

Resilience and Path Dependence

A Comparative Study of the Port Cities of London, Hamburg, and Philadelphia

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DOI

[10.1177/0096144220925098](https://doi.org/10.1177/0096144220925098)

Publication date

2020

Document Version

Final published version

Published in

Journal of Urban History

Citation (APA)

Hein, C., & Schubert, D. (2020). Resilience and Path Dependence: A Comparative Study of the Port Cities of London, Hamburg, and Philadelphia. *Journal of Urban History*, 47 (2021)(2), 389-419.
<https://doi.org/10.1177/0096144220925098>

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Journal of Urban History
2021, Vol. 47(2) 389–419
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DOI: 10.1177/0096144220925098
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Carola Hein¹ and Dirk Schubert²

Abstract

Port spaces, functions, and interests have shaped the growth and development of many cities around the world. At times, different stakeholders—private and public, local, regional, national and global—have collaborated to assure the continuity of port functions in old and new locations and, if the port relocates or if that effort fails, to redevelop former port spaces. Through the lens of port- and city-related urban developments in London, Hamburg, and Philadelphia, this article explores the multiple conditions that are part of port city resilience. It uses historical institutionalism as a theoretical framework for understanding these long-term changes, particularly in institutional and governance dynamics. It shows that the development paths of port and city spaces and the actors who shape them are not always aligned. Through the case of London, it shows a development path that is led by private investment building and relocating a world-class port and administrating it from the city center, while local and national institutions only intervene to balance spatial or social short-comings of the private actors. The case of the city-state Hamburg illustrates the development of shared port-city paths under long-term public leadership that has provided direction for the expanding port as well as for the growing city. In the case of Philadelphia, national interests, the Navy, and private investments played an important role in the creation of port infrastructure and, later, in the largely failed transformation of former port areas into public waterfronts. As shipping elites left the city and new land-based employers emerged, such as the University of Pennsylvania, the port-city path was partly discontinued. The article concludes by pointing to the expected capacity of each of these cities to address future challenges. Awareness of historical practices can help readers understand where current conditions may stand in the way of innovative solutions.

Keywords

resilience, path dependence, historical institutionalism, port cities, London, Hamburg, Philadelphia

Port Cities, Resilience, and Path Dependence

Ports and cities are structural, spatial, socioeconomic, and ecological systems that show an astonishing capacity to both persist in their function and to adapt to new challenges. This capacity is a

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quality of resilience (see also introduction). Port and city actors had to create local institutional, legal, and organizational frameworks in order to facilitate global trade, and specifically to transship growing flows of goods between sea and land. Over time, port city actors have used a range of governance structures—whether private or public; elected or nominated; democratically legitimized, appointed, or deployed—to adapt to local needs—specific urban forms, political, economic, or social conditions. They have also developed a broad range of spatial patterns and planning tools over time to respond to external economic, political, social, and technological changes, including containerization, the introduction of high-speed trains, the fall of the Iron Curtain, and the growth or decline of a port's hinterland. Such crises or transitions have sometimes required these actors to rebuild port-related spaces or to reimagine related institutions. But their investment in expensive infrastructure, over long periods of time, makes further spatial or institutional transitions difficult.

The Canadian scholar Andre Sorensen, among others, has explored historical institutionalism, which originated in political science, as a theoretical approach for the study of planning history.¹ Historical institutionalism focuses on the ways in which “some institutions tend to generate self-reinforcing dynamics, or positive feedback effects, which promote continuity and generate enduring trajectories of institutional development.”² It emphasizes the role of *critical junctures* in institution formation, particularly as moments which privilege some pathways over others. Ongoing decisions almost necessarily follow these privileged paths, in a resulting *path dependence*.³ Paths thus follow an immanent logic⁴ that make course changes more difficult. Such path development is self-reinforcing, in part because the “embeddedness” of new decisions in already established dynamics implies significant costs to changing strategy.⁵ In making complicated decisions, it is often easier to rely on familiar, proven strategies.

Path dependence includes the concept of *distributional inequalities*, wherein institutions reward some groups over others and mobilize coalitions to defend that practice, further reinforcing existing patterns that are largely irreversible.⁶ Constellations of actors and established processes of control and coordination create a complex pattern that is particularly prominent in port cities, where port authorities are a strong, often independent stakeholder. We can consider such constellations to be *growth clusters*, which, according to American scholar Michael E. Porter, are a surprising feature of contemporary globalized systems. He writes, “Clusters are not unique, however; they are highly typical—and therein lies a paradox: the enduring competitive advantages in a global economy lie increasingly in local things—knowledge, relationships, motivation—that distant rivals cannot match.”⁷ As such, ports have proven themselves many times through history as a regional economic development model. Promoting their economic, institutional, technological strengths and negating their weaknesses have long served the elites of these cities and the port's central shipping function. This focus on shipping also has downsides: the leading elites ignore less prosperous—sometimes even more value-adding—port-related areas and their importance to jobs and the local economy (and their value in other realms). As markets decline, clusters lacking diversity risk unemployment and tax losses.

Indeed, we argue that path-dependent decisions allowed many ports and cities to build *evolutionary resilience*⁸ in terms of their relation to shipping functions as part of their urban activities. Given the longevity of investments in port infrastructure, the quality of port city resilience is often linked to decisions of the past. We therefore find that path dependence provides an important way to look at port cities.⁹ The scholarly discussion of port cities and path dependence so far relies heavily on institutional and governance aspects, while the role of physical space and of historic investments in port and city infrastructure, institutions and culture remain unexplored. But historical institutionalism does also offer a theoretical framework for exploring processes of spatial change.¹⁰ Using the transformation of the form, function, and location of port infrastructure as the lens for understanding resilience provides a comparative framework for this study. Building on Brian Hoyle's abstract analysis of the development of port city relations and their

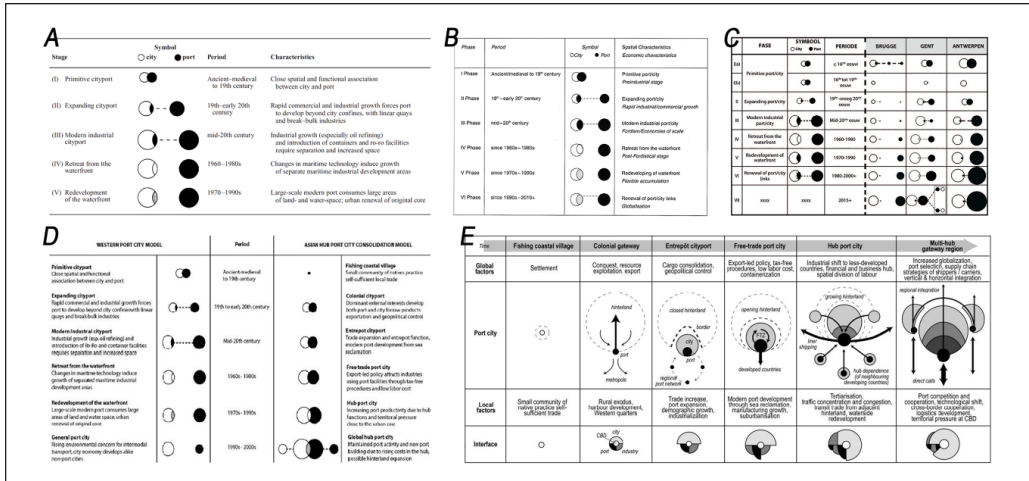


Figure 1. (A) Evolution model of the Port City Interface by Hoyle (1989), (B) Schubert's adaptation of Hoyle' model with proposed sixth phase (2011); (C) Van den Berghe's adaptation of the Port City Interface model of Hoyle, with case studies of Gent, Brugge, and Antwerp (2016); (D) Asia Port City Interface model by Lee et al. (2008); and (E) Spatial evolution of the hub port city by Lee and Ducruet (2009) (Compiled by Yvonne van Mil).

change over time, as amended by Dirk Schubert and Karel van den Berghe among others,¹¹ we identify moments of change (again, critical junctures) and describe how different actors have assured port and city resilience on changing scales, with different actors and in shifting locations (Figure 1).¹² Governance is a key evaluative metric in the case studies: the existence of the physical structures of ports, cities, and regions has impact on decision-making and spatial design in the long term. Concrete actions taken depend on the diverse and changing key actors and institutions in each of these spaces and the quality of their collaboration or the absence thereof. Governance is thus a key aspect of the long-term development of port city regions. In many cases, once development paths are cemented (*locked in*, to use path dependence terminology)—built in the form of wharves, docks, or other infrastructure and established in institutions, legal practices or policies—they can determine port and city functioning for decades, if not centuries to come. Comparative studies as a method¹³ can provide new insight into the complex intersection between institutional decision-making and spatial development.

To address shortcomings in historical institutionalism, the article examines the port cities of London, Hamburg, and Philadelphia. It considers what these three port cities can tell us about resilience, path dependence, and sustainable development, as they all faced and continue to face the same global transitions in technology, energy and society. It looks at the evolving port-city-region in each site from the late seventeenth century onward, identifying critical junctures, path dependent developments, and path foreclosures. It examines which stakeholders benefited from these changes and which did not, and how the use of urban spaces changed perpetuating earlier decisions. Bringing together the concept of resilience in port cities with that of historical institutionalism/path dependency, and combining approaches from the political and social sciences with history, also promises readers insight for future practices.¹⁴

London: Global City with Outplaced Port

The leadership of private enterprise has characterized port-city relationship in London for several hundred years, often at the expense of port workers and citizens. Public authorities only



Figure 2. Viking ships on the Thames by Everhardus Koster (1817-1892).

Source: https://commons.wikimedia.org/wiki/File:Everhardus_Koster_-_Viking_ships_on_the_river_Thames.jpg.

intervened when economic and social conditions could not be resolved by private investors alone. At the behest of private traders, port and city functions have been very resilient, while the location, form, and function of the port itself, as well as its major stakeholders, have shifted extensively, ultimately leading to a spatial separation of port and city. The constellation of actors effectively created separate development paths for city and port, albeit both driven by private enterprise and only occasionally balanced by public intervention. In line with the needs of port actors, the port changed dramatically, adapting from an economic and political driver of urban growth in or near the City of London to a support infrastructure for the larger region; meanwhile other private actors took over the historic port spaces.

Private-Led Port City Development

The City of London has thrived with and through shipping for some 2,000 years. The growth of the British Empire further shaped the city and laid the foundation for development paths that continue into the present. London's wealth relied on trading companies like the East India Company (founded in 1600), which temporarily controlled half of world trade and contributed one-tenth of the total tariffs to the British state budget.¹⁵ In the eighteenth century, the port could no longer handle the growing trade and the trading companies in charge of port development in London faced a critical juncture. Transshipment—the loading and unloading of ships—outgrew the capacity of the strictly limited government-designated Legal Quays on the Thames, under the monopoly of the City Corporation. Chaotic conditions characterized shipping and cargo handling (Figure 2). Not infrequently, ships anchored for months in the stream before workers could load and unload them. In fact, larger ships were mainly loaded and unloaded in the stream on barges and then transported onto land or to warehouses.¹⁶ But the port lacked adequate close-by warehouses. Companies stored goods out in the open on the wharf or on barges. By law, only special guilds were allowed to store and transport goods. Semi-legal places emerged to manage cargo,

notably cheaper goods. Since the goods had to remain on the smaller barges for weeks before they could be sold, thefts were the order of the day. Specialized gangs such as the “River Pirates,” “Night Plunderers,” and “Mudlarks” organized the theft.

Around 1800, these shortcomings could no longer be ignored and the private-sector organizations lobbied Parliament to establish new institutions and laws to handle them. The city established the River Police in 1801 as a first step to curbing illegal activity. Legal changes required the shipping companies to adapt their own operational strategies and to redevelop their organization of shipping and trading. The West India Dock Act of 1799 formed the legislative basis for a number of laws that granted temporary monopolies to companies handling all transshipment of goods to specific locations. Goods from the West Indies, for example, were to be turned over at the West India Dock; this monopoly was to last for an initial period of twenty-one years.¹⁷ The Warehousing Act of 1803 made temporary storage of goods more lucrative, allowing companies to stock their goods and pay customs fees only at the time of sale—possibly weeks or months after unloading them.

Dock companies created new dedicated and protected spaces despite the opposition of the City Corporation and the owners of the Legal Quays, establishing a development path for port activities that was separate from the path for the city. The London Dock Company built new docks downstream from London on the Thames,¹⁸ including an artificial harbor basin with storage and protective walls. After going through customs at the dock entrance, each ship passed through a lock and could then be loaded and unloaded at a constant water level. With the docks and also the new steam engine, it was possible for the company to compensate for the Thames’ large tidal range of more than six meters. The dock company maintained its own police and guards to avoid theft. The new structure sped up the loading and unloading of ships. The creation of docks was a revolution in privately financed port infrastructure and handling. It was not always easy, but the companies overcame financial challenges and local resistance. To enable the construction of the St. Katherine’s Docks, adjacent to the City and the Tower, for example, the companies had to demolish a Medieval-era hospital, Gothic church, and houses with some 11,000 residents and compensate the house owners¹⁹ (Figure 3). The compensation costs were so high that the company could only afford to build constricted docks and a narrow lock. These limited constructions were rapidly overtaken by new technologies. Companies, engaged in competition, continued to build new docks near the Thames through the century. In 1855, Prince Albert inaugurated Victoria Dock and with it, the steamship age in London. It was the first dock directly integrated with the British rail network, and turned out to be a financial success, in part because the company spent little money acquiring the land for it. Later, south of the Thames, several companies brought the Surrey Docks into existence.²⁰ The chaos of extending them was yet another prime example of privately led, uncoordinated port planning next to the city, but separate from urban interests.

Individual dock companies were no longer sustainable. Companies began to merge. In 1864, the operators of the docks south of the River Thames joined to form the Surrey Commercial Dock Company.²¹ A similar merger started among the companies north of the Thames. Meanwhile, the traditional integration of institutions of trade and shipping in London started to fall apart after the dismantling of the East India Company in 1873.

Although significant overcapacities of dock spaces were already apparent in the mid-nineteenth century, the Millwall Canal Company built a dock south of the West India Docks in the 1860s. In 1874, the St. Katherine’s Docks company connected the Victoria Dock with a second pool: the Albert Dock. This was the largest harbor basin in the world with a straight canal (Figure 4). But its biggest competitor, the now merged East and West India Dock Company, was undisturbed, and it began building a modern dock at Tilbury, forty-two kilometers downriver from London in 1882. This work effectively moved the port moved seawards, completely decoupling port and city spaces and functions and starting a new development path that has ramifications today.

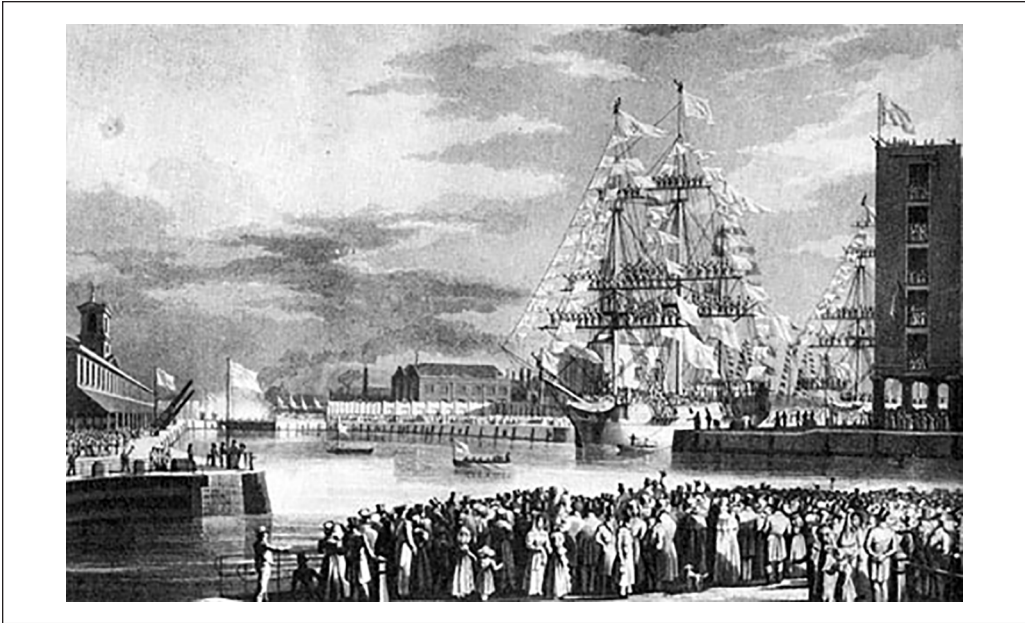


Figure 3. Opening of St. Katherine's Docks, October 25, 1828.

Source: https://commons.wikimedia.org/wiki/File:Brunswick_dock_London_1800s.jpg.

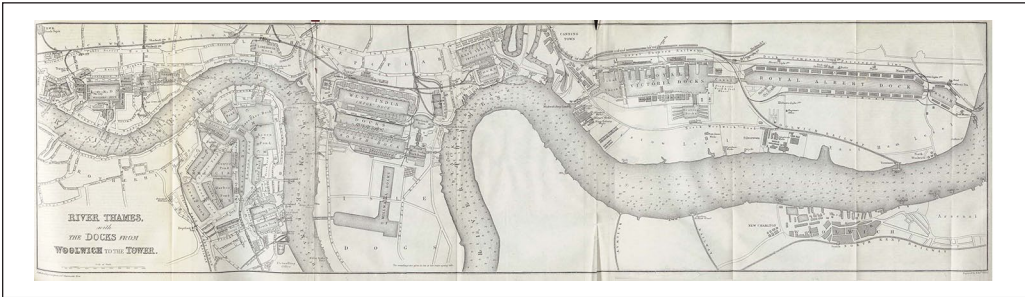


Figure 4. Map showing the London docks in 1882. The King George V Dock had not yet been built.

Source: Edward Weller (d. 1884)—*A Dictionary Practical, Theoretical, and Historical of Commerce and Commercial Navigation* by J.R. M'Culloch—Longmans, Green and Co. London, 1882 https://en.wikipedia.org/wiki/London_Docklands#/media/File:Thames_river_1882.jpg.

Increasingly, tensions between the growth and imperial splendor of the metropolis and its inequities became apparent. The port's competitiveness and its economic resilience were bought on the back of precarious life in the overcrowded slums of the East End and the shortage of work. With the construction of the docks, a new category of port workers had emerged: dockers and stevedores. The work of the dockers—loading and unloading ships—initially did not differ qualitatively from the work they had previously performed. But the scope and intensity of the work increased. Employment in the port was irregular due to the seasonal nature of shipping and trade as ocean, winds, tides, and fog made the arrivals of the ships often unpredictable. The port's fluctuating labor demand had led to a hiring system in which dockers gathered on the dock site two or more times a day in hopes of being hired by a foreman. This flexible “call-on system” made it easy for employers to keep wages low among the large number of job seekers. The

docking companies pressured laborers to keep them from protesting starvation wages.²² The dockers sought to defend themselves against poor pay and the arbitrary recruitment system. Their growing discontent culminated with riots in Trafalgar Square and the Dock Workers' Strike in 1889.²³ The shipping lines and docking companies responded by escalating the situation, bringing strike breakers to London to break the dockers' resistance. They did grant some wage improvements to end the strike, and the position of unions improved. But these changes did not last long.²⁴

Spatial Decoupling and the Emergence of Public Planning

By 1900, the port was no longer an integral part of the city. London was still the most important port in the world, but it had already lost importance to Rotterdam and Hamburg.²⁵ In London, port business was uncoordinated and privately organized (as it would remain until the beginning of the twentieth century). Various trading companies independently operated docking facilities, and they each built, expanded, and operated their own transshipment and storage facilities. This private-sector organization had considerable disadvantages: a 1900 report by the London Chamber of Commerce noted the insufficient and outdated port infrastructure; insufficient depth of port access; large number of different, sometimes divergent interests of companies and authorities; and delays in handling and transport due to an unsatisfactory light system and poor rail connections.²⁶ The ideological premise of "open competition" after the end of the monopolies had produced chaotic structures; over fifty institutions had different powers in the port. Yet, a kind of "lock-in" situation had developed, where continued practice appeared more cost-efficient than change.

Reorganization was the only way the port could continue to function; a critical juncture had been reached. New public institutions took the lead in this work. In particular, the London County Council (LCC), established in 1889—now an institution of Greater London with broader planning powers—supported major reform of port operations and port management. The main pushes for reform and path change came from the national government and globally oriented companies, both of whom sought more modern governance for the port. In 1902, a Royal Commission produced an extensive report with proposals for reorganization, which celebrated the "splendid natural advantages" of the site, including "the geographical position of the port; the magnitude wealth, and energy of the population behind it; the fine approach from the sea" and the navigability of the port among other elements. But it also spelled out deficiencies, notably those due to "causes which may be removed by a better organization of administrative and financial powers."²⁷

The port needed new leadership. After much controversy, a Royal Commission recommended the creation of a unified port authority, as the competing dock companies were financially weak, impeding the port's expansion and modernization.²⁸ In 1908, the government transferred the facilities and powers remaining from the earlier uncoordinated situation to the Port of London Authority (PLA), and also assigned it the task of supervising marine traffic up to the mouth of the Thames. Following this takeover of the docks, the PLA now had to raise considerable sums to reorganize the port's operation and modernize cranes, sheds and quay facilities. The PLA granted the dock companies funds to finance the modernization measures, and began gaining income from quayside and harbor dues. In the following years, its program of improvement included deepening the Thames and harbor areas and constructing new transshipment facilities. Its own distinctive administrative building, one of the tallest in the city at the time and started in 1912, became an excellent symbol of the port's worldwide standing (Figure 5). Nonetheless, changes in institutional management and oversight of dock infrastructure could not keep the port in the city and under a single authority.

Meanwhile, ships were getting bigger and faster and the docks, which had been a successful development path for a century, proved to be maladaptive. The deficiencies of London's port



Figure 5. The Port of London Authority (PLA) Building designed by Sir Edwin Cooper in 1912-1922. Source: https://en.wikipedia.org/wiki/Port_of_London_Authority#/media/File:Port_of_london_authority_building_trinity_square.jpg.

were evident by the First World War. The cranes were outdated and did not meet the modern demands of freight handling. In many cases, no direct transshipment from ship to quay was possible and companies had to use lighters to ferry cargo between them.²⁹ The London Port Authority sold all existing facilities near the city to avoid bankruptcy and to build modern new terminals at Tilbury on the Thames estuary in 1920.³⁰ They turned to political means to pacify the dock workers in order to ensure the resilience of the port: the 1947 National Dock Labor Scheme required all port employers and employees (including those in major ports) in the United Kingdom to register with the government, set a weekly minimum wage for all dockers who regularly came to work (even if there was no work), provided medical care and set up a central office. But the human docker was soon to be replaced. The mechanization of port handling—initially with forklift trucks—rapidly eliminated many docker jobs. Between 1945 and 1955, dockers held many strikes, mainly against the reduction of jobs. Nonetheless, cargo handling itself began to decline dramatically and the docks began closing—almost in reverse order of their formation, the oldest first.

Containerization in the 1960s hastened the rapid decline of London's port. This led to the closure of the port facilities, resulting in the bankruptcy of industries, shipyards, repairers, and other industries.³¹ In the Thames River, the Tilbury docks were restructured for container service by 1970.³² Geographically far outside London, the Port of London—still the largest port in the world as recently as 1960—today handles only about 10 percent of British maritime trade. A new deep-water terminal with a logistic center is under construction even further from the city center: the London Gateway in Thurrock, Essex. While located on the same river, the site will be largely under the control of authorities other than the city and thus also beyond the reach of the Mayor of London and any plans to ensure that it meets the city's new criteria of sustainability and social

equity.³³ The shared development path had forked earlier, it now completely separated, with the port functioning largely independently and at a distance from the city.³⁴

Resilience of the City: A New Role for Former Port Spaces

The decoupling of port and city had left the city with spatial structures that no longer filled the functions for which they had been designed. By the 1970s, the traditional core of London, once the largest port in the world, had lost most port activities.³⁵ Unemployment, homelessness, and lack of prospects now characterized the East End, the backyard of London, which had once fed the prosperity of London and the country as a whole.³⁶ The people of the East End, once linked to the booming world economy and the rise of the port, were isolated, forgotten, and exposed to an uncertain future by the rapid pace of globalization's transportation technology revolution.³⁷

Another radical change was needed at this critical juncture, this time a new development path for the former port structures. One of the city's few forward-looking measures was the construction of the Thames barrier between 1974 and 1982 to prevent the flooding of the center of London. It drew up redevelopment plans in the 1970s for the former port areas, delineating a construct of arbitrary boundaries that included twenty-two square kilometer and areas of five boroughs.³⁸ The 1976 London Docklands Strategic Plan (LDSP) responded to problems in the Docklands, focusing on public housing and commercial space but offered no major new employment programs. But the plan was not realized. Instead, the PLA, as the largest landowner—with major liquidity problems—sold its land to the highest bidder.³⁹

Starting in 1979, the Conservatives assumed that centralization and privatization would overcome unemployment and poverty.⁴⁰ The government transferred the planning authority for the Docklands to the London Docklands Development Corporation (LDDC) in 1981, while other departments such as education, health, and housing remained with the boroughs.⁴¹ They designed LDDC to be a modern, nonbureaucratic, lean, efficient organization that could respond flexibly to the needs of investors. The LDDC's decision-making processes were not transparent to the public, and budget and decision-making protocols remained secret. Under the pretext of facilitating faster and more flexible action, democratically elected bodies were often bypassed.⁴² More than 240 hectares of land were transferred to the LDDC by expropriation extended the property to an additional eight hundred hectares by 1994, about one-fifth of the land in the Docklands. For Prime Minister Margaret Thatcher and mastermind Michael Heseltine, the Docklands were a key experiment in re-establishing the neo-liberal free-market economy after the abolishment of the Greater London Council in 1986.⁴³

A power vacuum emerged, soon filled with a fragmented organizational structure of many new voluntary unions and partnerships as well as committees set up by the central government. The central government controlled all of these organizations or appointed members for new, usually London-based institutions such as the Port Authority of London, London Transport and the Metropolitan Police. The port area, comprising districts with high levels of unemployment and above-average proportions of low-income residents, experienced a cumulative cycle of disinvestment, rising social spending, and reduced resources. The character of the Docklands changed faster in one year than it had in the last 50. Radical social structural change fueled the new urban plans that incorporated the outdated structures in the port area. The policy of the LDDC led to a rapid, chaotic and brutal transformation in the Docklands, turning the former mixed space of the Dockland into a modern condominium-style office district, with no master plan and little port- or water-based urban design references (Figure 6).

But the LDDC had been set up for a limited time and it ended in 1998. The boroughs regained power. With the Greater London Authority Act of 1999, after eighteen years of conservative government, the National Labor Government installed a mayor and a city council for London, the



Figure 6. Canary Wharf in the London Docklands in 2019.

Source: KLeon 3, https://en.wikipedia.org/wiki/London_Docklands#/media/File:2019_London,_Canary_Wharf_02.jpg.

first directly elected mayor in the United Kingdom. The New Labor government reorganized the administration of Greater London.⁴⁴ Overcoming the previous balkanization of responsibilities and planning competencies was an extraordinarily complex process, and only a first step toward following new strategic plans by the Greater London Authority (GLA). Rebalancing the powers wielded by the “top” (central government) and the “down” (boroughs) signaled a major change in the historical development path of the city.

Over a period of two centuries, city and port relationships in the Port of London adapted flexibly to the challenges of shipping and trade based on private investment.⁴⁵ Private corporations, with some support from national institutions made decisions reactively, in response to market needs. They have led to the departure of the port to the larger urban region, leaving the public PLA in charge only of matters such as flood protection, pilotage, and dredging. Even cruise ships, often the last remaining visible part of port activities, have moved to other seaports.

In the City of London, the dominance of the financial sector has increased the city’s economic vulnerability (and that of the country as a whole). One-fifth of GDP in the United Kingdom is generated in the City of London.⁴⁶ Meanwhile, the insurance and reinsurance company Lloyd’s of London cemented the city’s role as a key player in the shipping world. The external shock of global financial crisis in 2008 further increased its narrow specialization in finance; the outcome and consequences of Brexit remain to be seen.

Private actors have led port city development in London over many centuries; the relationship between a private sector that drives development and a national or local government entity that intervenes only if and when needed to address technological changes, social needs, or economic challenges, has thus remained the same. But the spatial impact of respective port and city interventions has changed. The port function has created its own spatial footprint in the larger region, severing its spatial link with the development in the city center. While some port city connections remain in London, the historic integration of port city functions has given way to separate development paths for port and city.

Hamburg: Harbor in Town under Municipal Leadership

The relation between port and city in Hamburg is been characterized by a shared development path, where private and public actors collaborated and pursued shared values around shipping



Figure 7. Center of Hamburg with traditional shipping in at the Kehrwieder before demolition. Drawing by Johann Theobald Riefesell, 1884. HAMBURG. *Augenblicke einer Stadt 1882-1894*. In *50 Zeichnungen von Johann Theobald Riefesell nach Originalen im Museum für Hamburgische Geschichte*. Source: <https://de.wikipedia.org/wiki/Kehrwieder#/media/Datei:HH-Riefesell-24-Kehrwieder-6-12-20-10-1884.JPG>.

and trading. Shipping on the Elbe and tributaries was the activity of private companies. Local elites were active not only as shippers and traders but also as politicians, and they have long led the city-state. The city-state government generally supported construction and functioning of the port, providing people, funding, infrastructure, and policy frameworks that could not be handled by private companies. For example, the government employed a crane master and crane worker until the late nineteenth century to handle a few especially heavy goods. In contrast to London, this development path of mutual support has continued, even as both port and city grew and changed location.

City-Led Port Innovation: A Tidal Port, a Warehouse District, and an Office District

Hamburg emerged as a free trading city in the Middle Ages. As a free city, traders, shipping, and trading elites in Hamburg historically also led the city's political destiny and created the spaces needed to facilitate and administrate trade. The city held a key role in the group of allied Hanseatic cities due to its position on the river Elbe. Initially, companies had few opportunities to transfer goods directly ashore from their ships. For centuries, ships anchored in the Elbe or were moored to piles, while smaller vessels transported goods from them through shipping canals to warehouses that served simultaneously as merchants' houses and administrative centers (Figure 7). When the first steamer sailed the Elbe River in 1816, it marked a new era for the medieval port city of Hamburg.⁴⁷ The resulting expansion, consolidation, and acceleration of global relationships opened up new opportunities, and the accompanying increase in the volume of goods handled demanded organizational innovations and port extensions. For years, the city had relied on

expertise of foreign, notably English engineers, for city planning, harbor construction, and infrastructure design. The first proposals for the much-needed expansion of the port in the early nineteenth century therefore showed a dock port based on London's model.

Disasters, such as the Great Fire of 1842 that burnt for three days and destroyed a large part of the city (see also introduction) with the exception of the stock exchange, quickly turned out to also be an opportunity for city leaders to overcome traditional city structures and to expand and renew the port infrastructure in the following decades. City leaders passed a law of expropriation for the burned down area that opened up a new development path, allowing the merchant class to radically intervene in the city's spatial structure as well as in the governance system.⁴⁸ It also provided room for large lots, new office buildings, and other modern infrastructure. City and port leaders also opted for a new project for the port, choosing to build an open tidal port without locks. The Sandtorkai, built between 1859 and 1866, was the first modern wharf structure to follow this fundamental decision. Integral parts of the facility included single-story quay sheds, where goods could be stored at short notice; mobile quay cranes to load and unload goods; and links to inland modes of transport. Companies could directly transship goods from ship to shore and also to direct railway connections.⁴⁹ Even the largest seagoing vessels could moor at this wharf.

Sailing reached its peak in 1866 and from then on declined in absolute and relative terms. With the extension of the steamship business, the traditional dependency on wind disappeared and, as historian Heinrich Reincke wrote in 1926, "it was possible to establish not only the ship's departures, but also the approximate arrival times, thus simplifying all calculations and opening up a new field for speculation."⁵⁰ With these changes in maritime shipping, the port also saw new divisions of labor, risk-reducing structures and actors. Within a few years, the global shipping industry became an independent, purely capital-driven economic sector. The government of Hamburg supported the transformation by constructing harbor infrastructure. It also operated quays to guarantee equal use for all shippers. The State Quay Administration organized cargo handling on the wharf and the loading of trains, wagons, inland waterway vessels, and barges; it also supervised cranes, sheds, and quays and collected fees from shipping companies for the use of quays, storage, and weighing. Government workers managed these operations. In addition, the municipality leased communal storage facilities to shippers, who could also avail themselves of private storage.

A new phase in port city development occurred as Hamburg joined the German Reich in 1889.⁵¹ Hamburg had been a free port for centuries and thus enjoyed the opportunity to store and process goods duty-free. Traders only had to pay customs when exporting goods from Hamburg—usually in small quantities. Although advantageous for merchants and shipowners, this situation posed a considerable disadvantage for businesses: they had to pay both customs and foreign companies if they wanted to sell their goods outside of Hamburg. Hamburg and the German Reich agreed to that the city would keep its status as a free port, albeit the free port area would be reduced and located within the larger port area. After consideration of various alternatives, the partners agreed that the so-called *Freihafenbezirk* should be as close to the city as possible and not inhabited. But its financing, size and location remained controversial. The project did introduce a new actor, the city-owned *Hamburger Freihafen-Lagerhaus-Gesellschaft* (HFLG) in 1885, which would be a key leader in the port and urban spatial development.

Finally, local stakeholders agreed on a site that included an area north and south of the Elbe, with warehouses located on the Wandrahminsel. The contract between Hamburg and the Reich further provided that customs administration remained in Hamburg's hands, secured duty-free access for shippers going across the Lower Elbe to Hamburg, and allowed companies in the free port district to store raw materials or produce semi-finished goods duty-free. In fact, a new warehouse complex, the *Speicherstadt*, would allow traders to store valuable goods such as carpets, coffee, and spices. The German Reich subsidized this structural transformation. To secure the continuity and improvement of shipping and to make room for new storage, the city-state gave



Figure 8. Section of the Speicherstadt in Hamburg in 1888 and photo of 1890 with the Sandtorhafen from 1873, Planned by *Oberingenieur Franz Andreas Meyer (1837-1901)*—Aus dem *Hamburger Freihafengebiet, Hamburg 1888, Strumper & Co.*

Source: https://nl.wikipedia.org/wiki/Speicherstadt#/media/Bestand:Hamburg_Speicherstadt_1888_Querschnitt.jpg; https://upload.wikimedia.org/wikipedia/commons/5/55/Speicherstadt_1890.jpg.

the port permission to demolish buildings in the area, including housing for both elite families and workers. First, around 20,000 people had to relocate to enable the construction. Then the warehouses would be built, and then seagoing ships would transfer their goods to barges that would deliver them to the warehouses. On the land side, the goods could be delivered or picked up by wagon or rail. Cranes and other machines increasingly facilitated the handling of goods (Figure 8).⁵² A new spatial and functional development path had developed that started with the construction of single-use docks and warehouses throughout the nineteenth century.

Worker and Municipal Action for Improvement of Workers' Living and Working Conditions

The persistence of socioeconomic conditions created a negative resilience for local workers. First, dockers in Hamburg, like those in London, had to compete for a fluctuating and often limited number of jobs.⁵³ There was a constant oversupply of unskilled workers, and shipping companies hired and fired workers as needed (“casual labor”). Workers searched for jobs on the

streets in the harbor or in pubs; they spent a long time ashore while their ships waited in the port to unload, and they depended on pub owners to advertise jobs, so they spent more on eating and drinking. To provide the workers with cheaper food, so-called "coffee flaps" opened (they served no alcohol). A strike in 1896/1897 led to slow change and a collective agreement on wages and working hours by 1906. Second, since apartments were not allowed in the port, port workers lived at the harbor edge or looked for new accommodations further away from the port.⁵⁴ But the expansion of office functions close to the port reduced housing options in the city center. Landlords accordingly could charge high rents and deduct debts directly from workers' wages.

The city and port continued to grow. Hamburg continued the path of functional division and took a leading role in this construction of monofunctional districts. The Dovenhof office building, built by Heinrich Ohlendorff in 1885/1886, who made his fortune in guano shipping, was the first on the continent to feature a paternoster (elevator) and the first to offer office spaces for rent. It had a light court that gave access to the rooms, and it also contained a post office. Overall, it set the standard for the next generation of office buildings in Hamburg and beyond. The innovation in office buildings did not correlate with improvement of the living conditions for workers. The cholera epidemic of 1892 exposed the inadequacies of Hamburg administrative and spatial structures.⁵⁵ The disease interrupted traffic in the port. Over 7,000 people died and the Hamburg City Government started to scrutinize slum-like traditional working-class housing with often horrible living conditions. The City Government proposed urban renewal plans and rapidly put them into action. Approximately 60,000 people were affected by the demolitions, and many moved to new housing areas far from the city center. At the same time, stagnant wages, rising labor costs, and higher living costs, amid official suppression of union formation, fueled dissatisfaction among dockers.⁵⁶ Some projects were completed in a timely manner, while others continued into the 1930s.⁵⁷

In redeveloping these areas, the port and city leaders continued the path of monofunctional development aimed at facilitating shipping that had started with the construction of the warehouse area. One area was redeveloped for housing, one for a modern city center, and another one for a new office district (Kontorhaus area), which showcased the success of Hamburg companies. Located next to the warehouse district and the Elbe River, it would come to include buildings acknowledged worldwide, such as the Chilehaus commissioned by the shipping magnate Henry B. Sloman and finished in 1924 (Figure 9). Workers had to travel further to the center and the port, while decision-makers had moved to the suburbs. But this new development path disadvantaged workers, who had to cover long distances from their new housing areas to reach their work. To maintain port city functioning, the city-state built new railway lines for public transportation to connect ports and workers. The first ran from the town hall and central station to new housing in Barmbek and Rothenburgsort between 1912 and 1915.⁵⁸

Following the general plan of 1908, the Port of Hamburg had also extended to fill the Prussian areas south of the River Elbe with new shipping berths, port industries, and shipyards (Figure 10).⁵⁹ The First World War interrupted the steady growth of cargo handling in the port. A brief postwar upswing in the 1920s was immediately followed by the Great Depression with a new slump in trade.⁶⁰ The problem of the shortage of port-related housing for those working in and around the port would only be addressed with the 1937 Greater Hamburg Plan. Its inclusion of the former Prussian ports Altona, Harburg, and the city of Wandsbek eased urban, regional, and port planning in the Hamburg city-state and facilitated a better allocation of residences and workplaces. The need of the port and of shipyards for workers led to the construction of new residential quarters for German dockers. In line with the rise of the Nazis, the plans also included camps for forced laborers.

Hamburg and its port were largely destroyed in the Second World War. By 1945, only about 10 percent of port facilities remained operational.⁶¹ Despite the destruction, and despite the postwar division of Germany and Europe and the loss of Hamburg's hinterland, the port city remained resilient and continued its path of general cargo handling.⁶² Reconstruction involved

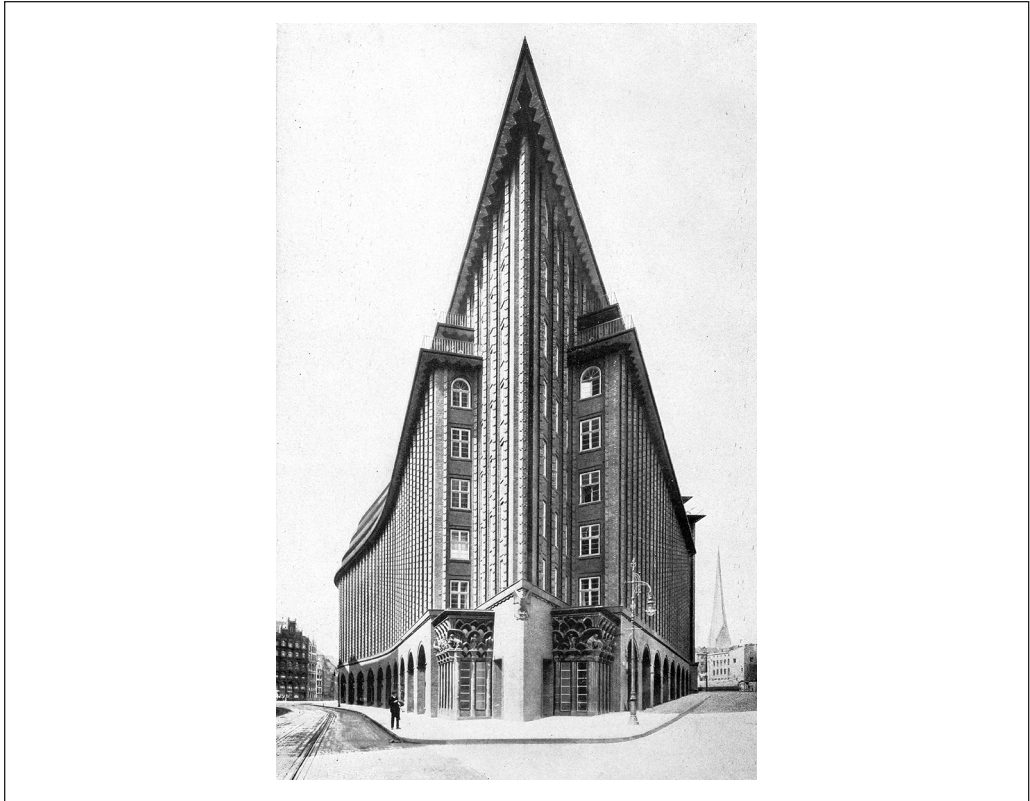


Figure 9. Chilehaus office building in Hamburg built by Fritz Hoeger. Photo by Carl Dransfeld. Source: https://upload.wikimedia.org/wikipedia/commons/4/4d/Chilehaus_building_Fritz_Hoeger_Carl_Dransfeld_Hamburg_Germany.jpg.

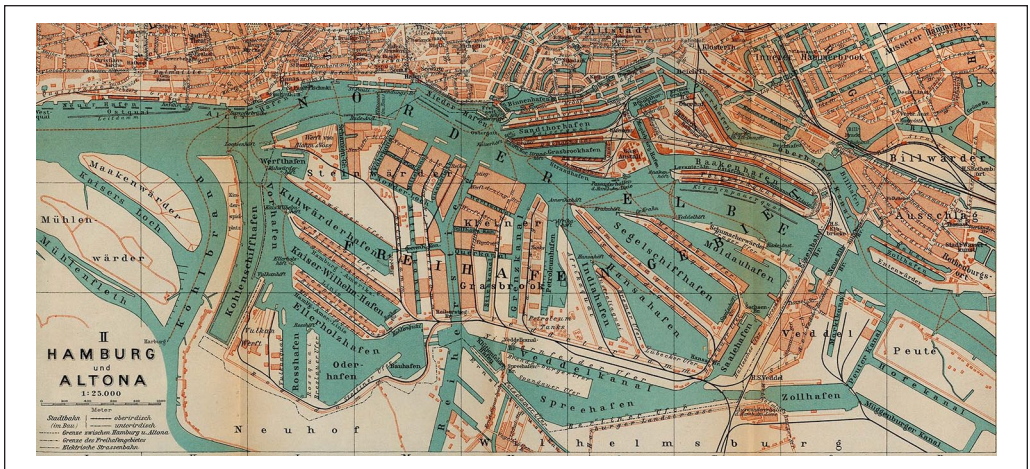


Figure 10. The Port of Hamburg in 1910 showing the growth of the port South of the River Elbe. Source: "Northern Germany as far as the Bavarian and Austrian Frontiers; Handbook for Travellers" by Karl Baedeker. Fifteenth Revised Edition. Leipzig, Karl Baedeker; New York, Charles Scribner's Sons 1910. https://commons.wikimedia.org/wiki/File:Karte_Hamburger_Hafen_1910.jpg#/media/File:Karte_Hamburger_Hafen_1910.jpg.

modernizing many facilities. Rather than wood and iron, new structures were made with reinforced concrete. Together, the city and the port improved rail connections to the port, expanded road connections, and introduced new electric cranes. The harbor grew and continues to expand to the south and west. Decisions made in the middle of the nineteenth century—at the time highly controversial—to develop the port of Hamburg as an open tidal harbor continued to guide the planning of the port. In 1961, a Port Extension Act was passed, stipulating that 2,500 ha of land would be used for future (undefined) port uses, a move that facilitated the growth of spaces for containers. However, the construction of the new container terminal Altenwerder would begin only thirty years later.⁶³

Spilt Development Paths: City-Led Innovation on the Waterfront

The 1960s saw a number of challenges for port and city alike. In 1962, a storm surge caused destruction on the entire North Sea coast, flooding large parts of the port of Hamburg and killing more than three hundred people. Immediately, the city and the port raised their dikes and their land. Together they made forward-looking arrangements for more resilient structures. In the 1960s and 1970s, the city government discussed moving the port to the mouth of the River Elbe in Cuxhaven (Neuwerk-Scharhörn) where it owned land and building an Elbe barrier (that would however hinder navigation). Neither of these came to fruition.⁶⁴

During the same period, containerization was a new critical juncture that triggered a new development path. It required Hamburg (and all global ports) to consider logistical innovation, notably for containerization, and spatially restructuring port facilities built for handling general cargo rather than standardized containers. To accommodate the new larger ships, the Hamburger Hafen Lagerhaus und Logistic AG (HHLA, successor to the HFGL) built new terminals with deep-water access (Altenwerder) outside the city. In London, this change separated the port from the city; in Hamburg the city used land on the South of the Elbe River, within its institutional borders, to host the new functions and to integrate them in the larger spatial planning. The interests of port and city actors in the economic development of the port and the city were not fully aligned, but overall the city-state government had pursued the maritime path of development that created new industries and jobs. Whether or not this focus on shipping and port functions has hampered the diversification of the local economy remains open.

After the fall of the Berlin Wall and the reunification of Germany in 1989, Hamburg again became the main port for an expanded hinterland and remains one of the top three ports in Europe. Since the turn of the new millennium, Hamburg has been a growing city and a city state in the federal system with relative autonomy from the central government of Germany. The port area occupies about 10 percent of the urban area of Hamburg. Shipping and trading companies can lease areas and user-specific infrastructure for a maximum of thirty years. The local government established the Hamburg Port Authority (HPA) in 2005. The HPA is the planning authority in the port area and also owns most of its land. It is also responsible for maintenance and management of the territory and water infrastructure. Although publicly owned, the port authority is independent, but ultimately the global shipping companies decide which infrastructure, ports and terminals best optimize their corporate logistics chains. The mission statement of the port development plan for the years leading up to 2025 reflects the priorities of city officials and is called “Hamburg holds course”; that is, it does not suggest a new development path, but rather a plan to “continue as before.”⁶⁵

Conflicts between Global and Local Actors

But urban growth has led to an imbalance of port and city development paths. The resources and power of global players, including terminal operators and logistics companies, have increased

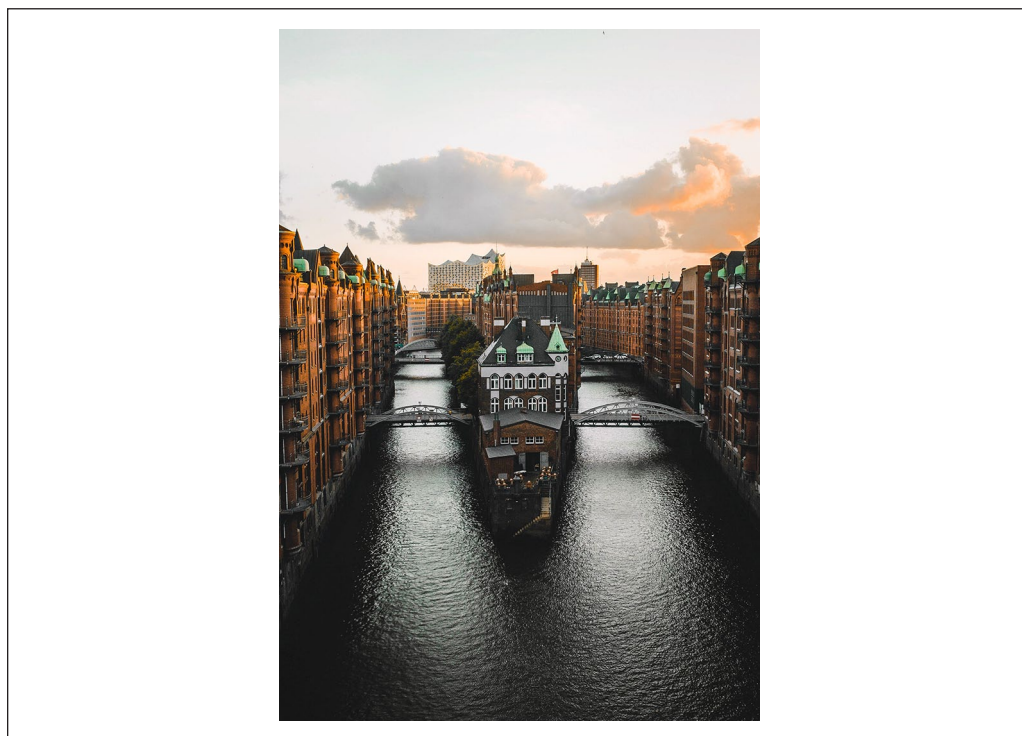


Figure 11. The UNESCO World Heritage site Speicherstadt and the Elbphilharmonie in Vincent Seydel Winter.

Source: https://de.wikipedia.org/wiki/Speicherstadt#/media/Datei:The_Wasserschloss_at_sunset.jpg.
CC BY-SA 4.0.

over the last years, and they are much stronger than local actors. While they attempt to optimize global logistics chains and pursue economic interest, the city has had to consider medium to long-term perspectives of port and urban development. A cycle of decay, neglect, planning, building, revitalizing older port areas, and creating new port infrastructure has involved a complex network of actors and interests.⁶⁶ The city set up an independent development company, HafenCity Hamburg GmbH, to ensure a long-term strategy for the redevelopment of the older port areas. As containers could no longer be handled there, uses shifted: first came carpet dealers, then galleries, artists, and other creatives. The Speicherstadt's designation as a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage site in 2015 ensured its preservation, as UNESCO allows only gentle changes (Figure 11).⁶⁷

Although the port authority released more than three hundred hectares of port land for these urban development projects, more conflicts between port and city are likely to occur at the waterfront, especially with increasing local demand for housing that is not related to port functions. Direct port-dependent jobs have been reduced, while jobs that are only indirectly port-dependent no longer require a location in or next to the port.⁶⁸ Fragmented governance structures between Hamburg, the boroughs, the port authority and HafenCity Hamburg and, on the regional level, four federal states in the Elbe region work together to forge resilient strategies, but these are challenging to implement. The construction of shipping terminals near the city center could have blocked real estate growth, but locations elsewhere facing the sea have since become some of the most expensive real-estate sites.

In the future, HafenCity will have to address questions of global climate change and of flood protection.⁶⁹ The collaboration of port and city actors in Hamburg on a mostly shared maritime

path has been key to the city's port city resilience. In the longer term, key actors may have to consider diversification and restructuring of the city's economy. This may include a new path with a focus on the development of science, research, or digitization, which could be related to the particular history, character, and needs of the port city.

Philadelphia: A City Whose Port Barely Has a Future

Philadelphia's original plan carefully connected port and city functions. Laid out by city founder William Penn (1683) as part of maritime trade and exchange networks between Europe and America, Philadelphia's grid plan was framed by the Schuylkill River and the Delaware River, and originally equipped both with port facilities.⁷⁰ Its layout referenced notably the great port city of London, Penn's birthplace. The large lots and detached houses expressed Penn's desire to avoid the dangers of London's overcrowding and dense construction with flammable materials that had resulted respectively in the great plague (1665/1666) and the Great Fire of 1666.⁷¹ What started out as a development path shared by commercial and military port and city actors, would split in the early twentieth century into divergent port and city developments, leaving former trading and military port areas vying for new uses.

Private Businesses and State-Owned Port: Oil Ports and Fingerpiers

Until 1800, Philadelphia was the capital of the United States as well as the country's largest city and the second-largest English-speaking city in the world (Figure 12). The city thrived on shipping, and local port and city elites collaborated with each other. Until the end of the eighteenth century, among U.S. East Coast ports, only New York surpassed Philadelphia's importance. Philadelphia served as an important port and center for commerce and industry, and was widely celebrated as the "Workshop of the World."⁷² The first state-owned shipyard in the United States was founded in the south of Philadelphia in 1801. Shipyards, wharves, and fingerpiers supported shipping and trade on both the Schuylkill and Delaware River. Private companies and the city alike operated piers and warehouses. Immigration, the slave trade, and the import of tropical fruits and meat played important roles in developing the city and port of Philadelphia.⁷³ Exports included tobacco, iron ores, cotton, and petroleum. By the second half of the nineteenth century, Philadelphia had also become a major oil industry center.⁷⁴ An industrialized port city with global networks, the city offered the new industry the necessary rail and water infrastructure as well as access to water.

Port and city followed a strong shared path into the nineteenth and early twentieth century. In the nineteenth and twentieth century, a municipal facility, the Department of Wharves, Docks and Ferries, was responsible for port development. The interplay of oil ownership, transportation opportunities, refining capacity, and the promise of great profits made the early oil trade a key driver of the city's shipping function. One petroleum center emerged in Philadelphia on the Delaware River at Greenwich Point, south of the port on the Philadelphia side. Another cluster for storing refined petroleum emerged on the Schuylkill, where the Atlantic Petroleum Company built its first refinery in 1870.⁷⁵ Four years later, the partners agreed to combine their properties and operations with Standard Oil of Ohio, while keeping the Atlantic name.⁷⁶ Consolidating oil transport and refining, and developing its own fleet of ships, Standard Oil helped the city develop into a key oil export center.⁷⁷ By 1891, 50 percent of the world's illuminating fuel and 35 percent of all U.S. petroleum exports came from the three hundred and sixty-acre Atlantic refinery.⁷⁸ Until the beginning of the twentieth century, petroleum shipping provided a shared path for port and city development. The emergence of other centers of extraction and refining around the world and the construction of a pipeline network in the United States after the Second World War, led to a slow decline of both refining and shipping activities in Philadelphia, which ended with the closure of the Schuylkill refineries in 2019 (Figure 13).



Figure 12. Plan of the City of Philadelphia in 1796 by John Hills showing the port facilities on the Delaware River.

Source: <https://upload.wikimedia.org/wikipedia/commons/f/f7/HillsMap1796.jpg>.

Even though the port was essential to the design of Philadelphia, the city's shipping industry started to decline in the late nineteenth century and the business community moved away from the riverfront. Several transformations outside of Philadelphia brought the decline of the port, including the Erie Canal (opened in 1821) and the construction and amalgamation of the New York and New Jersey port (PANYNJ) in 1921. But Philadelphia itself also contributed to the foreclosure of the strong port path: local authorities in 1912 did not provide funding for the necessary river dredging.⁷⁹ When Baltimore and New York modernized their ports, this did not happen in Philadelphia. In contrast to the ports of London and Hamburg, the Port of Philadelphia did not control one side of a key river: the Camden side of the Delaware River is located in the state of New Jersey. Strong municipal and regional support for shipping activities would have been needed to maintain the port's competitiveness. By the mid-1950s, the shipping industry had largely abandoned the city.⁸⁰ In 1956, only three piers from the previous twenty-three piers were in operation and the city began to buy the ones remaining.

Lack of Municipal Engagement for Comprehensive Waterfront Redevelopment

The city has taken a turn away from shipping. Since the 1950s, Philadelphia has been shrinking: its population has fallen from over two million in 1950 to approximately 1.6 million in 2017. The old dock area ("harbor"), the nucleus of the port, was redeveloped in the 1960s to make room for strategic gentrification at Society Hill. The city's two major attempts at waterfront redevelopment failed over the last decades. On the Delaware riverfront, planners and policy-makers



Figure 13. The Philadelphia Oil Refinery between 1980 and 2006. Photo Carol M. Highsmith, Library of Congress, LC-HS503-1031 <https://www.loc.gov/pictures/item/2011630489/>.

introduced a north-south urban highway, the eight-lane interstate I-95 and parallel four-lane road, in the 1950s. This wide infrastructure forms a barrier between the city and the river, though planners make it possible for people to get to the river zones through bridges.⁸¹ On landfill along the Delaware River, they also created Penn's Landing, which has since been the focus of multiple visions for waterfront revitalization, only small parts of which have been completed. The ownership and barrier effect of I-95 complicates the comprehensive use or redevelopment of the waterfront.⁸² Despite interventions by internationally successful developers such as Rouse and Associates (headed by the Philadelphia-based Willard Rouse III [nephew of James Rouse, Baltimore's waterfront developer]), and world-famous architects including Robert Venturi and Denise Scott Brown, the opportunity to redevelop the waterfront has not attracted the same strong private or public interest as in London or Hamburg.

The warehouse buildings and piers are now largely unused; private investors converted a few to condominiums and others serve touristic or temporary purposes. The Independence Port Museum (with museum ships), a hotel, multi-story car park, a marina, and a park are the result of a developer-driven piecemeal approach that has not led to long-term development. Through various participatory processes, regional leaders have sought to raise awareness of the port's past status and to develop what they called the Civic Vision for the Central Delaware, which excluded "big bang" projects such as casinos, shopping centers, and stadiums.⁸³ A civic initiative led by Penn Praxis, set up by faculty members of the University of Pennsylvania, has involved grassroots movements and initiated many tours, workshops, and hearings and a website since 2001 to bring new interest and life to the waterfront.⁸⁴ Nonetheless, Philadelphia has not joined the global movement for waterfront revitalization. Clearly, the waterfront location has not shown resilience in the case of Philadelphia (Figure 14).

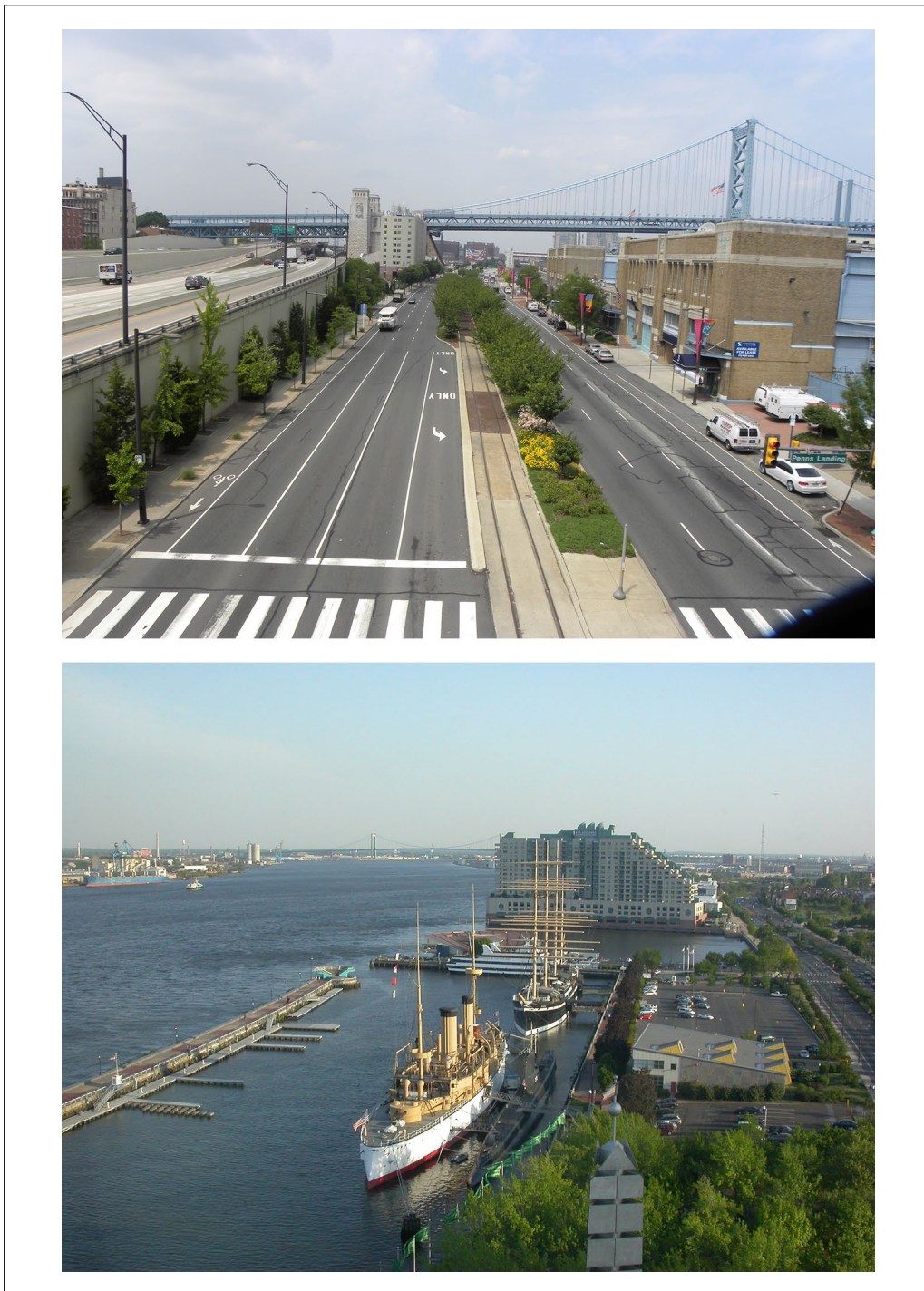


Figure 14. Top: I-95 and parallel streets cut off the Philadelphia's Delaware waterfront from the city. Photo: Jason Paris (2009) <https://www.flickr.com/photos/jasonparis/3623994505/>. Bottom: The Delaware River with industries on the Camden side (left), condominiums, and parking on a former finger pier, museums ships from the Independence Seaport Museum and the Interstate 95 that separates the waterfront from the city (right). Photo: Dirk Schubert (2007).



Figure 15. Camden Waterfront Redevelopment 2005.

Photo: Lucius Kwok, https://de.wikipedia.org/wiki/Camden_%28New_Jersey%29#/media/Datei:Camden_waterfront_skyline.jpg.

The port and industrial city of Camden, opposite Philadelphia on the east bank of the Delaware, has been even more affected by economic structural change and its consequences. Hog Island in Camden was once home to the largest shipyard in the world, the New York Shipbuilding Company. In the Second World War, the shipyard employed 35,000 people. When the orders of the U.S. Navy halted after the war, the shipyard went bankrupt and in 1970 delivered its last new ship. Since then, the yard has only carried out repairs. Other companies discontinued or slowed production. “White flight” from Camden to surrounding suburbs intensified the urban crisis.⁸⁵ The population dropped from 124,000 in 1950 to 76,000 in 2015, of whom almost 50 percent were nonwhite, an indicator that the wealthier population had left the city for the suburbs. Camden hoped that its waterfront redevelopment, opposite Penn’s Landing on the opposite side of the Delaware, would kick off a structural and image transformation. After many delays, an aquarium was built. A marina and a museum in the battleship *New Jersey* were developed but remained isolated, decoupled from the run-down urban area, and visited mostly by tourists. The concept “Two Cities—One Waterfront” proved to be a clever marketing concept for both cities but remained without any clear implementation strategy. Even though in 1990 the state appointed a Philadelphia Regional Port Authority (PRPA) and it is now responsible for the entire area on both sides of the Delaware River, no strong concept for a port city path has emerged (Figure 15).

A Military Actor in the Port City: Transforming the Navy Yard

Yet another attempt at starting a new development on former port land occurred on the Navy Yard, the former Philadelphia Navy Shipyard (PNSY) and Philadelphia Naval Business Center, a military site that brought another stakeholder into the discussion. As a former capital, Philadelphia had served as a national military base and an employer to the people of South Philadelphia starting in 1776.⁸⁶ The Navy Yard was one of the largest shipyards and naval areas in the world, with dry docks in which even the largest aircraft carriers could dock, covers approximately 1200 acres (four hundred and seventy hectares), approximately thousand buildings and sits some six miles (ten kilometer) from the Town Hall. The military part of the Navy Yard was long fenced, secured, and accessible only with permission. Closing this part has been a lengthy procedure because of all the stakeholders involved: in addition to the city of Philadelphia, three states (Pennsylvania, New Jersey, and Delaware) and federal agencies. In 1991, the Department of Defense recommended closure and the Navy Yard ultimately closed in 1995,⁸⁷ at a cost was over \$200 million between 1994 and 1999, of which over \$1.3 million was



Figure 16. Aerial view of the Reserve Basin of the U.S. Navy Philadelphia Naval Shipyard in Philadelphia on May 19, 1955.

Source: U.S. Navy photo 80-G-668655, [https://en.wikipedia.org/wiki/Philadelphia_Naval_Shipyard#/media/File:Aerial_view_of_the_Philadelphia_Naval_Shipyard_Reserve_Basin_on_19_May_1955_\(80-G-668655\).jpg](https://en.wikipedia.org/wiki/Philadelphia_Naval_Shipyard#/media/File:Aerial_view_of_the_Philadelphia_Naval_Shipyard_Reserve_Basin_on_19_May_1955_(80-G-668655).jpg).

spent on decontamination.⁸⁸ About 7,400 people were still employed in the Yard and about 36,000 jobs were indirectly connected to the Yard.

But the closure was a fatal decision for the labor market of the weakening city and for the residential district South Philadelphia closely connected to the workplaces in the Yard. Other jobs were scarce or required other qualifications.⁸⁹ New plans for the site also required an economic concept. Consensus formed quickly among planners that no amusement park or shopping mall be built on the site. With the closure of the Yard, once a jewel on the Delaware River, the area declined along with the adjacent neighborhoods in South Philadelphia.

The U.S. Navy wanted to continue to use a number of the buildings and remain the owner of the ground. It was not until 2000 that the Philadelphia Authority for Industrial Development (PAID) was able to buy about five-sixths of the area on behalf of the city, thereby accelerating its conversion to an urban district (Figure 16). The German shipyard company Meyer (Papenburg), which specializes in cruise ships, proposed building cruise ships in the remaining part, possibly creating 1,800 jobs. But it failed to acquire funding. In 2000, the Norwegian Kvaerner Group took over a section as a shipyard, receiving grants from the state of Pennsylvania, regional institutions, and the city to do so. The nostalgic hope to revive shipbuilding came with a high price: Kvaerner promptly reduced the number of workers. To date, there are still ships in the Yard from the U.S. Reserve Fleet (the “Mothball Fleet”) plus inactive units that have a modified appearance so that they can be quickly reintegrated into the active fleet.

The transformation of the Navy Yard site into an urban district, and the creation of a new development path for this area, has been slow and only partly successful, in part because large railway infrastructure, which originally served port and oil facilities on the Delaware, cuts the Yard off from the rest of the city. The South Broad Street and Rouse Avenue form the main development axes to the site. In the absence of comprehensive urban planning, the master plan for the conversion of the Yard, revised in 2013, proposed a residential area around a planned marina and golf course.⁹⁰ The plan did not make a clear switch to an urban development path and reserved

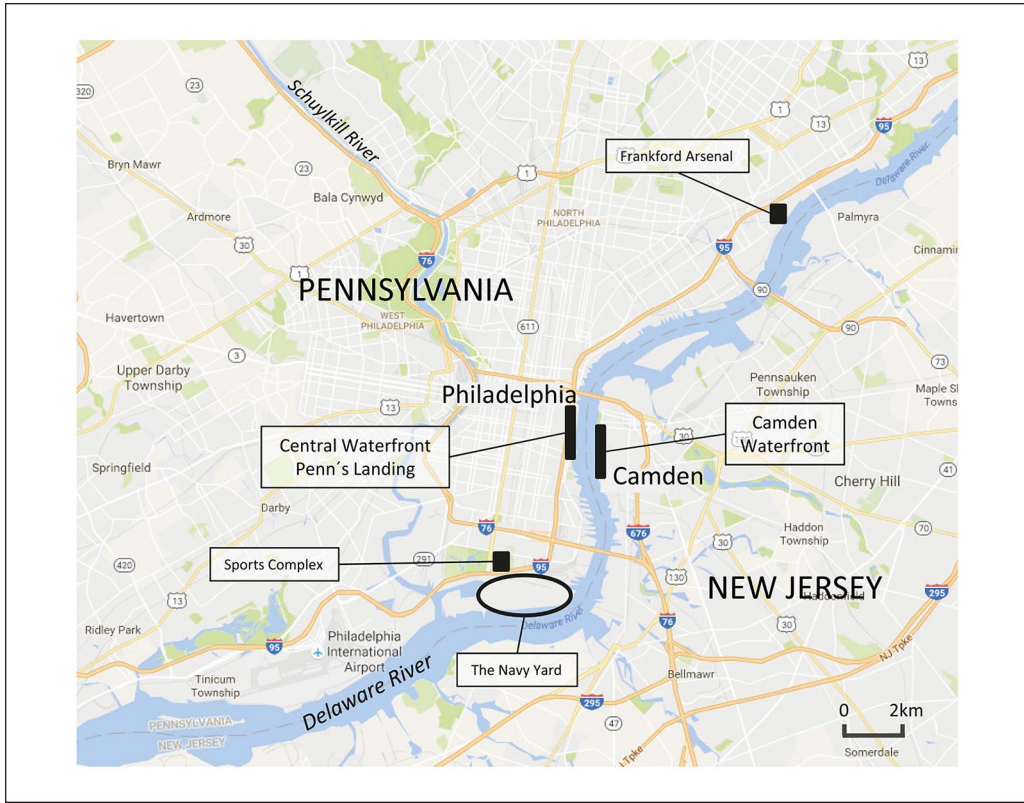


Figure 17. Map of the Philadelphia—Camden Waterfront and the Navy Yard. Copyright: <https://www.hcu-hamburg.de/it-und-medien/kartographie/> (Draft Dirk Schubert).

the eastern part of the area for port-related uses unlikely to be compatible with the planned residential development. The chemical giant GlaxoSmithKline established itself in the new urban district, followed by the fashion industry. The now multinational, hip fashion company Urban Outfitters, with headquarters in Philadelphia and over four hundred branches worldwide, aims to involve young creatives in the Yard's transformation. Companies benefit from state Keystone Opportunity Zone (KOZ) tax credits. By 2015, \$150 million in public funding had generated approximately \$750 million in private investment. Approximately 145 companies have moved in, and around 11,000 jobs have been created. Seven huge shipbuilding halls now accommodate administrative buildings, design studios, offices, a fitness center, a canteen, and a library, combining a maritime ambience with modern workplace requirements (Figure 17). Major universities intend to locate new facilities at the Navy Yard site; meanwhile, the redevelopment of the site is also in line with Philadelphia's nomination as the first UNESCO World Heritage City in the United States. And, the Navy Yard stakeholders still anticipate that new companies will create thousands of jobs and invest three billion dollars here.⁹¹

But the optimistic visions of developers and planners for a rapid transformation of the Navy Yard into an urban district have not yet come true. Public transport connections have not been ideal for transporting large numbers of people into the area and establishing a strong new development path. A planned extension of the underground line along Broad Street to Navy Yard has had difficulty acquiring funding.⁹² Meanwhile, the Navy Yard Loop shuttle to and from the Broad Street Station runs infrequently. The 2013 plan therefore carved out large areas for parking lots. The area had previously not been open to the public and planners had considered it to be a foreign

body within the urban fabric, so it needs a new narrative and identity. Similarly, as a residential location by the water it needs a marketing strategy. But so far, no comprehensive stories are forthcoming. Meanwhile, demand for housing, office, and commercial space remains insufficient in Philadelphia. The nearby downtown district contains many empty and available buildings. And, cruise ship tourism, which helped Hamburg HafenCity develop, was discontinued in Philadelphia in 2011.

Nor has the Navy Yard site reached critical mass as a new urban district. In contrast to the Hamburg case, the builders have so far assembled only fragments, like unconnected building blocks. Even the ambitious goal of sustainability has been realized only in stages, remaining more aspirational than concrete. So far, only single buildings in the Yard have been reused. The size of the area, the presence of historical monuments, existing buildings, the ongoing problem of contamination, complex governance structures regulating the space, and complicated property and lease relationships continue to make it difficult to reutilize this site for civilian purposes. No one has yet networked parts of the Northern Delaware Waterfront, the Frankford Arsenal, or the downtown Philadelphia waterfront with the Navy Yard plans in a long-term strategy. The southern waterfront of the Delaware in Camden also remains unaffected by these plans. Furthermore, the planners' hopes of having nothing to do with the military administration of the site proved wrong. Above all, the Yard lacks the coupling of planning and timely implementation that has produced attractive waterfront locations elsewhere. The complete restructuring of the Navy Yard will therefore take significantly longer than assumed by planners. It will take a long time for military use to be replaced by green industries, creative industries, research, and the IT industry of a future-oriented knowledge society.

Once the largest port in the United States, Philadelphia is currently only at number twenty-five of major U.S. ports. Deindustrialization, job losses, and unemployment hit the city hard, like other cities in the Rust Belt.⁹³ The city has largely abandoned its historic port path. Science and research are now major economic forces, alongside tourism, medicine, biotechnology, telecommunications, and financial services. Thus, in Philadelphia, national, municipal, and port interests have diverged, creating a city development path with little links to port or maritime interests.

Concluding Remarks

The comparative exploration of path dependence in three case studies shows different patterns of resilience, and sometimes the failure of resilience. All three cities experienced the same historical shocks: during industrialization, the expansion of global trade networks translated into increased transshipment in ports. Meanwhile, rapid technological innovation produced larger ships requiring deeper water in ports, and containerization required extensive new territories and fewer workers. But each port city responded to these changes in distinctive ways. Each city opted for a different type of sea and land developments, demonstrating how local institutional and physical setups play a role in port city resilience. Political changes, ranging from the loss of an empire, in the case of London, to being cut off from the hinterland through the creation of a wall that divided Europe, in the case of Hamburg, or the departure of port functions and military infrastructure in the case of Philadelphia, called local decision-makers to action. In the case of London, the response to new economic and technological challenges remained largely in the hands of the private sector (including huge companies). National and local governments intervened mostly to negotiate claims of the working-class population at times when the impact of the free market was too divisive. The example of Hamburg shows how a port and city run by local government institutions and actors (who are also port elites) can be beneficial for both port and urban development. In the case of Philadelphia, the decline of support of local and national leaders for port activities and for waterfront redevelopment shows how a city can leave its long-time maritime path.

Resilience and path-dependence studies do not provide empirical verification or falsification.⁹⁴ But, together, these detailed case studies give insight into the long-term impact of institutional choices and the relevance of development paths and critical junctures. They also provide insight into the need for planning for an uncertain future,⁹⁵ notably the important question of how port cities are going to address future environmental challenges. At a time of climate change and rising sea-levels that particularly affects both cities and ports, port cities need a combined resilience strategy. Research on the history of cities and ports, including dimensions of resilience and path dependence, can help us get a better grip on the relation between spatial and social development.⁹⁶ Different approaches to this work—individualizing, microanalytical, primarily empirical-phenomenologically oriented—can be combined with each other and with generalizing, structuralist, and theoretical problem-oriented ones.

Looking forward, it will be necessary for scholars and planners to consider cities over longer periods of time, and to work comparatively and across disciplines. Case studies should consider spatial, social, and cultural developments at the macro, meso, and micro levels. Here, the three case studies show that politicians and planners can no longer simply pursue the path of funding harbor construction and docked seaport industries that has been successful for port and city elites at any cost; this strategy achieved a robust maritime economy for centuries, but it is no longer an option. A more diverse, economically, socially, and environmentally just approach is needed as ports, cities, and regions face global urgencies, including climate change, sea water level rise, migration, and the energy transition, and local urgencies, such as education and job creation. Finding shared values and common understanding are necessary first steps for cooperation, shared development paths, and long-term, evolutionary resilience.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. Andre Sorensen, "Taking Path Dependence Seriously: An Historic Institutional Research Agenda in Planning History," *Planning Perspectives* 30, no. 1 (2015): 17-38.
2. André Sorensen, "Planning History and Theory: Institutions, Comparison, and Temporal Processes," in *The Routledge Handbook of Planning History*, ed. Carola Hein (New York: Routledge, 2018), 35-45.
3. Peter A. Hall and Rosemary C. R. Taylor, "Political Science and the Three New Institutionalisms," *Political Studies* 44, no. 5 (1996): 936-57; Paul Pierson, *Politics in Time: History, Institutions, and Social Analysis* (Princeton: Princeton University Press, 2004), 21.
4. The German sociologists Helmuth Berking and Martina Löw introduced the term "Eigenlogik" in 2005, focusing on the peculiarities and unique selling points of cities. Helmuth Berking and Martina Löw, *Die Eigenlogik der Städte. Neue Wege für die Stadtforschung* (Frankfurt am Main and New York: Campus, 2005).
5. Scott E. Page, "Path Dependence," *Quarterly Journal of Political Science* 1 (2006): 87-115.
6. Vivien Lowndes, "New Institutionalism and Urban Politics," in *Theories of Urban Politics*, ed. Jonathan S. Davies and David L. Imbroscio (Los Angeles, CA: Sage, 2009), 95; Similarly, James Mahoney and Kathleen Ann Thelen, *Explaining Institutional Change: Ambiguity, Agency, and Power* (Cambridge and New York: Cambridge University Press, 2010), 8.
7. Michael E. Porter, "Clusters and the New Economics of Competition," *Harvard Business Review* 76 (1998): 77-90.
8. Simin Davoudi, "Resilience: A Bridging Concept or a Dead End?" *Planning Theory & Practice* 13, no. 2 (June 2012), 299-333.

9. Carola Hein, "The Port Cityscape: Spatial and Institutional Approaches to Port City Relationships," *PORTUSplus* no. 8 (2018); Carola Hein, "Port Cityscapes: Conference and Research Contributions on Port Cities," *Planning Perspectives* 31, no. 2 (2016): 313-26; Carola Hein, "Temporalities of the Port, Waterfront, and the City," in *City on Water*, ed. Guenter Warsewa (Wroclaw: Association of European Schools of Planning, 2016), 36-45; Carola Hein, "Modern Cities: Interactions: Port Cities," in *Oxford Handbook on Cities in History*, ed. Peter Clark (Oxford and New York: Oxford University Press, 2012), 809-28; Carola Hein, *Port Cities: Dynamic Landscape and Global Networks* (New York: Routledge, 2011).
10. Pierson, *Politics in Time*; Giovanni Capocchia and R. Daniel Kelemen, "The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism," *World Politics* 59, no. 3 (2007): 341-69; Vivian Schmidt, "Discursive Institutionalism: The Explanatory Power of Ideas and Discourse," *Annual Review of Political Science* 11 (2008): 303-26; John Creighton Campbell, "Ideas, Politics, and Public Policy," *Annual Review of Sociology* 28 (2002): 21-38; Jennifer Robinson, "Cities in a World of Cities: The Comparative Gesture," *International Journal of Urban and Regional Research* 35, no. 1 (2011): 1-23; Sorensen, "Taking Path Dependence Seriously"; Charles Tilly, *Big Structures, Large Processes, Huge Comparisons* (New York: Russell Sage Foundation, 1984).
11. Brian Hoyle, "The Port-City Interface: Trends, Problems and Examples," *Geoforum* 4 (1989): 429-35; Dirk Schubert, "Ports and Urban Waterfronts," in: *The Routledge Handbook of Planning History*, ed. Carola Hein (New York and London: Routledge, 2018), 338-50; Karel van den Berghe, "Why Are Port Cities Geographically Analysed? The Ideal-Typical Concepts Create an Institutional Lock-in," *Ruimte & Maatschappij*, 7 (2016): 6-27; S. W. Lee, D.-W. Song, and Cesar Ducruet, "A Tale of Asia's World Ports: The Spatial Evolution in Global Hub Port Cities," *Geoforum* 39 (2008): 372-85; S. W. Lee and Cesar Ducruet, "Spatial Glocalization in Asia-Pacific Hub Port Cities: A Comparison of Hong Kong and Singapore," *Urban Geography* 30 (2009): 162-84.
12. Carola Hein and Yvonne van Mil, "Towards a Comparative Spatial Analysis for Port City Regions Based on Historical Geo-Spatial Mapping," *PORTUSplus* no. 8 (2018).
13. Robert K. Yin, *Case Study Research Design and Methods*, 5th ed. (Thousand Oaks, CA: Sage, 2014).
14. Three articles in the Journal MSG (*Moderne Stadtgeschichte* 2/2018) refer to the concept of path dependence (Pfade des Urbanen): Clemens Zimmermann, Antwerpen 1550-1600: Abbruch oder Verengung eines Entwicklungspfades? (31-43), Christoph Strupp, Freie und Hansestadt Hamburg? Maritime Pfadabhängigkeiten in Hamburg seit den 1950er Jahren (59-72), Jörn Eiben, "Wilhelmshaven blickt seewärts"—Beginn und Ende eines wirtschaftspolitischen Pfades (86-98). See also: Jürgen Beyer, *Pfadabhängigkeit. Über Institutionelle Kontinuität, Anfällige Stabilität Und Fundamentalen Wandel* (Frankfurt and New York: Campus, 2006). Theo Notteboom, P. De Langen, and W. Jacobs, "Institutional Plasticity and Path Dependence in Seaports: Interactions Between Institutions, Port Governance Reforms and Port Authority Routines," *Journal of Transport Geography* 27 (2013): 26-35.
15. John Keay, *The Honorable Company: A History of the English East India Company* (London 1993: Harper Collins), 454.
16. Joachim Heinrich Schultze, *Die Häfen Englands. Eine wirtschaftsgeographische Untersuchung der Schiffahrtszentren in Großbritannien* (Leipzig, 1930): Schriften des Weltwirtschafts-Instituts der Handelshochschule Leipzig.
17. Joseph Broodbank, *History of the Port of London*, Vol. I (London: Daniel O'Connor, 1921), 96.
18. Jerry White, *London in the Twentieth Century. A City and its People* (London: Viking, 2001), 172.
19. British History Online, "St Katherine's Dock," accessed December 30, 2019, <https://www.british-history.ac.uk/old-new-london/vol2/pp117-121>; Dirk Schubert, *Stadterneuerung in London und Hamburg. Eine Stadtbaugeschichte zwischen Modernisierung und Disziplinierung* (Braunschweig and Wiesbaden: Vieweg, 1997), 27.
20. Broodbank, *History of the Port of London*, 67.
21. Port Cities London, "Surrey Commercial Docks (1807-1970)," accessed December 27, 2019, <http://portcities.org.uk/london/server/show/ConFactFile.81/Surrey-Commercial-Docks.html>.
22. Gareth Stedman Jones, *Outcast London: A Study in the Relationship between Classes in the Victorian Society* (London: Pantheon, 1984), 53.
23. Terry McCarthy, ed., *The Great Dock Strike 1889* (London: Weidenfeld and Nicolson, 1988).

24. Shafik Kasim Al Naib and R. J. M. Carr, *Dockland, An Illustrated Historical Survey of Life and Work in East London* (Dagenham: North East London Polytechnic, 1988), 71.
25. Jonathan Schneer, *London 1900. The Imperial Metropolis* (New Haven and London: Yale University Press, 1999), 42.
26. Broodbank, *History of the Port of London*, 282.
27. Broodbank, *History of the Port of London*, 316.
28. Port of London Authority, "Port of London Authority Historical Timeline," accessed December 29, 2019, <http://www.pla.co.uk/History>.
29. Schultze, *Die Häfen Englands*, 35.
30. Peter Stone, *The History of Port of London, A Vast Emporium of All Nations* (Barnsley: Pen & Sword, 2017), 145.
31. Alan Palmer, *The East End. Four Centuries of London Life* (London: Rutgers University Press, 2000), 160.
32. Port Cities London (Tilbury Dock (1886-1981), <http://www.portcities.org.uk/london/server/show/ConFactFile.82/outputFormat/print/Tilbury-Dock.html>).
33. Mayor of London, *The London Plan. Spatial Development Strategy for Greater London. Consolidated with Alterations since 2004* (London: Greater London Authority, 2008); Carola Hein, "Port Cities and Urban Wealth: Between Global Networks and Local Transformations," *International Journal of Global Environmental Issues* 13, no. 2/3/4 (2014): 339-61.
34. Michael Hebbert, *London, More by Fortune than Design* (Chichester: John Wiley & Sons, 1998), 186.
35. Sue Brownill, *Developing London's Docklands: Another Great Planning Disaster?* (London: Paul Chapman Publishing, 1990); Sue Brownill and Glen O'Hara, "From Planning to Opportunism? Re-Examining the Creation of the London Docklands Development Corporation," *Planning Perspectives* 4 (2015): 537-70.
36. Janet Foster, *Docklands Cultures in Conflict, Worlds in Collision* (London: UCL, 1999).
37. Jane Cox, *London's East End. Life Traditions* (London: Weidenfeld and Nicolson, 1994).
38. Peter J. Turnbull, "The Docks after Deregulation," *Maritime Policy and Management* 13, no. 1 (1991): 15-27; S. Page, "The London Docklands: Redevelopment Schemes in the 1980s," *Geography: The Journal of the Geographical Association* 72 (1987): 59-63, 62.
39. A. McIntosh, "Another Point of View on London's Docklands," in: *Waterfronts: A New Frontier for Cities on Water*, ed. R. Bruttomesso (Venice: Citta d'Aqua, 1993), 47-51.
40. A. Merrifield, "The Canary Wharf Debacle: From "TINA"—There Is No Alternative—To "THEMBA"—There Must be an Alternative," *Environment and Planning* 1 (1993): 1247-65, 1250.
41. John Barnes, Bob Colenutt, and Patrick Malone, "London: Docklands and the State," in: *City, Capitol and Water*, ed. Patrick Malone (London and New York: Routledge, 1966), 18.
42. Michael Hebbert and Tony Travers, *The London Government Book* (London: Cassel, 1988).
43. Dirk Schubert, "Stadtplanung ohne Planung—Die Docklands in London und die Aushebelung des Englischen Planungssystems Als neue 'Planungskultur,'" in *Neue Wege der Planungskultur*, ed. J. J. Brech (Darmstadt: WOHNBUND, 1993), 289-295.
44. Stephen Syrett and Robert Baldock, *Governing London. Competitiveness and Regeneration for a Global City* (London: Middlesex University Press, 2001); Ben Pimlott and Nirmala Rao, *Governing London* (Oxford: Oxford University Press, 2002).
45. Dirk Schubert, "Governancestrukturen, Pfadentwicklungen und räumliche Auswirkungen auf das Verhältnis von Stadt- und Hafenenwicklung in London und Hamburg," in: *Wer entwickelt Stadt? Geschichte und Gegenwart lokaler Governance, Akteure, Strategien, Strukturen*, ed. Uwe Altröck and Grischa Bertram (Bielefeld: transcript, 2012), 125-49.
46. Mike Raco and Emma Street, "Resilience Planning, Economic Change and The Politics of Post-recession Development in London and Hong Kong," *Urban Studies* 49, no. 5 (April 2012): 1065-87.
47. Hans J. Teuteberg, "Die Entstehung des modernen Hamburger Hafens 1866-1896," *Tradition* 17, no. 4/5 (1972): 257-91.
48. Dirk Schubert, "The Great Fire of Hamburg. From Catastrophe to Reform," in: *Flammable Cities. Urban Conflagration and the Making of the Modern World*, ed. Greg Bankoff, Uwe Lübken, and Jordan Sand (Madison: The University of Wisconsin Press, 2012), 212-34.
49. Arnold Kludas, Dieter Maass, and Susanne Sabisch, *Hafen Hamburg. Die Geschichte des Hamburger Freihafens von den Anfängen bis zur Gegenwart* (Hamburg: Kabel Verlag, 1988), 22; Helmut F.

- Hansen, *Im Auf und Ab der Gezeiten. Die wechselvolle Geschichte des Hamburger Hafens* (Herford: Koehler, 1989).
50. Heinrich Reincke, *Hamburg. Ein Abriss der Stadtgeschichte von den Anfängen bis zur Gegenwart* (Bremen: Friesen Verlag, 1926), 258.
 51. Hermann Eberstadt, *Hamburgs Anschluss an das deutsche Zollgebiet* (Hamburg: Otto Meißner, 1881); Jürgen Lafrenz, "Die Speicherstadt in Hamburg," *Die alte Stadt* 4 (1994): 318-38; Karin Maak, *Die Speicherstadt im Hamburger Freihafen, Eine Stadt an Stelle der Stadt* (Hamburg: Christians, 1985); Walter Emmerich, *Der Freihafen* (Hamburg: Okis Verlag, 1960).
 52. Jürgen Rath, *Arbeit im Hamburger Hafen. Eine historische Untersuchung* (Hamburg: Ergebnisse Verlag, 1988).
 53. Robert Lee, "The Socio-Economic and Demographic Characteristics of Port Cities: A Typology for Comparative Analysis?" *Urban History* 25, no. 2 (1998): 147-72, 150.
 54. Michael Grüttner, *Arbeitswelt an der Wasserkante. Sozialgeschichte der Hamburger Hafentarbeiter 1886-1914* (Göttingen: Vandenhoeck und Ruprecht, 1984).
 55. Richard Evans, *Tod in Hamburg. Stadt, Gesellschaft und Politik in den Cholera-Jahren 1830-1910* (Reinbek, 1990).
 56. Dieter Maass, *Der Ausbau des Hamburger Hafens 1840 bis 1910* (Hamburg: Schifffahrts-Verlag Hansa, 1990), 97.
 57. Dirk Schubert, *Stadterneuerung in London und Hamburg. Eine Stadtbaugeschichte zwischen Modernisierung und Disziplinierung* (Braunschweig and Wiesbaden: Vieweg, 1997).
 58. Ralf Heinsohn, *Schnellbahnen in Hamburg: Die Geschichte Von S—Bahn Und U—Bahn; 1907—2007* (Norderstedt: Books on Demand GmbH, 2006); Elke Pahl, "Die Zerstörung Des Gängeviertel—Ein Versuch, Hamburger Hafentarbeiter Über Ihre Wohnungen Zu Kontrollieren," in *Autonomie—Materialien Gegen Die Fabrikgesellschaft Neue Folge Nr. 3: Die Zweite Zerstörung Deutschlands*, ed. Redaktionskollektiv (Hamburg/Tübingen: Autonomie 3, 1980), 83-87.
 59. Maass, *Der Ausbau des Hamburger Hafens 1840 bis 1910*, 180.
 60. Ludwig Wendemuth and Walter Böttcher, *Der Hafen von Hamburg* (Hamburg: Meissner und Christiansen, 1928), 164.
 61. Jan Heitmann, *Hamburgs Hafen in der "Stunde Null"* (Hamburg: Elbe Spree Verlag, 2006); Kurt Grobecker, *Hafen Hamburg, Sechs Jahrzehnte Erfolgsgeschichte* (Hamburg: Koehlers Verlagsgesellschaft, 2004).
 62. Christoph Strupp, "Freie und Hansestadt Hamburg? Maritime Pfadabhängigkeiten in Hamburg seit den 1950er Jahren," *Moderne Stadtgeschichte* 2 (2018): 59-72.
 63. Christoph Strupp, "The Rhetoric of 'Provision': Public and Political Disputes over Port Planning in Hamburg in the 1970s and 1980s," in: *History. Urbanisme. Resilience. Change and Responsive Planning*, ed. Carola Hein, Proceedings 03 (Delft: International Planning History Society, 2016), 135-48.
 64. Dirk Schubert, "Visionen und Scheitern der Industrialisierung der Unterelberegion, Herausforderungen zwischen Ökonomie und Ökologie," in: *Die Elbe. Über den Wandel eines Flusses vom Wiener Kongress (1815) bis zur Gegenwart*, ed. Andreas Martin and Norbert Fischer (Leipzig: Leipziger Universitätsverlag, 2018), 175-203.
 65. Freie und Hansestadt Hamburg—Behörde für Wirtschaft und Innovation—Hamburg Port Authority, *Hamburg hält Kurs. Der Hafenentwicklungsplan bis 2025* (Hamburg, 2012), 4.
 66. Dirk Schubert, "Three Contrasting Approaches to Urban Redevelopment and Waterfront Transformations in Hamburg," in *Water and Cities. Managing a Vital Relationship*, ed. Shi Nan, Jim Reilly, and Fran Klass, Review 10 (The Hague: ISOCARP, 2014), 124-37.
 67. Agnes Seemann, ed., *UNESCO Welterbe Speicherstadt und Kontorhausviertel mit Chilehaus. Dokumentation des Antragsverfahrens* (Berlin: Henrik Bäder Verlag, 2017).
 68. Iris Grossmann, "Perspectives for Hamburg as a port city in the context of a global changing environment," *Geoforum* 39, no. 6 (2008): 2062-72.
 69. <https://www.hafencity.com/en/concepts/flood-secure-bases-instead-of-dikes-safe-from-high-water-in-hafencity.html>.
 70. Jeffrey Cohen, "The Fabric of a Maritime City: Streetscapes and Building Patterns of Mid-19th Century Philadelphia as a Port," Presentation at the Port Cities Conference (Bryn Mawr: Bryn Mawr College, 2008).

71. John W. Reps, *Town Planning in Frontier America* (Princeton: Princeton University Press, 1969).
72. The Philadelphia of To-Day, The World's Greatest Workshop: America's largest Home City with more home owners than any other City in the world. W.T. Littig & Co., N.Y., 1908. See also: Workshop of the World-Philadelphia, accessed December 30, 2019, <https://www.workshopoftheworld.com/index.html>.
73. Reps, *Town Planning in Frontier America*.
74. Carola Hein, Refineries (Oil), *The Encyclopedia of Greater Philadelphia*, accessed November 20, 2016, <http://philadelphiaencyclopedia.org/archive/refineries-oil/#22535>.
75. Gilbert Holland Montague, *The Rise and Progress of the Standard Oil Company* (New York: Harper & Brothers, 1902).
76. "Our Oil Trade. Petroleum the Rival of King Cotton," *Philadelphia Inquirer*, October 16, 1867; John A. Jakle, *City Lights. Illuminating the American Night* (Baltimore: Johns Hopkins University Press, 2001).
77. Neil McElwee, "Atlantic Refining Co.," *Oil 150*, accessed August 27, 2018, oil150.com/essays/article?article_id=159; "Struck Oil. A Great Fire at Point Breeze," *North American*, June 14, 1879, 2.
78. William Mátos, "Atlantic Refining Company," in: *Philadelphia, Its Founding and Development, 1683-1908*, ed. William Mátos (Philadelphia: Executive Committee in charge of the Founders' Week Celebration, 1908), 318-319.
79. Frank Hamilton Taylor and Wilfred Harvey Schoff, *Hafen Und Stadt Philadelphia* (Philadelphia: Herausgegeben von dem lokalen Organisations-Komitee des Kongresses [XII Internationalen Schiffahrtskongress], 1912); John James Macfarlane, *Manufacturing in Philadelphia, 1683-1912: With Photographs of Some of the Leading Industrial Establishments*, (Philadelphia: Philadelphia commercial museum, 1912).
80. Stephen McGovern, "Evolving Visions of Waterfront Development in Postindustrial Philadelphia: The Formative Role of Elite Ideologies," *Journal of Planning History* 7, no. 4 (2008): 295-326.
81. McGovern, "Evolving Visions of Waterfront Development in Postindustrial Philadelphia."
82. Dirk Schubert, "Umnutzung von Marinearealen in den USA—Visionen für den Philadelphia Naval Shipyard," *RaumPlanung* 193, no. 5 (2017): 55-61.
83. Harris M. Steinberg, "Philadelphia in the Year 2059," in: *Imagining Philadelphia, Edmund Bacon and the Future of the City*, ed. Scott Gabriel Knowles (Philadelphia: Philadelphia University Press, 2009), 112-44, 131.
84. Harris M. Steinberg, "Creating a Civic Vision for the Central Delaware Riverfront," *National Civic Review* (Fall 2010): 29-35.
85. Howard Gillette Jr., *Camden after the Fall. Decline and Renewal at a Post-Industrial City* (Philadelphia: University of Pennsylvania Press, 2005), 124.
86. Jeffrey W. Dorwart and Jean K. Wolf, *Philadelphia Navy Yard, From the Birth of the US Navy to the Nuclear Age* (Philadelphia: University of Pennsylvania Press, 2001).
87. David S. Sorensen, *Military Base Closure. A Reference Handbook* (Westport and London: Praeger Security International, 2007); Ron Hess, Jefferson P. Marquis, John F. Schank, and Malcolm MacKinnon, *The Closing and Reuse of the Philadelphia Naval Shipyard* (Santa Monica: National Defense Research Institute [RAND], 2001).
88. C. M. Clark, "Learning from Experience: Defense Disposals in the UK Contrasted with Sustainable Redevelopment in Four US East Coast Navy Yards," in: *Defense Sites. Heritage and Future*, ed. C. M. Clark and C. A. Brebbia (Southampton, 2012), 243-53.
89. Christopher A. Preble, "Twelve Miles, Eighteen Years, and Worlds Apart. The Cases of the Philadelphia Navy Yard and the Frankford Arsenal," in: *Sustainable Regeneration of Former Military Sites*, ed. Samee Baggaeen and Celia Clark (London and New York: Routledge, 2016), 106-25.
90. The Navy Yard Master Plan 2013 Update, accessed October 15, 2016, <http://www.navyyard.org/>.
91. Navy Yard Philadelphia, accessed January 10, 2020, <https://navyyard.org/about-the-campus/master-plan/>.
92. Carolyn T. Adams, *From the Outside, in: Suburban Elites, Third Sector Organizations and the Reshaping of Philadelphia* (Ithaca and London, 2014), 31.
93. Steven High, *Industrial Sunset. The Making of North America's Rust Belt, 1969-1984* (Toronto: University of Toronto, 2002).

94. Jean Philippe Vergne and Rudolphe Durand, "The Missing Link between the Theory and Empirics of Path Dependence: Conceptual Clarification, Testability Issue, and Methodological Implications," *Journal of Management Studies* 47 (2010): 736-60, 737.
95. Han Meyer, "Making Urbanizing Deltas More Resilient by Design," in: *History. Urbanisme. Resilience. Change and Responsive Planning*, ed. Carola Hein, Proceedings 03 (Delft: International Planning History Society, 2016), 13-24; Stan Majoor, "Resilient Practices: A Paradox-Oriented Approach for Large-Scale Development Projects," *Town Planning Review* 86, no. 3 (2015), 258-77, 259.
96. PortCityFutures at Portcityfutures.nl and, Carola Hein, Yvonne van Mil, "Mapping as Gap Finder: Geddes, Tyrwhitt and the Comparative Spatial Analysis of Port City Regions," *Urban Planning* 5, no. 2, doi:10.17645/up.v5i2.2803.

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