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Editorial

Shipping Canals in Transition

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Abstract
Shipping canals have supported maritime traffic and port development for many centuries. Radical transformations of these shipping landscapes through land reclamation, diking, and canalization were celebrated as Herculean works of progress and modernity. Today, shipping canals are the sites of increasing tension between economic growth and associated infrastructural interventions focused on the quality, sustainability, and resilience of natural systems and spatial settlement patterns. Shifting approaches to land/water relations must now be understood in longer political histories in which pre-existing alliances influence changes in infrastructure planning. On the occasion of the 150th Anniversary of the New Waterway (Nieuwe Waterweg), the Leiden–Delft–Erasmus universities PortCityFutures Center hosted an international symposium in October 2022 to explore the past, present, and future of this channel that links Rotterdam to the North Sea. Symposium participants addressed issues of shipping, dredging, and planning within the Dutch delta, and linked them to contemporary debates on the environmental, spatial, and societal conditions of shipping canals internationally. The thematic issue builds on symposium conversations, and highlights the importance of spatial, economic, and political linkages in port and urban development. These spatial approaches contribute to more dynamic, responsive strategies for shipping canals through water management and planning.

Keywords
geoengineering; inland waterways; port territory; ports; shipping and environment; shipping canals; urban canals

Issue
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Shipping canals have been at the heart of economic and spatial restructuring for many centuries. They are hubs of political claims, economic development projects, and visions of national identity. They are key infrastructures for sea-land connections, at the heart of the development of port city territories and of the ecological rethinking of urban deltas. Shipping canals are not only important for spatial development on a horizontal plane; they are also key to vertical development: think of the depth of the sea and dredging.

Canals have a long history. The Grand Canal in China, a UNESCO World Heritage Site and the longest artificial canal in the world, goes back more than 2500 years. Most of the canals that are relevant today date to the "second industrial revolution" of the late nineteenth century, when shipping canals were part of complex inland waterway systems, constructed by states as a way to extend production networks into the hinterlands to gain access to cheaper labor and to facilitate resource extraction. Along with railroads, shipping channels formed the

networks that imprinted a new territorial "mosaic of industrial urbanism" (Brenner, 2004, p. 119). They spatially redistributed value unevenly across territories with new cores and peripheries.

The relationship between global systems and canal infrastructure is marked by the shaping of international shipping canals. The Suez Canal and the Panama Canal are examples. They shifted global shipping flows and changed the fate of many cities, such as the Mediterranean ones that once again thrived as ships from Asia no longer took the long way around Africa to reach Europe. Both canals proved to be major logistical chains in a network of empire and colonial relationships that continued after 1945 and were essential links in the new geopolitical order during the Cold War. Their depth and width have even become a measurement for the size and draught of ships.

Similarly, the New Waterway in the Netherlands, created in the nineteenth century, was and is inextricably linked to this global infrastructure and the ongoing spatial transformations. It served as a catalyst for a fundamental transition, which led to the explosive growth of the port and city of Rotterdam. The transition was accompanied by a structural change in the river drainage system, and of the ecological systems in and around the estuary, including the development of the industrial port complex Botlek-Europoort-Maasvlakte in the mid-twentieth century. The Maas changed from an estuary to an industrial port canal that must now be dredged annually.

Rotterdam owes its world port status to the New Waterway. Houston's status arrived via the Houston Ship Channel, and Shanghai's came from the Huangpu River, an artificially dug shipping channel of the Yangtze River Delta, which, like Rotterdam, transformed Shanghai into an industrial port after WWII. The economic globalization of the 1990s created the conditions for China to become a new world and maritime power. China's Belt and Road Initiative uses major works of infrastructure—including existing and new maritime and land-based construction to extend its global power. Like France, England, and America in the past, China uses shipping canals—existing and planned new ones—as part of a world infrastructure. China's new power regime is based on logistical superiority in shipping and global trade.

Today, shipping canals continue to be excellent objects for the study of extended urbanization and for reflections on infrastructure as socio-cultural objects and on ecosystems and geopolitical relations. In 2017, the 56 countries of the United Nations Economic Commission for Europe signed the European Agreement on Main Inland Waterways of International Importance, hoping water transport would enhance the efficiency of logistics distribution, with fewer greenhouse gas emissions generated from truck cargo. But the "waterways as roads" strategy reduces and instrumentalizes ecology to service offsite wealth accumulation. In this service, waterway dredging and maintenance perpetually disturb marine and riparian habitat, threatening the life cycles of the deeper ecology. As Joshua Lewis (2023, p. 264) writes, "balancing the needs for efficient navigation, coastal restoration, and flood protection is becoming challenging for responsible agencies in the [Mississippi Delta] region."

New fundamental transitions are needed, raising the question as to whether shipping canals can act globally as catalysts for change in multiple, inextricably linked fields: water management and flood protection, biodiversity, estuarian ecosystem restoration, energy transition in the industrial port complex, regional spatial structure, and strong "green-blue" structures, all with consideration for the history and heritage of culture, territory, and the built environment.

This thematic issue includes contributions that consider contemporary regional, economic, global, logistical, and natural dimensions of international shipping canals. The editors invited participants to consider the values that drive water engineering, economies of scale, and the political and legal instruments that have allowed for the construction and maintenance of the canals—land ownership, expropriation, and land use—as constituting essential elements of nature-culture ecosystems.

The contributions explore waterways in diverse geographies, including the Deux-Rives project in Strasbourg (Biscaya & Elkadi, 2023) and the Grand Maritime Port of Nantes Saint-Nazaire and Loire Estuary in France (Duval & Bahers, 2023); the Manchester Ship Canal (Biscaya & Elkadi, 2023) as well as the broad inland waterway network in the UK (Terziev et al., 2023); the Lower Vistula inland waterway (Golędzinowska, 2023), the Ports of Gdańsk and Elbląg in Poland (Marciniak, 2023), and their international connection through the Danish Straits (Krośnicka & Wawrzyńska, 2023); the port city of Skikda on the banks of the Safsaf River in northeastern Algeria (Ghennaï et al., 2023); the Tagus Estuary in Portugal (Costa et al., 2023); and the Mississippi River Ship Channel (Lewis, 2023) and Gulf Intracoastal Waterway (Lessoff, 2023) in the US.

The thematic issue illustrates that shipping canal strategies remain path dependent on older regimes. It examines how cities and ports became disconnected and how the ongoing transformations of river deltas due to shipping canal dredging will demand new perspectives on port-hinterland relationships that will impact future urban planning processes. For instance, older canal networks in Amsterdam and London are linked to long-term processes of urban development. Post-industrial interpretations of mobility and inner-city connections have proved to be of value in reconsidering functional diversity and local development in these two cities (Alsavada & Karimi, 2023). Shanghai's future strategies are dependent on its location in an area with abundant waterways and the possibilities of reconnecting the urban with a rural hinterland. Economic and commercial rationalities are leading, but often geopolitical considerations play a fundamental role in the finalization of

decision-making (den Hartog, 2023). The case study of the Elbląg port addresses the geopolitical situation associated with Poland's accession to the EU in 2004, which led to deterioration of economic relations with the Russian Federation. Russia's invasion of the Ukraine in February 2022 has urged another approach to canal through the Vistula Spit to allow for shipping to bypass Russian territory (Breś & Lorens, 2023).

The articles incorporate a range of methods, including the catalytic-based approach, hydrodynamic performance analysis, development thresholds analysis, SWOT analysis, PESTEL (political, economic, sociocultural, technological, environmental, legal strategic planning tool) and the MICMAC (micro/macro) scenario method, with theoretical frames ranging from urban metabolism to the UNESCO historic urban landscape. Many contributions emphasize that ship channels are not just navigation networks but have to be placed in the broader dynamics of water/land and city/territory relations. The concepts of (hydrological) porosity and fluid territories serve to bring home the shifting ways in which water and land are articulated in port city territories and call for new types of visualization (Hein et al., 2023).

Today, more than in the past, new shipping canals and the necessity of dredging have become controversial, and negative effects on the environment are taken more seriously. The agendas of politicians, transnational business, maritime economists, urban planners, and environmentalists reveal different priorities. The case studies show that innovations, planning decisions, and technological adaptations dominate the outcomes. The decision-making process is embedded in "hydrocracies" (Carse & Lewis, 2017) that operate as state bureaucracies in control of water management and their associated network of shipping firms, maritime industries, port authorities, government and academic institutions, and NGOs effectively block regime shifts that are needed to address these fundamental transitions. Ports and shipping canals have become too dependent on global supply chains that emphasize capacity, efficiency, and volumetric output. Regime shifts demand new political and social contracts as is evident from anthropological studies of distributive power regimes. Urban planners need to address the ultimate ecological question and develop hydrocracies-resistant design strategies. The issues discussed boil down to a fundamental question: Who owns the river?

Conflict of Interests

The authors declare no conflict of interests.

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