might favor preservation or restoration over demolition. The market for industrial structures has played a major role in tipping financial scales in the favor of preserving industrial structures on the waterfront. Synogy's move from a modern office building in Conshohocken, Pennsylvania to the restored Chester Generating Station on the Delaware waterfront demonstrates a demand for unique historic spaces. The adapted Chester Station is enjoying healthy occupancy, even in the current down economy. Other adapted industrial structures including The Cork Factory in Pittsburgh, Tide Point in Baltimore, the Philadelphia Navy Yard, The Victor in Camden, the Custom House Quay (chq) in Dublin and the Fairway Market in South Brooklyn are enjoying occupancy rates that indicate market demand for space in converted industrial structures.

These restored industrial structures have served to boost the local economy as well. Since Fairway Market opened on Brooklyn's Red Hook waterfront, the project has served as a catalyst for economic development in the community. "Nearby retailers have increased their

business, vacant storefronts along Van Brunt have filled up, and Steve's Authentic Key Lime Pies down the street is reporting more walk in business than in the previous seven years."²⁵²

Models like Granville Island in Vancouver have also persuaded developers and lenders that preservation and reuse of industrial structures can be profitable. The Canadian government redeveloped Granville in the 1970's retaining many of the corrugated tin structures. The redevelopment involved minimal initial investment and has served as a catalyst for private development in Vancouver generates millions in tax revenues for the city every year.

The Power Station at Pier 4 in Baltimore, the Cork Factory in Pittsburgh and Tide Point in Baltimore all represent financially successful examples of the reuse of industrial structures.

The growing list of economically viable projects that tackled the adaptive reuse or preservation of industrial infrastructure has given developers and cities the confidence to pursue and support such projects.

5.3. The Brownfield Factor

The redevelopment of Southside Works, Waterfront in Homestead, The Cork Factory, The presence of hazardous substances, pollutants, and contaminants that were used in industrial processes or discarded on the site complicated redevelopment at Can Company, The Victor, IKEA Red Hook and Tide Point. The design and implementation of environmental remediation technologies required at these sites has evolved rapidly in the last 30 years since

²⁵² Doban, Susan. "Brooklyn Fairway Market at Red Hook receives Masterwork Award for the Municipal Art Society of NY" 10 May 2007.

the U.S. Congress enacted the Resource Conservation and Recovery Act (RCRA) in 1976 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, in 1980.

RCRA's primary goals are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that hazardous wastes are managed in an environmentally sound manner. Superfund created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Critical to the redevelopment process, Superfund established a criteria and responsibility for long-term remedial response actions that permanently and significantly reduce the dangers associated with releases of hazardous substances into the air, ground or groundwater.

With the establishment of these Acts, anyone in the business of selling or developing commercial properties took on additional costs associated with assessing whether sites are contaminated, determining contaminant levels and locations, and developing and implementing a remediation program as required. In the early years of RCRA and Superfund legislation the fledgling environmental remediation industry found it difficult to predict the costs and processes associated with such investigations and cleanup. Without reliable costs and schedule projections for environmental remediation, early brownfield redevelopers could not derive dependable pro forma that would attract lenders.

The ability to predict the cost and time required to complete environmental site remediation makes preserving and adapting industrial properties more feasible. Stewart Abrams, an environmental engineer, asserts that experience with successful remediation projects has made developers more comfortable with tackling projects with contaminated buildings and sites. Abrams relayed a story about recent meeting, “I was with a former client last month where we did a \$4 million chemical oxidation program. He admitted he was quite nervous about doing this in 2004, but given how well it worked out, he would not hesitate to look at highly contaminated sites in the future. Ten to fifteen years ago, many developers were simply spooked by environmental issues and costs. Now, they see these issues in the context of all development costs, plus government has stepped in as a subsidizer of remediation.”²⁵³

Thirty years of experience with environmental remediation have rendered the risks, costs, and timetables associated with redevelopment of environmentally hazardous sites more predictable. Grants for assessment and clean up have favorably influenced the balance sheet and pro forma for the development of brownfield sites.

Yet, contaminated sites continue to present a challenge to preservation plans. The recent designation of the Gowanus Canal in Brooklyn as a Superfund site by the Environmental Protection Agency presents a good example of such a challenge. The designation has sparked concerns about the how long the cleanup will take and created difficulties related to

²⁵³ Interview with Stewart Abrams, 14 March 2010

obtaining financing and insurance for redevelopment projects.²⁵⁴ There are concerns that the Superfund cleanup process will lead to gentrification and a loss of the historic industrial fabric as post-remediation redevelopment drives up real estate prices and forces industry to move to sites that are more economical.²⁵⁵

5.4. The Green Factor

Historic Preservation plays a key role in green initiatives. The reuse of waterfront historic resources, particularly for industrial uses taking advantage of waterborne transportation, provides unmistakably sustainable dividends.²⁵⁶ Many industrial preservation projects have benefited from the focus on sustainability. Maintaining, reusing, or recycling obsolete infrastructure for traditional or new purposes is environmentally sustainable. Beyond the benefit of cleaning up contaminated sites, reusing buildings reduces the consumption of new materials and energy for new construction and prevents building materials from adding to the solid waste stream. Rebuilding on urban sites takes advantage of existing utility infrastructure and transit systems that can serve to reduce air pollution, water pollution preserve greenfields and reduce our carbon footprint.

Redevelopers leveraged the green aspects of industrial preservation at the Cork Factory with Growing Greener II, Community Conservation Partnerships (C2P2), Community

²⁵⁴ Navarro, Mireya. "Gowanus Canal gets Superfund Status" *New York Times*. 3 March 2010, New York Edition: A1.

²⁵⁵ Nyman, Jack. "Answers about the Gowanus Canal" *New York Times* 10 March 2010. Accessed 27 March 2010.

²⁵⁶ Municipal Arts Society of New York. "Regarding Gowanus Rezoning and Related Actions" White Paper. 11 March 2009.

Revitalization Partnership (CRP), and Public Art and Trail Design Grants totaling \$1million. Redevelopment projects on former industrial sites benefit from funding for brownfield redevelopment, watershed and flood protection (through removal of impervious surfaces, improved stormwater management and wetland mitigation projects that often accompany redevelopment) and community revitalization grants whether or not buildings and infrastructure are preserved.

Redevelopers of industrial sites can take advantage of green certifications that can serve to attract tenants and positive media attention. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System developed a 110-point system to benchmark environmentally sustainable design and construction. Since its inception in 1998, LEED has grown to serve as a common standard for gauging sustainable building practices. The redevelopment of industrial waterfront sites potentially contributes ten site-related points toward LEED certification.²⁵⁷ By also preserving buildings on redeveloped sites, projects are eligible for an additional six points towards LEED accreditation.²⁵⁸

The green factor does not always serve the cause of preservation. In the case of the National Cold Storage Warehouses in Brooklyn, the New York State Office of Parks, Recreation and Historic Preservation rationalized the demolition of the warehouses, citing the intent to

²⁵⁷ Comprised of five points for Community Connectivity, one point for brownfield redevelopment and up to 4 points for regional priority.

²⁵⁸ Comprised of up to three points for maintaining existing walls, floor and roof, one point for maintaining interior nonstructural elements, and two points for materials reuse. Additional credits would accrue to both examples based on building and systems design unrelated to the reuse of brownfields or structures.

salvage building materials as green. While salvage is a sustainable practice, the assertion by the commissioner of the New York State Office of Parks, Recreation and Historic Preservation that salvaging materials from the former National Cold Storage Warehouses “is an appropriate way to honor the industrial heritage of the Brooklyn waterfront” is disingenuous. While preservation and salvage are both sustainable practices, salvage does not honor heritage.

5.5. The Perspective Factor

The loss of an astounding amount of industrial infrastructure has made some urban planners, preservationists and citizens look at the remaining industrial fabric in a new light. As piers are demolished the texture of the shoreline changes. As smokestacks are imploded and cranes are sold for scrap, the wayfinding steeples of the industrial era disappear. In some cases, the loss of so much building fabric inspires local preservation campaigns like the effort led by Hillary Regan of Philadelphia²⁵⁹ who was concerned about the demolition of the northern addition to PECO’s Delaware Station. The historic portion of the plant remains, offering the possibility of restoration and reuse. This is especially true as memories of the pollution and noises emanating from such plants along the Delaware fade.

Emotional distance and big picture perspective can serve the cause of preservation. Mill Ruins Park, in Minneapolis, excavated a 19th century mill complex from a layer of 20th century fill is a good example of the benefit of such distance. The effect of unearthing a (not

²⁵⁹ Saffron, Inga. “Last Days for Electric Plant?”

so) ancient treasure turned a former skid row into a prime gathering spot and historic waterfront attraction that catalyzed the rehabilitation of over 80 nearby buildings in the last 25 years.²⁶⁰ In this case, late 19th century buildings, which might have been demolished as derelict intrusions during the early and mid 20th century have been viewed afresh since they were out of view for a half century. The mills at Lowell present another example of preservation served by a century and a half of separation from the contested histories that long-dead ancestors might have told. The relative emotional distance afforded by time made Lowell attractive to public and an attractive target for National Park Service support.

Over 50 years ago, Pittsburgh's waterfront Renaissance started as an effort to sweep the heart of the city clean of industrial structures. More recently, restoration of industrial waterfront plants such as Heinz Lofts and the Cork Factory show an increasing appreciation of the city's industrial architectural legacy. The creation of the Rivers of Steel National Heritage Area shows increasing acceptance of and identification with the area's industrial heritage.

²⁶⁰ Presentation of Minneapolis Riverfront Revitalization and Economic Development at the Third Ward Summit, 23 September 2009.

6. Recommendations: Five Lessons for Philadelphia

Preserving and reusing industrial infrastructure takes advantage of physical assets that supplement the economic, environmental, cultural and sustainable aspects of waterfront redevelopment projects. Preserving industrial infrastructure also contributes to creating a richly layered, consolidated urban fabric. One can see the effects of such preservation efforts in Philadelphia--the Navy Yard is a more vibrant, active and imageable place than Penn's Landing. The main reasons for the success of the Navy Yard as an urban space is the mix of historic and contemporary buildings, a well defined, historic street grid and entry points, and the commercial and institutional occupants that continue to activate both the site and the waterfront in a very fundamental way. Similar elements make Tide Point, Granville Island, and the Wharf at Riverton successful industrial waterfront redevelopment projects. All of these projects have used industrial buildings and infrastructure as primary elements in restored waterfronts that are richly layered, self-sustaining localities. The best of these examples have reused industrial fabric in a way that recognizes the importance of character and diversity to establish identity without resorting to imagineered heritage landscapes. Simply preserving industrial and maritime infrastructure on urban waterfronts does not assure successful redevelopment—the preservation and adaptive reuse of industrial heritage elements is most successful when carried out within the framework of sound urban planning and land development principles. Examples provided in the case studies and analysis point to some best practices for preserving waterfront industrial heritage.

6.1. Attract Attention

Gaining public attention and attracting the interest of investors and policy makers is the first step in establishing the potential of waterfront industrial heritage. Events, articles, books and exhibits serve to not only document the evolution of the working waterfront, but also draw attention to a place that the average citizen only glimpses from elevated highways. These strategies can serve to attract the interest of locals, visitors, developers and legislators. The value of such attention is evident in cities like New York, where the volume of high-quality articles, books and exhibits on the city waterfront has had an impact on the municipal and public mandate to preserve industrial infrastructure from Erie Basin Park to the High Line. Philadelphia harbors an abundance of historic records, images and maps in archives that can serve to tell the broader story of the working waterfront. Beyond recognized archives, interactive websites like PhilaPlace.org facilitate the sharing of personal accounts and photos that are crucial to understanding Philadelphia's history and its industrial legacy as the "workshop of the world." There are many existing forums for the discussion of industrial waterfront preservation from the 'Design on the Delaware' conference hosted by the Philadelphia chapter of the AIA to Urban Land Institute Forums. Convening conferences among groups with an understanding of industry and the waterfront²⁶¹ would serve to focus attention on strategies for reimagining the postindustrial waterfront. A creative and dedicated

²⁶¹ The Philadelphia City Planning Commission, The Delaware River Port Authority, Delaware Valley Regional Planning Commission, Preservation Alliance of Greater Philadelphia, Philadelphia Industrial Development Corporation, Philadelphia Chapter of the AIA, Philadelphia Society for Industrial Archeology, and Riverfront Community Development Corporations are just a partial list of potentially interested groups.

editor could assemble the sources currently dispersed among the city's many public, private and commercial archives, and the knowledge base distributed among local universities, industries, historians, academic and industrial societies, to tell the story of The Philadelphia Waterfront. Kevin Bone's *The New York Waterfront* serves as an excellent model for such a book that offers a unique perspective on waterfront building that serves up the lessons of the past in an engaging way to inform decisions about the future.

Leveraging Philadelphia's active arts and cultural events scene is vital to getting the public and policymakers to the waterfront. Organized hikes, bike rides and boating events like the kayaking program on the Delaware River instituted by the Pennsylvania Environmental Council in the summer of 2009 provide examples of programs that get the public to the waterfront. In 2009, HiddenCity Philadelphia²⁶² hosted an art installation in an empty factory building at the Disston Saw Works on the Delaware River in Northeast Philadelphia²⁶³ among other installations. In April 2010, the New Kensington Community Development Corporation will host a cell phone-based scavenger 'hunt through the work history of Kensington, Fishtown and its waterfront" to draw attention to the neighborhood industrial heritage and encourage visits to the waterfront. (Figure 87) 'Under 95' is an annual

²⁶² The mission of Hidden City Philadelphia is to draw attention to the historical and architectural landmarks that have been forgotten through visual arts installations and performances that have been inspired by the history and architecture of their selected sites to draw attention back to the important people and places forming Philadelphia

²⁶³ See http://www.hiddencityphila.org/events/Disston_Saw_Works for additional information about the installation and Disston

art show held at Front and Mifflin Street that demonstrates a new vision for using overpasses, typically viewed as urban deficits, as a venue for public gatherings . (Figure 88)

The nexus between art, preservation and planning is vital in Philadelphia, where artists have pioneered the use of industrial buildings for gallery and living space, changing the outlook for formerly derelict neighborhoods. The Delaware Riverfront can serve as palette or a gallery for art that will draw attention to the industrial riverfront and help the public to see former industrial infrastructure in new ways. Art presents many possibilities for drawing public attention, while at the same time, transforming the landscape. Some possibilities include: employing large fuel tanks as new palettes for Philadelphia's Mural Arts Program; hosting an invitational garden or arts festival similar to Chaumont in France or Quark Park in Princeton; or using barges--icons of the industrial age--for large scale works of art that exploit the qualities of floating, changing and moving.

Beyond attracting attention to local waterfront assets, documenting success stories of adaptive reuse through publications, programs, and precedent tours provides a better understanding of how industrial assets are preserved and leveraged in other locations. Getting the story out on the successful reuse of the former Chester Station as the Wharf at Riverton, or the conversion of the Bankside Power Station to the Tate Modern could reinforce the potential for adaptive reuse of the Richmond and Delaware Power Stations in Philadelphia.

6.2. Prioritize

In a world of limited resources it is important to target the most valuable and useful structures for preservation and focus on documenting, recognizing and saving the most important structures. Not every factory, warehouse and machine shop can or should be preserved or reused. The planning for the Philadelphia Navy Yard involved making determinations about what buildings to demolish in order to accommodate the most historically valuable and reusable buildings and create circulation and parking that serves tenant's needs. In comparison, the Arsenal Business Center retained more buildings that contribute to access, circulation, parking and image problems brought on by the crowded site. As a result, the site is not commanding the necessary leasing fees to assure upkeep of the valuable historic structures. Preservation triage is important if the site is to function and be self-sustaining for its intended purpose

6.3. Catalyze

Building partnerships, mapping assets and investing in one preservation project to generate additional redevelopment can all serve foster preservation of industrial waterfront infrastructure. Cultural resource professionals must be resourceful and explore opportunities to collaborate with the private sector to advance the cause of preserving and interpreting the industrial waterfront.²⁶⁴ The corporate community in Pittsburgh has proven their interest and willingness to be associated with the National Park Service and local groups to tell the

²⁶⁴ This insight owes a debt to Constance Budurow who advocated this approach in her assessment of NHA's

story of big steel through the Rivers of Steel NHA. Private/public partnerships are critical to landmark industrial infrastructure reuse projects like the New York Highline and Bethlehem's Steel Stacks. Similar partnerships would be crucial to preserving, interpreting and telling the story of Philadelphia's Workshop of the World.²⁶⁵ A move to designate process for a Workshop of the World Heritage Area would call on a coalition of groups to combine efforts to define a vision that encompasses industrial culture, maritime history, ecological restoration, and the business interests along a working waterfront. Similar collaboration between federal, state and local governments, public planning agencies, corporations, arts organizations, preservationists, educational institutions and the public would be required to foster the adaptation of the Delaware Station as a world class Museum.

Mapping the industrial heritage of the waterfront can underscore the nexus between preservation and other goals such as environmental remediation, shoreline restoration, recreational access and potential for redevelopment. The process of mapping applies to individual buildings as well as districts and can serve as a way to store information, prioritize preservation and historic designation efforts, and catalyze redevelopment by clearly showing how these goals can align with improvements and funding for other projects in the same geographical area. When industrial heritage map layers are integrated with mapping of other

²⁶⁵ Barrett, 15.

historical, cultural and natural features, they can inform permitting decisions and create a record of heritage, even if features cannot be preserved.²⁶⁶

Public investment in environmental cleanup and restoration of landmark buildings like the Chester Station has catalyzed the construction of a waterfront stadium, mixed-use development, a major infrastructure project that realigns highway ramps for better access, and preserved active industrial uses near the site. The public sector has a critical role to play in priming the pump, to provide funding for good urban development. “Cities need to create a critical mass and sense of place before they can get the private sector to move in.”²⁶⁷

Clearly, Philadelphia could catalyze similar private investment through public investment in one of its power plants to create a landmark destination that speaks to the city’s reputation as a Workshop of the World.

6.4. Do the Math

It is vital that professionals in the fields of planning, sustainability and preservation get the word out on the *real* cost of adaptive reuse and preservation of buildings compared to the cost of new construction. The accepted paradigm that restoration is more expensive than new construction requires evaluation of the economic, environmental and permitting costs involved in each scenario. When expenditures for demolition and disposal of existing buildings and the economic and environmental costs of manufacturing and transporting new

²⁶⁶ LUDA, 11.

²⁶⁷ Gail Farris, former CEO and chair of Forest City’s Science and Technology Group in Cambridge, Mass. as quoted in “Where are Cities Headed?” *Urban Land* 69. (March/April 2010) 59.

building materials are factored into the equation, the cost of restoration can be more fairly compared to new construction. As evidenced in the example of construction cost tracking at the Philadelphia Navy Yard, this is rarely the case. Compiling and disseminating information operating costs and occupancy rates of restored industrial buildings to development professionals through recognized channels such as the Urban Land Institute would encourage preservation of industrial infrastructure.

6.5. Keep it real

When the novelty of site furnishings that mimic mooring bollards (Figure 89), concrete pavers that mimic cobblestones and brick cylinders that mimic long demolished smokestacks (Figure 27) wear off, they quickly become outmoded and replaceable. Evoking the industrial heritage of a site by naming garages after furnaces or streets for industrial processes is afterthought. The new 'smokestacks' at Homestead Works that evoke the skyline of active industry is place making verging on Imagineering. There is no validity to disguising new ash cans or cell towers as bollards or smoke stacks. The new can exist alongside the old serving as a reminder of the passage of time.

The retention of active waterfront industry is a more critical issue than one of authenticity in the redevelopment of redundant industrial and port structures. Large areas of some waterfronts remain fundamentally industrial and offer a niche in which modern manufacturing can grow and new technologies can be developed. Rezoning waterfront industrial sites for mixed-use redevelopment within active industrial areas potentially

diminishes local employment opportunities, negates industrial water borne transportation-oriented development²⁶⁸ and fundamentally changes the historic character of these areas. The creation of new waterfront districts and permitting non-conforming uses in active industrial corridors can adversely affect operations. There are strategies that serve to preserve viable industry. One strategy is to restrict floor area ratios for residential, hotels and big box retailers that are incompatible with industry. Another is to employ land use buffering that surrounds industry with compatible uses and protects against individual parcel rezoning. The conversion of buildings or lots from manufacturing to residential and mixed use in active industrial zones should only be considered if adjacent buildings on both sides are already non-industrial. Lastly, creating TIF districts within industrial corridors can encourage manufacturers relocate and expand through programs such as building improvements grants and seawall restoration funds.

Some would argue that a community's physical form, rather than land uses, is its most intrinsic and enduring characteristic. Place making and all that makes it work--historic preservation, urban design, transportation, asset-based community development, arts & cultural development, commercial district revitalization, tourism and destination development²⁶⁹-- require a sound economic base for support. Industry remains

²⁶⁸ Transporting raw materials, fuels and finished industrial products on waterways helps to reduce the carbon footprint by removing truck trips from our streets and allows us to capitalize on existing intermodal freight transportation infrastructure according to the New York Municipal Arts Society statement 'Regarding the Gowanus Rezoning and Related Actions'

²⁶⁹ Urban places and spaces <http://urbanplacesandspaces.blogspot.com/2008/04/speaking-of-preservation> advocates for these principals

Philadelphia's third-largest economic sector, after education and health care, and is a key factor in the city's economic resiliency. The city earned its reputation as "The Workshop of the World" and retained this brand for the best part of the century after the Civil War because of the rich industrial inventory it built. Today, abandoned and active industrial sites are a part of Philadelphia's industrial legacy. How we use these sites to honor historic uses, forge a new economy and build our city will be a testament to our creativity, resourcefulness, and ability to change,²⁷⁰ as well as our ability to preserve what is most valuable. The source of our economic and cultural power in the past holds one key to our source of hope for the future. (Figure 90)

“Industry-the source of every evil and every good becomes the true protagonist in the transformation of the city.”²⁷¹

²⁷⁰ Program notes for Infill Philadelphia: Industrial Sites, an initiative of the Philadelphia Chapter of the AIA Community Design Collaborative and the Philadelphia Industrial Development Corporation.

²⁷¹ Rossi, Aldo (trans. Diane Ghirardo). *The Architecture of the City*, Cambridge, Mass.: MIT Press, 1982.

FIGURES



Figure 1 Port Richmond Pier, Philadelphia. Photo: Philadelphia Department Records (c.1928)



Figure 2 Dipping hand in Cuyahoga River. Photo: M. Green, *Cleveland Plain Dealer* (c.1960)

Urban Waterfront Redevelopment								
International	Country	Visit	Site	Acres	Authority/Contact	Former Use	Planning	II Highway
Barcelona,	Spain	N	Porta Vell/Olympic Vil.	130	City of Barcelona	Port	1982	BigDig
Belfast,	Ireland	Y	Titanic Quarter	350	Laganside Corp	Industrial	1989	N
Bilbao,	Spain	N	Abandoibarra	85	Bilbao Ria 2000	Industrial/Port	1987	N
Bratislava	Slovakia	N	Eurovea/ Priboonova	60	Atelier AVC	Port	U	U
Cardiff,	Wales	M	Cardiff Bay	200	Cardiff Bay Redev. Corp	Port	1987	U
Denmark	Denmark	N	Aalborg*	40	Aalborg	Port	1997	U
Dublin,	Ireland	Y	Dublin Docklands	1300	DDDA	Port	1986	N
London	England	Y	Docklands	>1000	LDDC	Port	1982	U
Liverpool	England	N	Docks	950	Merseyside DC	Maritime/Mercantile	1981	U
Genoa	Italy	N	Porto Antico	450	Renzo Piano	Port	1992	N
Glasgow,	Scotland	Y	Clyde Waterfront	>1000	Clyde Waterfront	Industrial/Port	1999	Y
Hamburg,	Germany	N	Hafen City	85	Hafen City	Port	1990	N
Havana	Cuba	N	Port of Havana	>1000	Cuban CEU	Port	2007	N
Manchester,	England	N	Salford Quays	85	Salford City Council	Port	1985	N
Oslo	Norway	N	Aker Brygge Stranden1	64	Aker Eiendom AS	shipyard	1983	N
Shanghai,	China	N	Huishan-Shanghai WF	U	EE&K	Industrial	2003	Y
Toronto,	Canada	N	Toronto Harbour	100	West *	Industrial/Rail	2000	Y
Vancouver,	Canada	N	Granville Island	40	City of Vancouver	Industrial	1979	N
Malmö	Sweden	N	Bo01	60	City of Malmö	Industrial	1998	N
US	State	Visit	Site	Acres	Authority/Contact	Former Use	Planning	II Highway
Baltimore	MD	Y	Inner Harbor	240	Mark Milspatch	Port/Industrial	1964	N
Baltimore	MD	Y	Fell's Point	U	Steve Ziger,	Shipbuilding/Port	1964	N
Baltimore	MD	Y	Clipper Mill	17.5	SBER	Industrial	U	N
Baltimore	MD	Y	Locust Point.	U	SBER	Industrial/Port	U	N
Pittsburgh,	PA	Y	Waterfront Homestead	256	Continental Real Estate	Steel Mill	1990	N
Philadelphia	PA	Y	Schuylkill River Park	U	Schuylkill River DC	Industrial	2003	Y
Philadelphia	PA	Y	Penns Landing	15	DRWC	Port/Industrial	1960	Y
Philadelphia	PA	Y	Navy Yard	1200	PIDC	Military Industrial	2000	Y
Philadelphia	PA	Y	Arsenal Business Center	U	Hankin Group	Military Industrial	1990	Y
Bethlehem,	PA	Y	Steel Stacks	U	ArtsQuest	Steel Mill	U	N
Boston,	MA	N	Boston Central WF	100	City of Boston	BRA/ WDC	U	Big Dig
Boston,	MA	N	Piers Park, E. Boston	U	Massport	Port/Industrial	U	Big Dig
Boston	MA	N	S. Bost. Marine Park	U	Harborwalk	Unknown	U	Big Dig
Cambridge	MA	N	Lechmere Canal Park	7	Cambridge	Transport	U	N
Camden	NJ	Y	Central Riverfront	U	Cooper's Ferry DC	Port/Industrial	1987	N
Chester	PA	Y	Wharf at Rivertown	90	City of Chester	Industrial	U	N
Miami	FL	N	Bayside Marketplace	20	Rouse Corp.	Port/Industrial	U	Y
Monterey	CA	Y	Cannery Row	U	City of Monterey	Industrial	U	N
Red Hook	NY	Y	Erie Basin Park	6	Lee Weintraub	Industrial	2006	N
Brooklyn	NY	Y	Brooklyn Bridge Park	90	Brooklyn Bridge Park Con.	Industrial/ Port	2002	Y
New York	NY	N	Battery Park City	92	Cooper-Eckstut	Port/Landfill	1979	N
New York	NY	N	South Street Seaport	23	Rouse Corp.	Port	1960	Y
Philadelphia	PA	Y	Penns Landing	39	DRWC	Port Industrial	1963	Y
Pittsburgh	PA	Y	Point State Park	36	Pitt URA	Industrial	1947	Y
Pittsburgh	PA	Y	Southside Works	123	Soffer Org. & R+URA	Steel Mill	1993	N
Roebing	NJ	Y	Roebing Iron works	200	Burlington Co, EDA	Iron Works	U	N
West Warwick,	RI	N	Royal Mills at RiverPoint	U	SBER	Industrial	U	N
San Francisco	CA	N	Pier 39	4.5	City of San Francisco	Port	1978	N
San Francisco	CA	N	Various/ Port of SF	U	SF Port Authority	Port	U	N
Seattle	WA	Y	Harborfront	U	City of Seattle	Port./ Industrial	U	Y
Seattle	WA	Y	Gas Works Park	20.5	Richard Haag	Power Production	1971	N
Tacoma,	WA	N	Foss Waterfront	U	Su Dowie	Industrial Port	U	N

Figure 3 Matrix of Industrial Waterfront Redevelopment

This matrix was generated to compile information about potential case study sites for this thesis. Rows in bold italic text were chosen as case studies. The size of the redevelopment areas and dates that planning started are estimated based on most frequent attributions. 'U' indicates that the information is unknown. 'Big Dig' indicates that a highway formerly stood between city and waterfront was rerouted or buried.



Figure 4 Gas Works Park, Seattle/. Photo: R. Haag (2008)



Figure 5 Landschaftspark Duisburg Nord. Photo: Benutzer Ra'ike (2009)



Figure 6 Landschaftspark Duisburg Nord. Photo: J.E.B. Elliot (c.1997)



Figure 7 The New York High Line. Photo: J. Spector (2009)

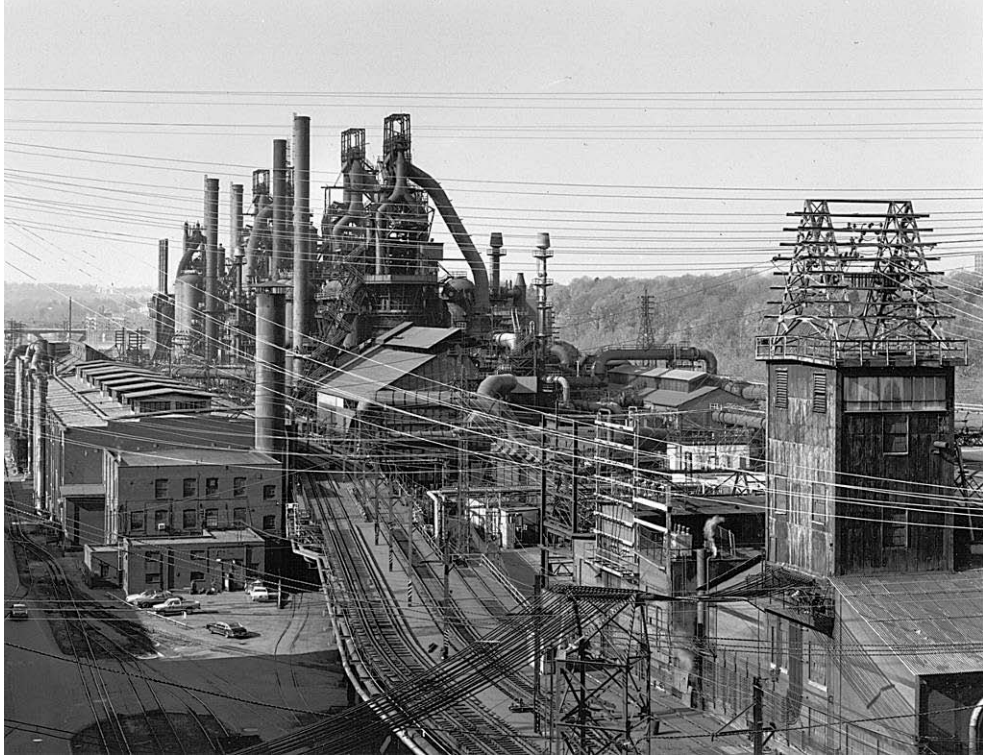


Figure 8 Blast Furnace West of No.2-200, Bethlehem. Photo: J.E.B. Elliot (c.1992)



Figure 9 Blast Furnace, Bethlehem, Pennsylvania. Photo: J.E.B. Elliot (c.1992)



Figure 10 Mill Ruins Park, Minneapolis. Photo: Bobak Ha'Eri (2007)



Figure 11 Granville Island. Photo: Vancouver Archives (1922)



Figure 12. Granville Island Photo: F. Zhatt (2005)



Figure 13 East River Waterfront Pier15. Rendering for Piers Park press release

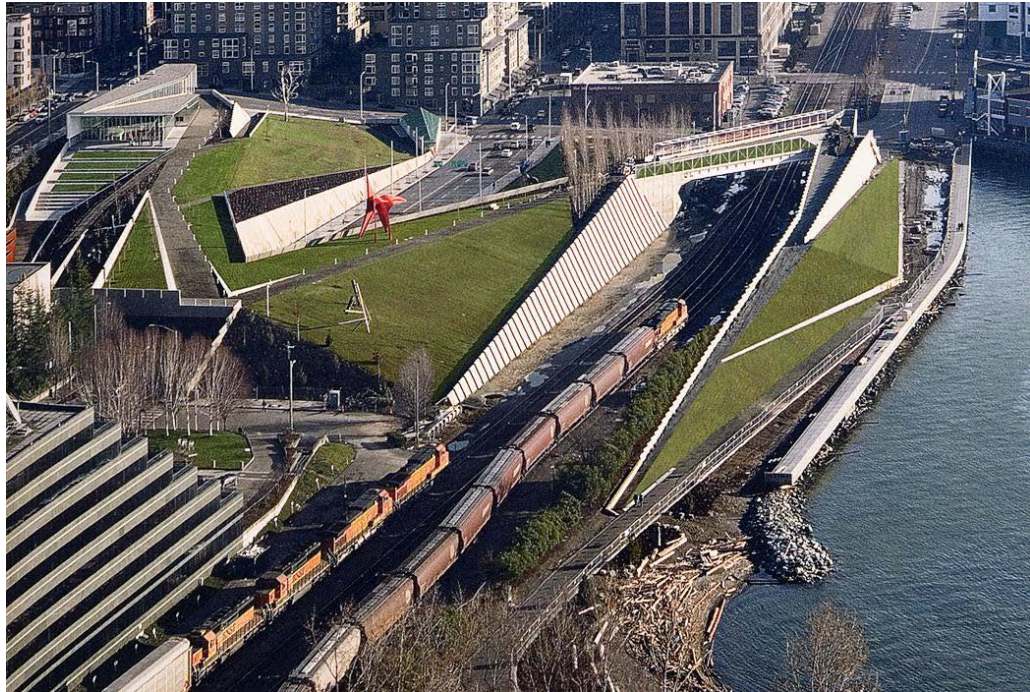


Figure 14 Olympic Sculpture Park, Seattle Photo: B. Benschneider *Topos* (2007)



Figure 15 Pedestrian Connection to Elliot Bay, Seattle. Photo: J. Spector (2010)



Figure 16 Railroad and Route 99 at pedestrian walkway, Seattle. Photo: J. Spector (2010)

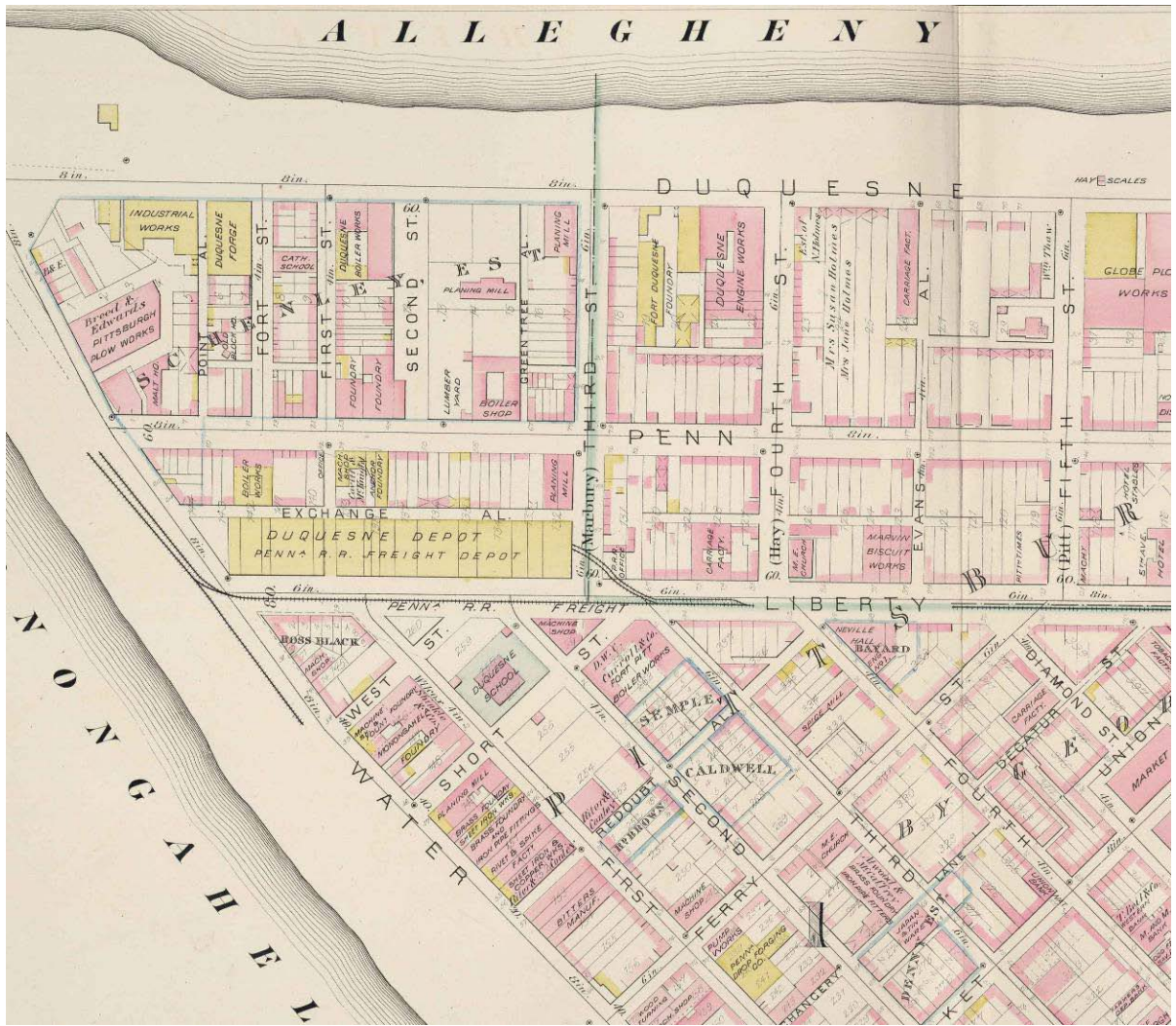


Figure 17 Portion of 1882 Hopkins Insurance Atlas of Pittsburgh

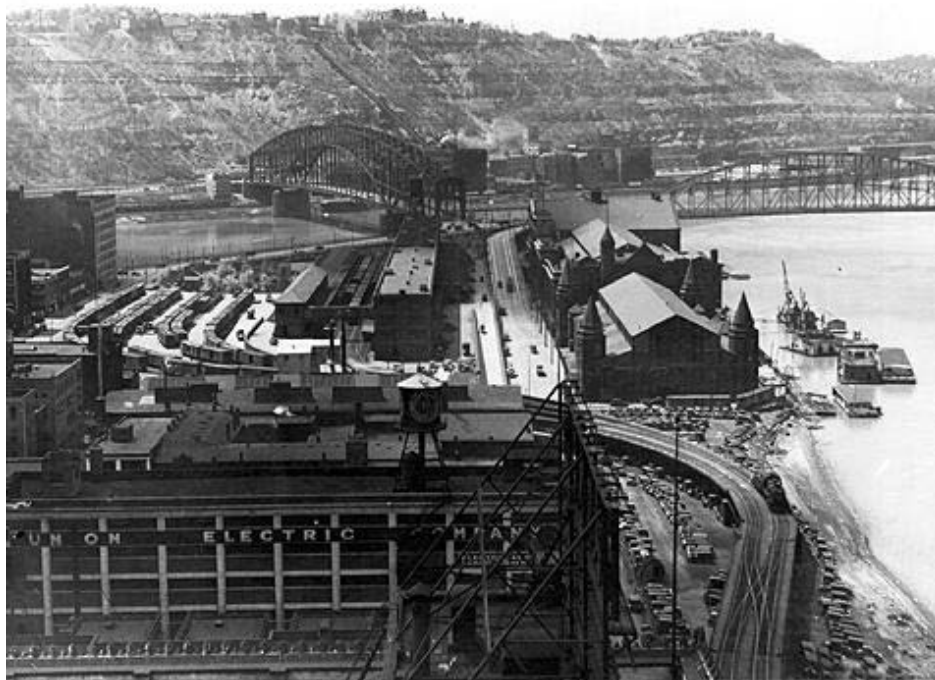


Figure 18 Pittsburgh's Point. Photo: Frank E. Bingaman (1919)



Figure 19 Pittsburgh's Point. Photo: Paul Slantiss (1953)



Figure 20 Pittsburgh's Point. Photo: Corbis Bettmann (1975)



Figure 21 Concrete arch highway overpass at Point State Park. Photo: J. Spector (2010)



Figure 22 Gateway Center, Pittsburgh. Photo: J. Spector (2010)



Figure 23 Clinton Furnace machinery at Station Square Plaza. Photo: J. Spector (2010)



Figure 24 Carrie Furnaces, Monongahela Valley, Pennsylvania. Photo: J. Spector (2010)



Figure 25 The Cork Factory, Pittsburgh. Photo: J. Spector (2010)



Figure 26 Gantry crane at Homestead Works. Photo: J. Spector (2010)



Figure 27 New smokestacks at Homestead Works. Photo: J. Spector (2010)



Figure 28 Rivers of Steel Interpretive Signage, Southside Works. Photo: J. Spector (2010)



Figure 29 Furnace parking structure sign at Southside Works. Photo: J. Spector (2010)



Figure 30 Portion of 1906 Bromley atlas of Baltimore, Maryland



Figure 31 Baltimore & Gay Streets after 1904 fire. Photo source: City of Baltimore Master Plan

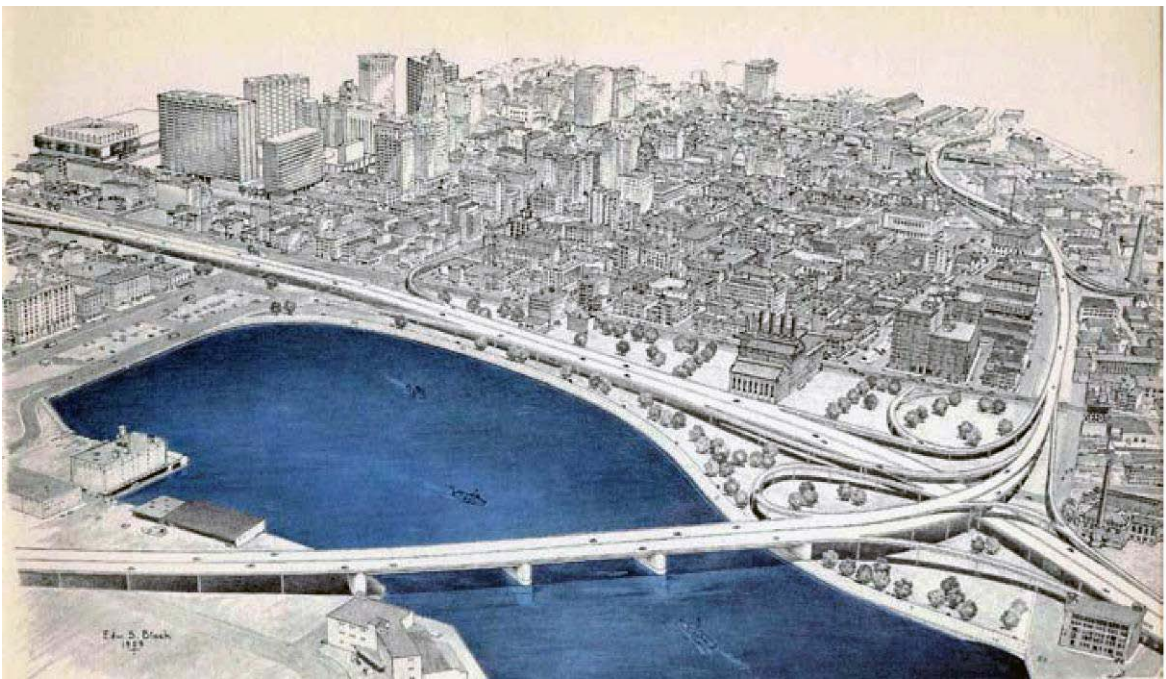


Figure 32 Inner Harbor with expressway alignment proposed 1959. Baltimore Master Plan

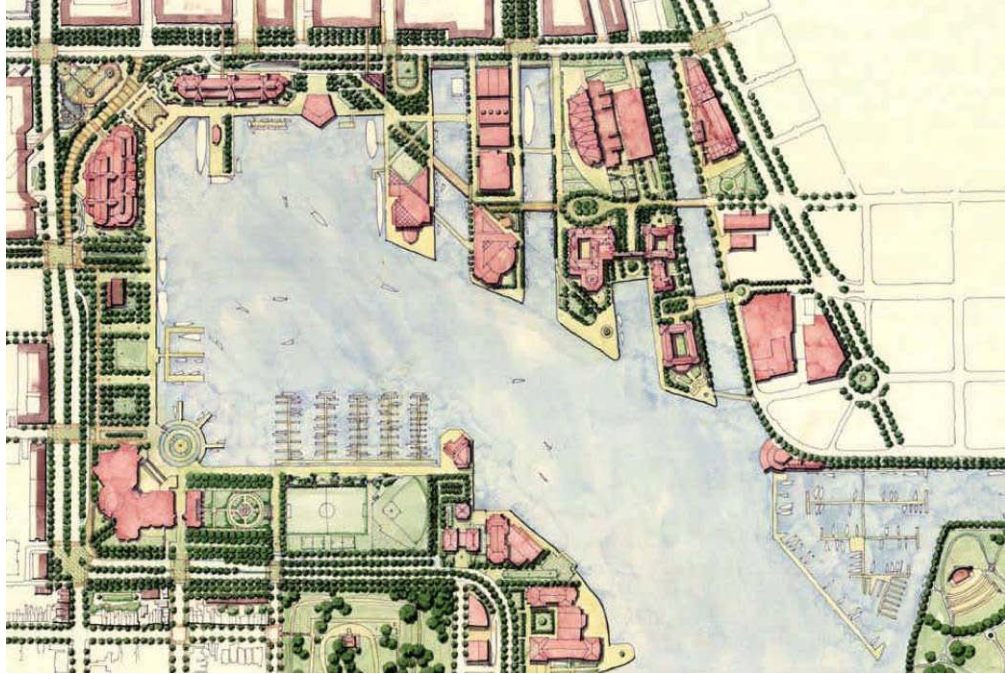


Figure 33 Inner Harbor Master Plan, 2003 Cooper Robertson



Figure 34 Restored Pier 4 Power Plant. Photo: J. Spector (2010)



Figure 35 Inner Harbor esplanade. Photo: J. Spector (2010)



Figure 36 Henderson's Wharf (1893) Inn, Fells Point Baltimore. Photo: J. Spector (2010)



Figure 37 The Can Company, Baltimore. Photo: J. Spector (2010)



Figure 38 The Can Company, Baltimore. Photo: J. Spector (2010)



Figure 39 Tide Point, Baltimore. Photo: J. Spector (2010)



Figure 40 Tide Point Baltimore. Photo: J. Spector (2010)



Figure 41 The Baltimore Immigration Memorial. Photo: J. Spector (2010)



Figure 42 Baltimore Immigration Memorial with tank farm. Photo: J. Spector (2010)



Figure 43 Baltimore Museum of Industry. Photo: J. Spector (2010)



Figure 44 Portion of 1886 Philadelphia Camden Atlas. Rand McNally and Company.



Figure 45 Delaware Avenue widening. Photo: Philadelphia Department of Records (1899)



Figure 46 RCA and Campbell's, Camden. Photo: Camden County Historical Society (1930)

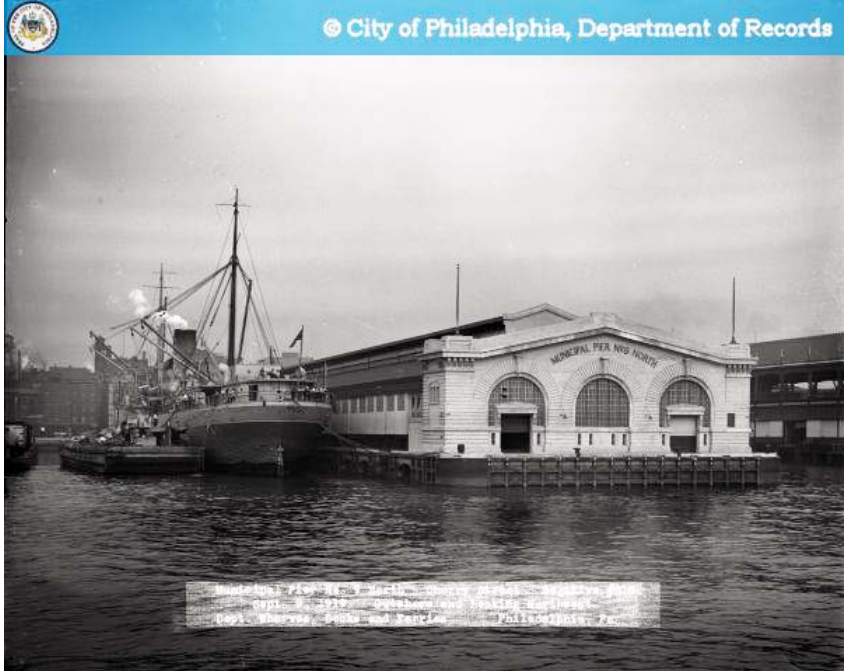


Figure 47 Pier 9 at Cherry Street. Photo: Philadelphia Department of Records (1919)



Figure 48 Chester Station electric plant. Chester, Pennsylvania (c. 1930)

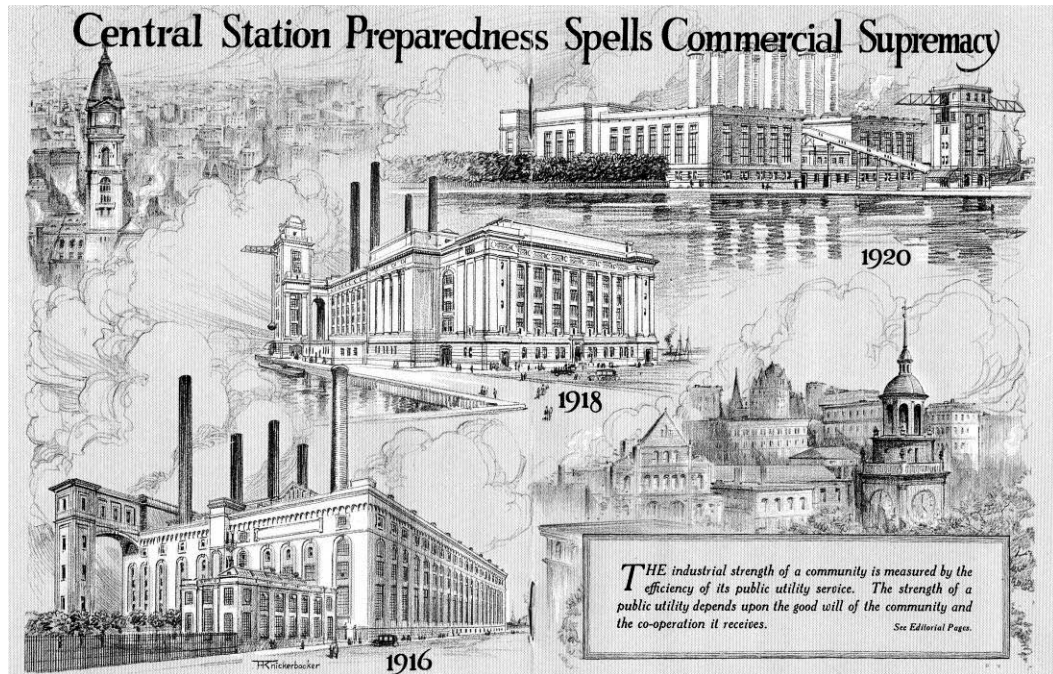


Figure 49 Early Philadelphia Electric Company Illustration. Collection of J.E.B Elliot.

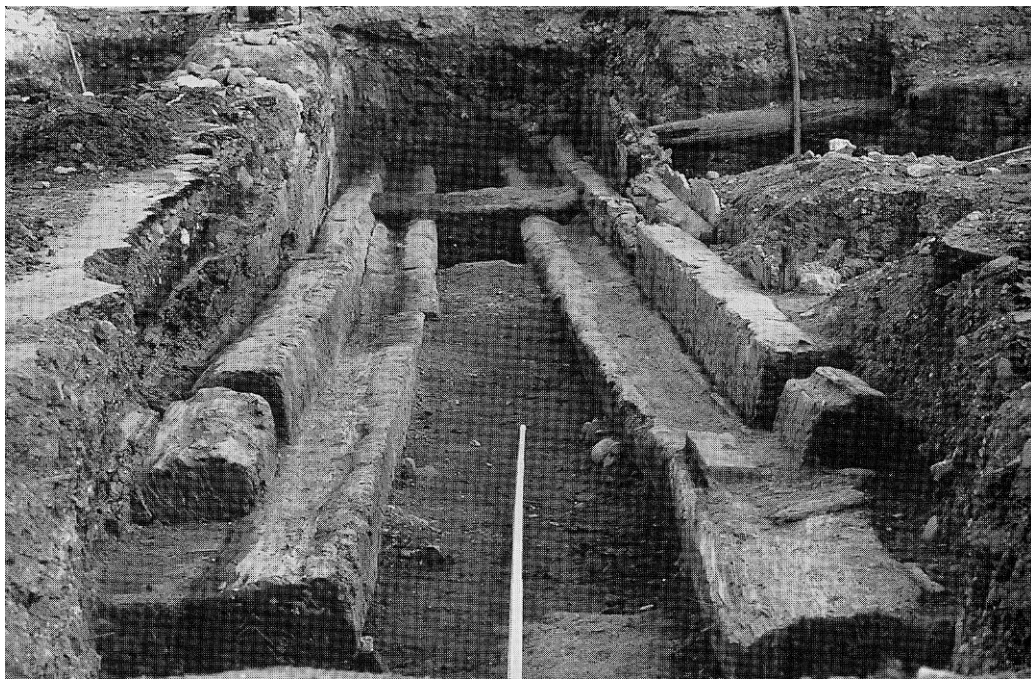


Figure 50 Late 18th century slipway, Philadelphia Photo: R. Yamin (1988)

Late 18th century slipway unearthed in 1987-88 approximately 9' below existing grade of surface parking lot between Delaware Avenue and Water Street bounded by Callowhill and Vine Streets. Photo from *Digging in the City of Brotherly Love* by Rebecca Yamin.



Figure 51 Former RCA Nipper Building, Camden, New Jersey. Photo: J. Spector (2009)



Figure 52 Pier 3 (1923) adapted as condominiums, Philadelphia. Photo: J Spector (2010)



Figure 53 Richmond Power Generating Station. Photo, J.E.B. Elliot (c.2000)



Figure 54 Frankford Arsenal. HABS aerial photo by J.E.B. Elliot (c. 2000)



Figure 55 Philadelphia Navy Yard. Photo, Philadelphia Industrial Development Corp. (c.2008)



Figure 56 Urban Outfitters offices at Philadelphia Navy Yard. Photo: J. Spector (2010)

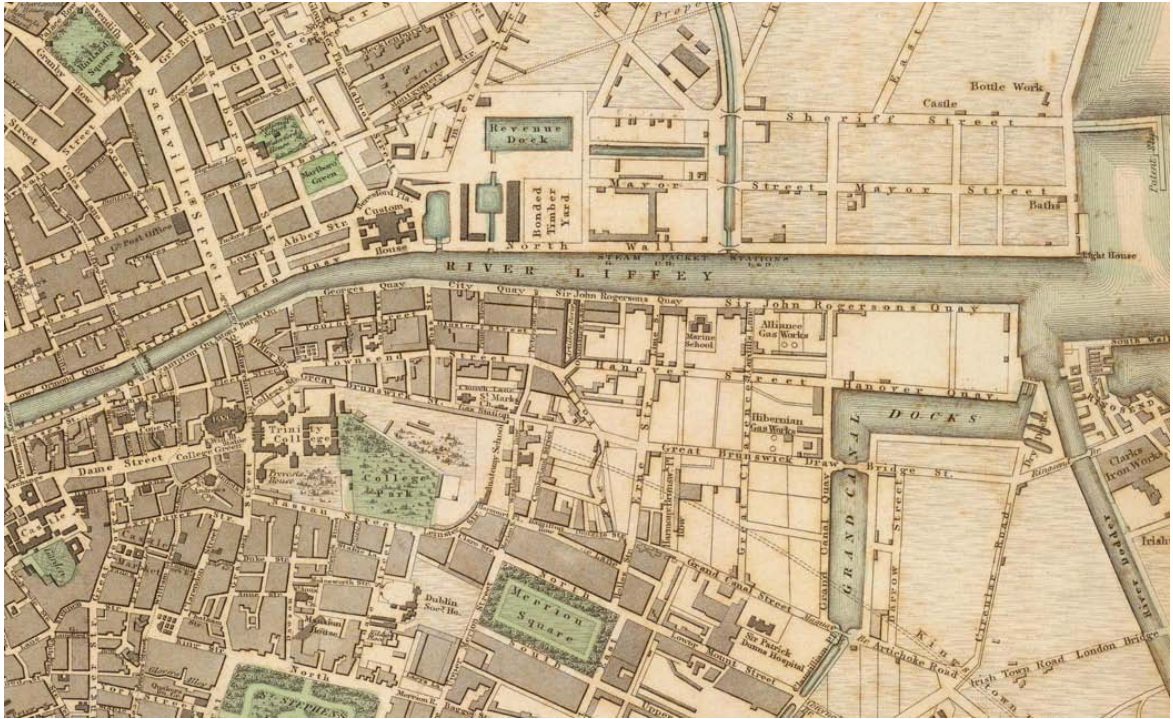


Figure 57 Portion of 1836 Dublin Map. Society for the Diffusion of Useful Knowledge

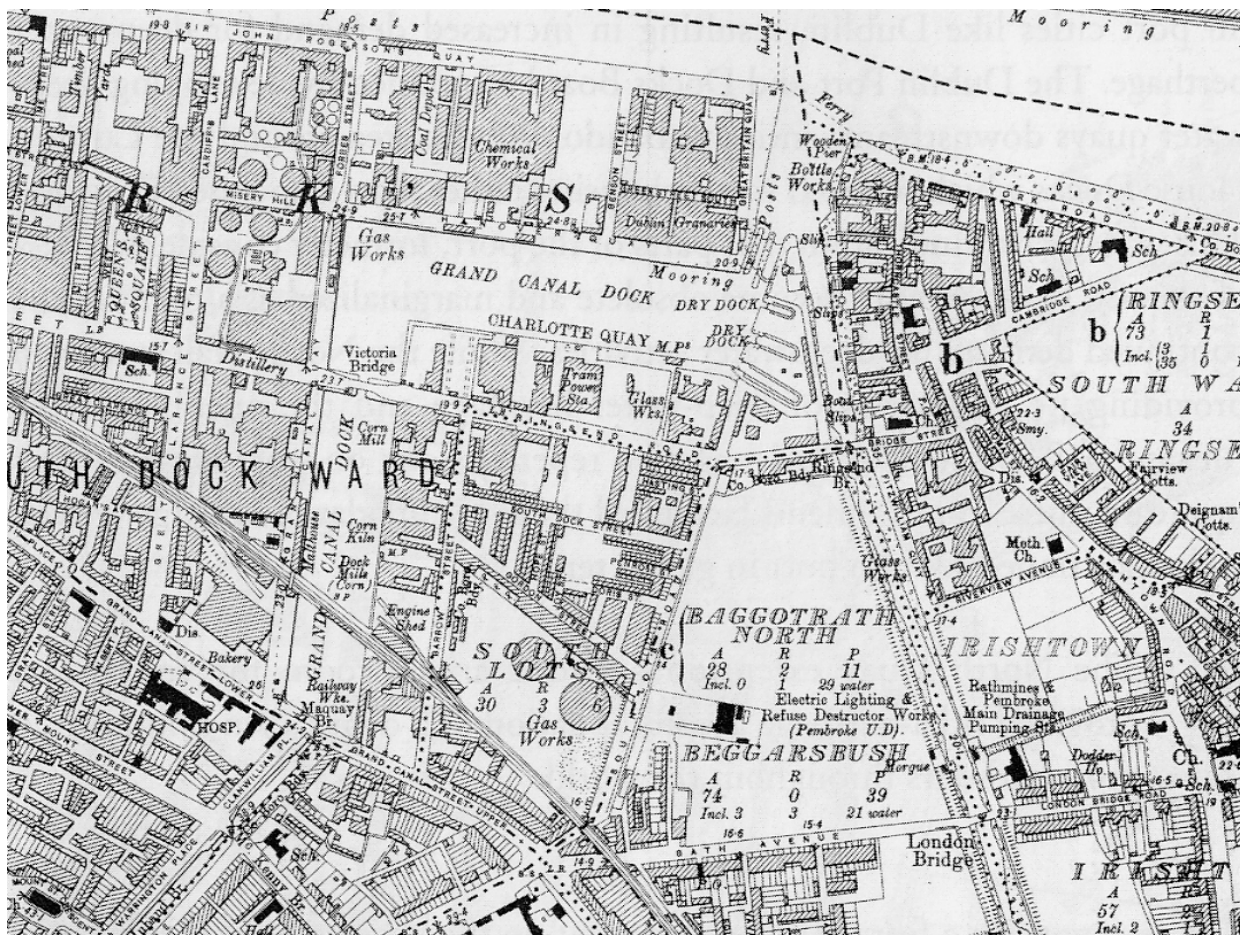


Figure 58 Industrial Uses in the Docklands, 1911 Ordnance Survey 1:10, 560. Sheet 18.



Figure 59 Clayton Gasometer. Photo, Dublin Docklands Reinvented by Niamh Moore.

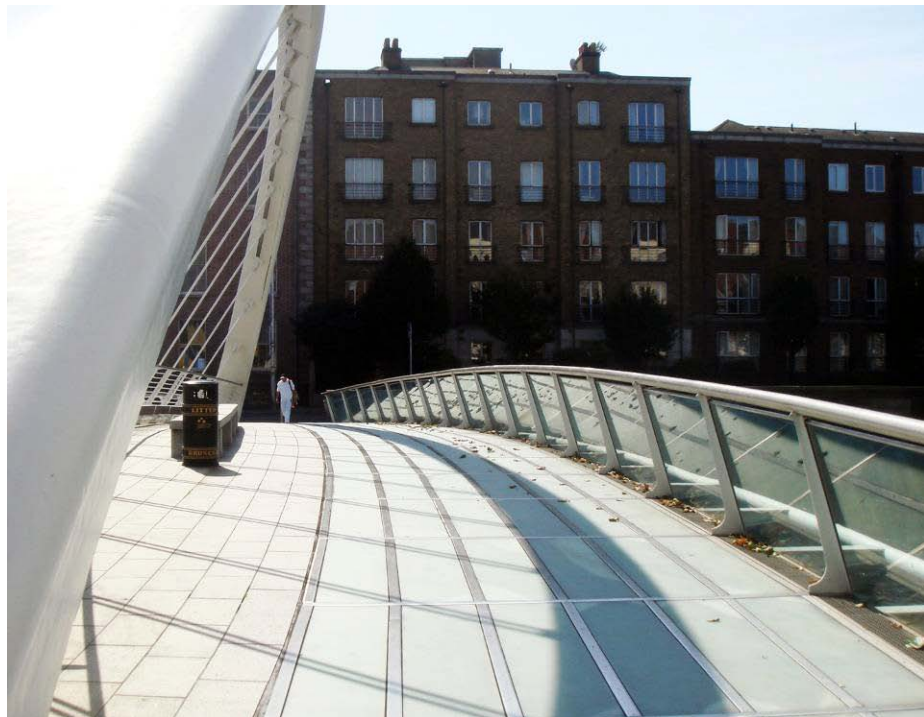


Figure 60 Rails on the James Joyce Bridge, Dublin. Photo: J. Spector (2009)



Figure 61 Rails and warehouse retained in a campshire, Dublin. Photo: J. Spector (2009)

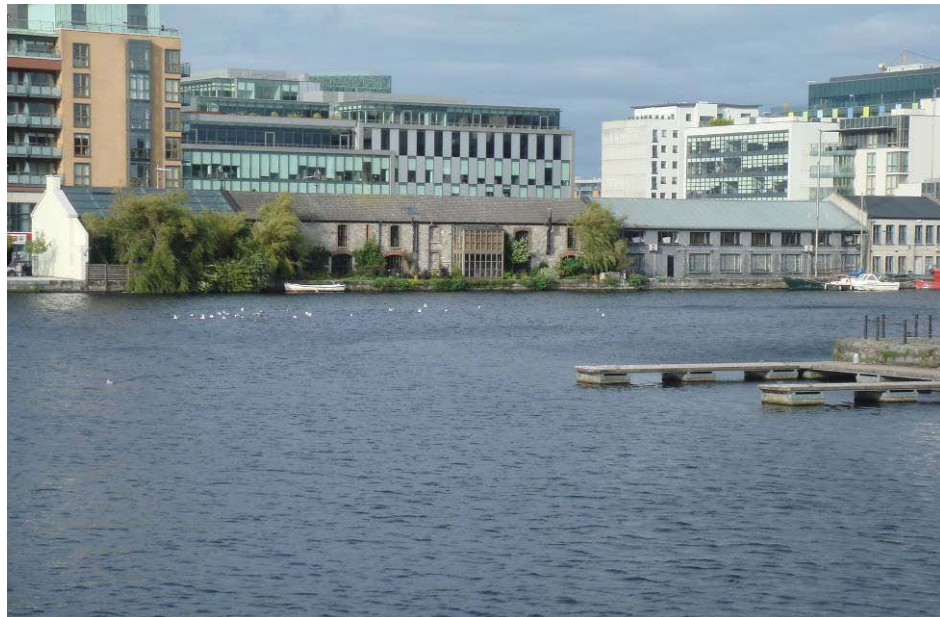


Figure 62 Stone warehouses, Grand Canal Dock, Dublin. Photo: J. Spector (2009)



Figure 63 Warehouses retained adjacent to O2 Center, Dublin. Photo: J. Spector (2009)

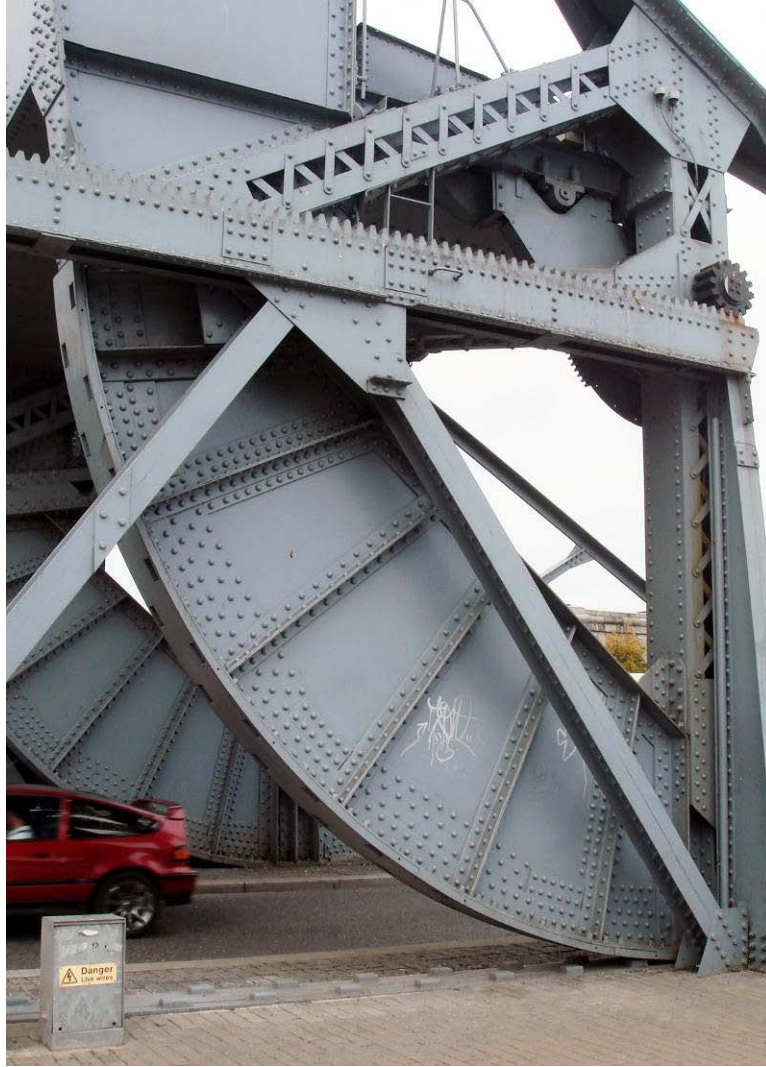


Figure 64 Close-up of Scherzer Bridge structure, Dublin. Photo: J. Spector (2009)



Figure 65 Stack A restoration, Dublin. Photo: DDDA 2008 Master Plan (c. 2008)



Figure 66 Alliance Building in gasometer framework, Dublin. Photo: Charles Howarth. (2007)

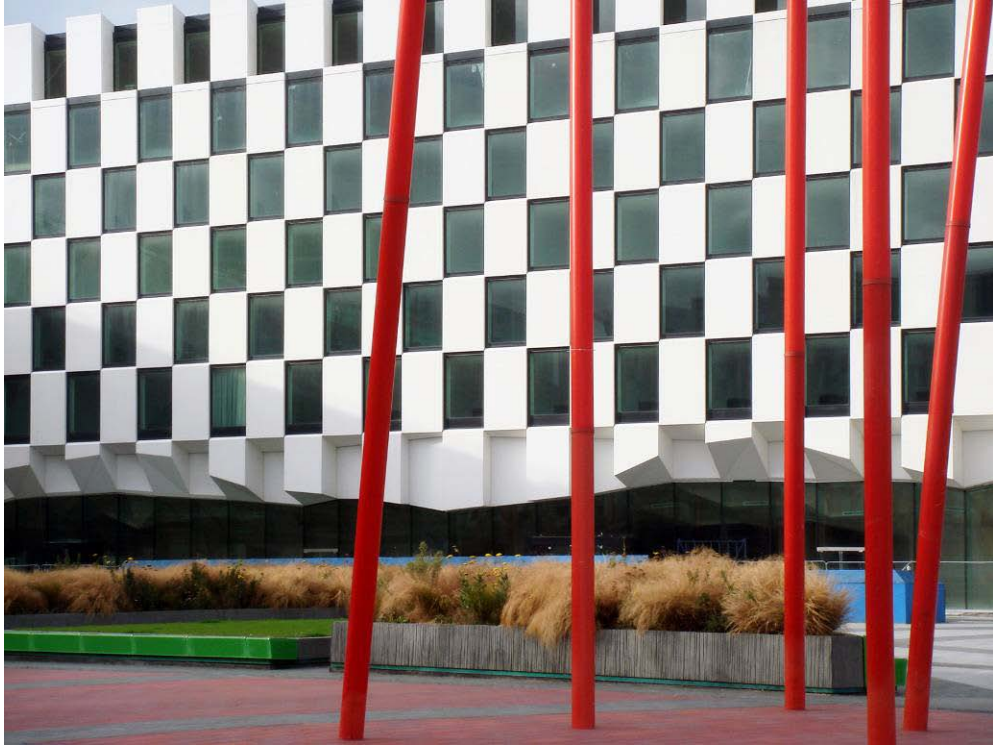


Figure 67 Public space and building at Grand Canal Docks, Dublin. Photo: J. Spector (2009)



Figure 68 Industrial buildings Grand Canal Docks, Dublin. Photo: J. Spector (2009)

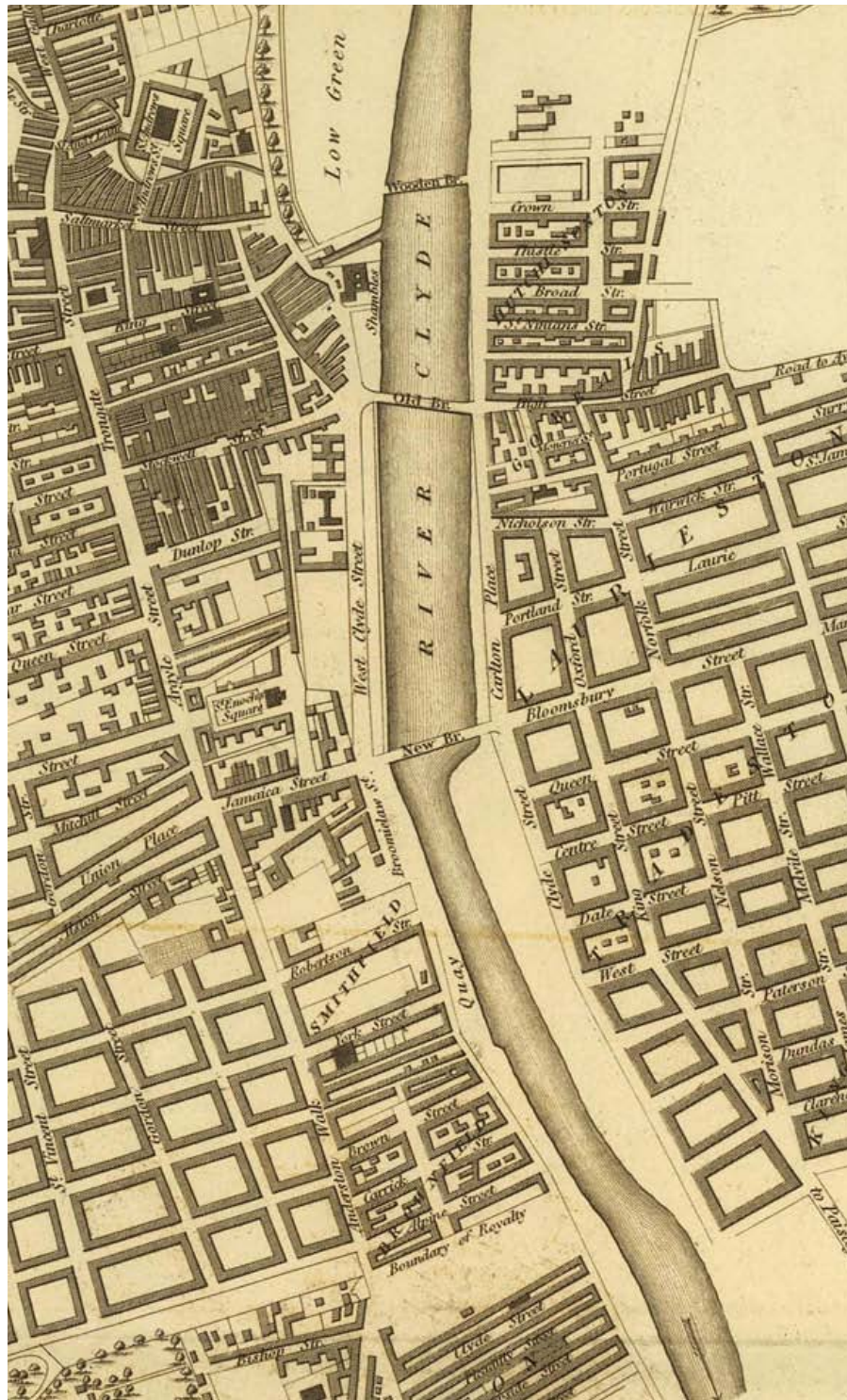


Figure 69 Portion of 1832 map of Glasgow, Edinburgh: by John Thompson & Co.



Figure 70 Quay from the Granaries. Photo: River Clyde Heritage (c. 1960)



Figure 71 Railway infrastructure with shops, Glasgow. Photo: J. Spector (2009).



Figure 72 Glasgow Harbor, Queen's and Princes Docks. Photo: Clyde Heritage (c.1960)



Figure 73 Restored Pump house at Yorkhill Quay, Glasgow. Photo: D. Bilabas (2006)



Figure 74 Clyde riverfront c. 1889. Etching: The Glasgow Story as shown in Bilbas



Figure 75 Riverfront warehouse with additions, Glasgow. Photo: J. Spector (2009)



Figure 76 Nando's Restaurant in big box redevelopment, Glasgow Photo: J. Spector (2009).



Figure 77 River Clyde esplanade with reused maritime hardware. Photo: J. Spector (2009)

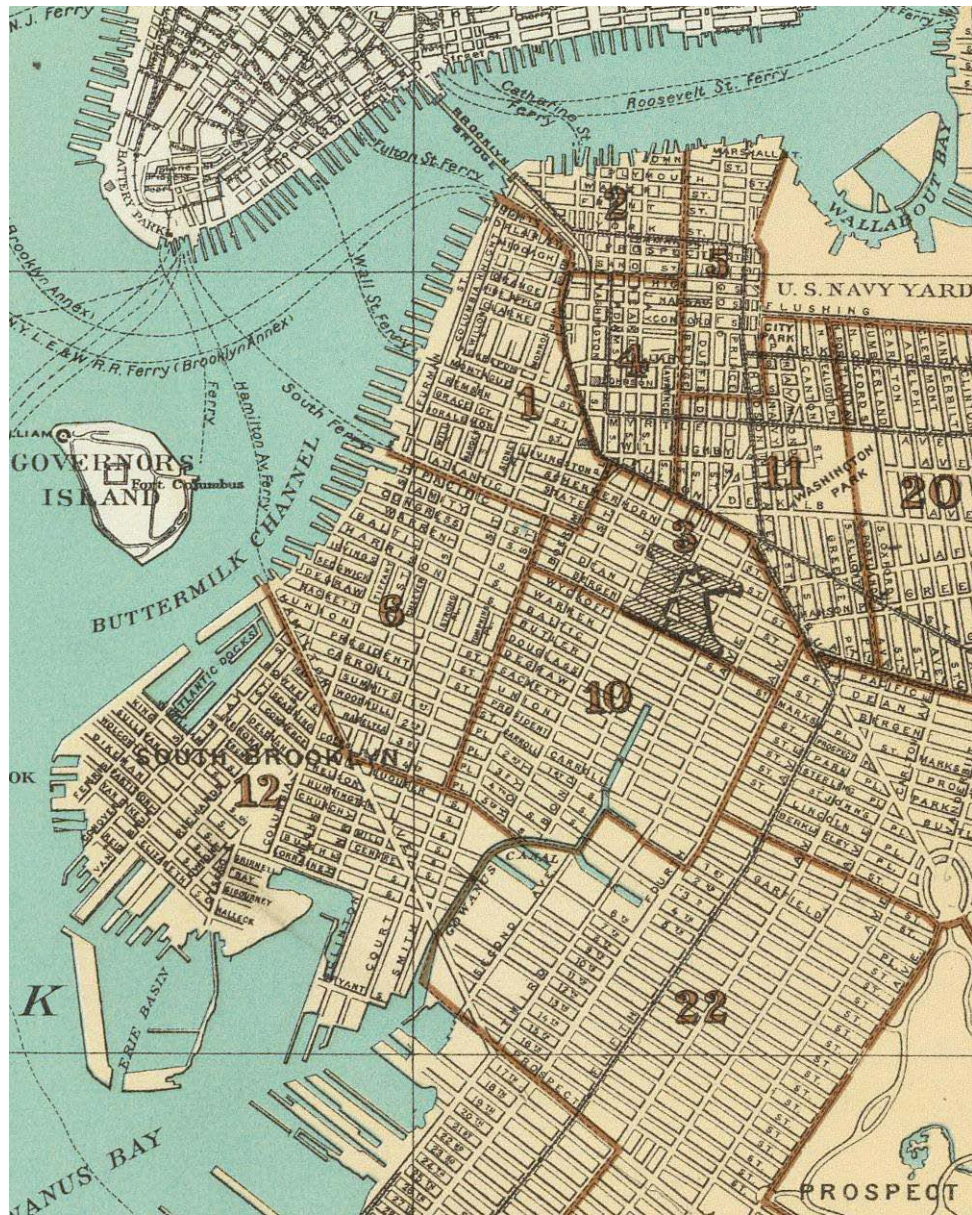


Figure 78 Portion of 1895 map of Brooklyn, New York by J. R. Bien



Figure 79 Fairway Market, Brooklyn. Photo: J. Spector (2009)



Figure 80 National Warehouses, built 1875 – 1915, Brooklyn, New York.



Figure 81 Gantry cranes at Erie Basin Park. Photo: J. Spector (2010)



Figure 82 Mooring bollards, Erie Basin Park, NY. Photo: J. Spector (2010)



Figure 83 Shipyard stabilizing blocks, Erie Basin Park, New York. Photo: J. Spector (2010)



Figure 84 Unrestored pier, Erie Basin Park, New York. Photo: J. Spector (2010)



Figure 85 Granite inset at former graving dock, IKEA, Red Hook. Photo: J. Spector (2010).

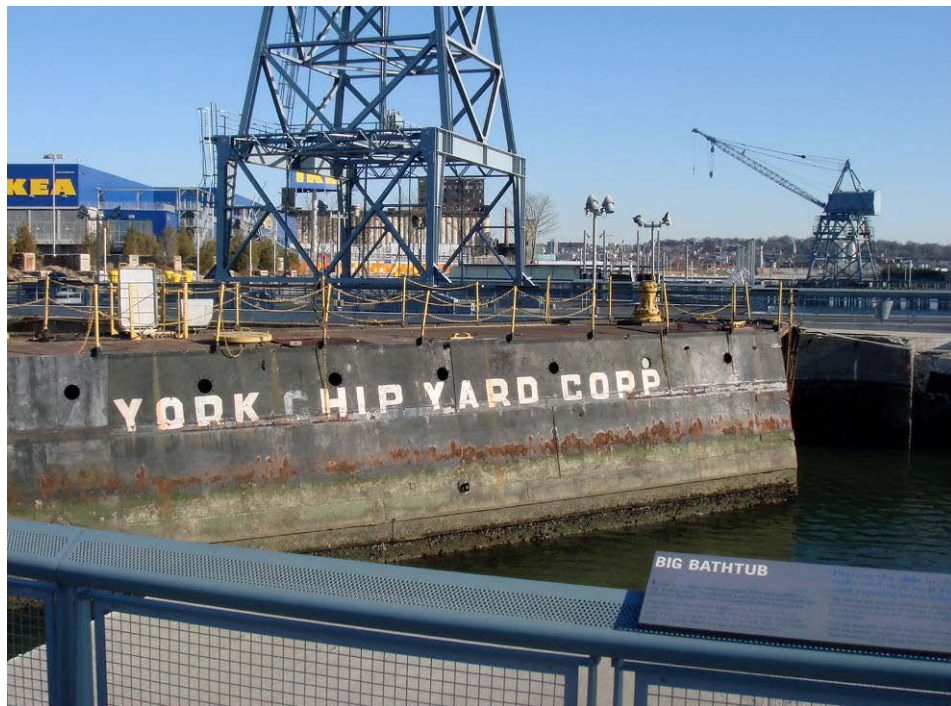


Figure 86 End of former graving dock No.1, Red Hook, New York. Photo: J. Spector (2010)



Figure 87 DCNR Point State Park Interpretive Plan (2009)



Figure 88 Pier 53, Philadelphia. Photo: J. Spector (2010)

TAKE ME TO THE RIVER PRESENTS...

HELP WANTED

A HUNT THROUGH THE WORK-HISTORY OF KENSINGTON, FISHTOWN AND ITS WATERFRONT, USING TECHNOLOGY OF TODAY.

NEEDED

SHIPWRIGHTS
 KNOW NOTHINGS
 ARCHITECTS
 TEXTILE WORKERS
 FISHERMEN

HELP WANTED

is a cell phone-based scavenger hunt. Teams receive clues and riddle challenges via text message leading to historical Kensington, Fishtown and Waterfront sites. Puzzle clues will guide your team by foot to a special grand finale location. Prizes will be awarded at the end of the hunt!

SPONSORED BY

odvpc
 [Logos for other sponsors]

WHEN
 SATURDAY APRIL 24 11AM
REGISTER AT WWW.NKCDC.ORG/HELPWANTEDHUNT
 TEAMS WILL BE DISTRIBUTED (VARIABLE TEAM LOCATIONS BASED ON ASSIGNED OCCUPATION)
 IN CONJUNCTION WITH THE GRANDFEST! FISHTOWNSHARFEST.ORG

WHAT
 Help Wanted is an interactive community adventure on Saturday, April 24th that will send you touring through the pages of time to live "A day in a life of" the historical occupants from the Kensington & Fishtown Communities.

You do not need a cell phone to participate! Teams are randomly generated, though families can request to be grouped together.

The activity will last roughly one hour and is free.

Sign up by contacting helpwantedhunt@nkcdc.org
 Or call 215-427-0330 x.127

WHO
 The Agency is eligible and families are encouraged to participate.
 Full teams that RSVP will be limited to 15 participants per team.

WIN PRIZES!

Figure 89 Advertisement for New Kensington CDC



Figure 90 *Autograph Line* exhibit, Under I-95. Photo: Andrew Odhusky (2009)



Figure 91 Site furnishings mimicking mooring bollards, Dublin. Photo: J. Spector (2009)



Figure 92 Delaware River, Philadelphia, Pennsylvania. Photo: J. Spector (2008)

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