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"For Thousands of Years, Waters Delineated the Destiny of This City and Its People": A Material Cartography of the Coastlines and the Shaping of Istanbul's Port Geography

Gökçen Erkılıç

Abstract
The planetary scale of urbanization and shifting scales of ecological devastation have recently brought new forms of attention to the conditions of the urban edge. Preconceived temporal frameworks, scales, and agents fail to decipher histories. This paper introduces a conceptual and a cartographic methodology to study the material history of Istanbul's urban edge by the water through the "critical delineation" of its coastline. In a city whose process of urbanization has been predominantly defined by the colonization of land, this methodology aims to shift attention to the waterward space, to the production of port geography. It follows material dispositions between land and sea, focusing on the organization of port logistics, dislocation, and discharge of coastal sediments. By landing and production of urban debris, the coastal geography of the city was made and remade as a place of human engagement with nature. A *longue durée* take on this material disposition provides over a hundred years of historic processes to delineate a cartography of fluctuations of the changing coastlines on this shifting landscape. The coastline of Istanbul becomes the body of research, and therefore, the production of port geography initiates a production of meaning. As an urban edge, it unfolds nonhuman agency and human engagement with the planetary, as much as it unfolds the everyday production of political discourse and its discrepancies.

Keywords: coastline, port geography, material cartography, planetary urbanization, political ecology

"Bu Su Binlerce Yıldır Bu Şehrin ve İnsanlarının Kaderini Çizmiş": Kıyı Çizgilerinin Maddi Kartografisi ve İstanbul'un Liman Coğrafyasının Şekillendirilmesi

Özet
Gezegensel kentleşme ve ekolojik yıkımın yer değiştiren ölçeklere yayılan etkileri, kent çeperi olarak anılan yerlere dair yeni ilgi biçimleri getirdi; alışılagelmiş ölçek algıları aşılıyor, zamansal çerçeveler genişliyor ve öznelikler artıyor. Bu yazı, kıyı şeridinin eleştirel bir tasvirini yaparak, İstanbul'un suyla birleşen kentsel çeperinin maddi tarihini incelemek amacıyla kavramsal ve kartografik bir metodoloji önermektedir. Kentleşme süreci anlatısı ağırlıklı olarak karanın kolonileştirilmesi olarak tanımlanan şehri düşündüğümüzde, bu metodoloji dikkatini kıyı çizgisinin su tarafına, liman coğrafyasının yaratımına yönlendiriyor. Kara ve suyun arasında cereyan eden maddi yer değiştirmeleri, liman lojistiğinin organizasyonu, yerinden etme ve kıyı boşaltımına odaklanarak takip ediyor. Şehrin kıyısal coğrafyası, karada yerleşim ve kentsel atık üretimiyle, doğayla insan etkileşiminin bir mekânı olarak devamlı yeniden üretilmiştir. Bu maddi duruma uzun süreli bir tarihsel bakış (*longue durée)*, yerinde sabit durmayan bu peyzajdaki değişken kıyı şeritlerinin yüz yılın üzerinde bir tarihsel sürece yayılan dalgalanmasının bir kartografyasını sunmaya yardım ediyor. İstanbul'un kıyı şeridi araştırmanın temelini oluşturuyor, dolayısıyla liman coğrafyasının üretimi anlam üretimine önayak oluyor. Şehir çeperi olarak, siyasal söylemler ve onların tutarsızlıklarının gündelik üretimini ortaya koyduğu kadar, insan olmayan öznelikleri ve insanın gezegensel olanla ilişkisini açığa çıkarıyor.

Anahtar kelimeler: kıyı çizgisi, liman coğrafyası, maddi kartografi, gezegensel kentleşme, politik ekoloji

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The 1985 film *Tekerleme* by Merlyn Solakhan recalls the entanglement of water surrounding Istanbul and those who live in it. In her film, Solakhan uses Istanbul as a protagonist, and narrates the stories of its characters in relation to the lost and found memories of geography

This paper is partially based on my doctoral thesis, "'This is not a line': Critical Delineation of the Coastline in Istanbul" (PhD diss., Istanbul Technical University, 2019). I would like to thank all the reviewers and editors of *YILLIK*: *Annual of Istanbul Studies* for their thoughtful insights and comments during the finalization of this text.

and history. *Tekerleme* uses scenes shot at the coast of Bosporus, along the riverbanks of the Alibeyköy River, and offshore footage overlooking the city down to the coastline at Galata. Here, water, almost personified, acts as a place of questioning the reasons behind citizens' despairs and hopes.[1]

In May 2021, news on the Marmara Sea reported a rapid increase of a jelly-like material—mucilage—that washed up on the coasts at certain locations, agglomerated in bays, fishing ports, marinas, and spread over the surface of the open sea in swirls. Satellite views captured and published the images of the mucilage from space, while marine reporters took footage by diving under the sea.[2] In the drone footage, the coastline appeared covered with a mud-like layer that solidified the waterscape, landlocked the coast, and created a new shoreline.[3] Some discussions linked the crisis with the controversial project of Istanbul Canal,[4] a canal that will either kill or revitalize the ecological deadlock of the Marmara Sea; while others stress the misgovernment of the sea ecology by highlighting the outpouring of plastics, untreated wastewater, and industrial contamination. Istanbul, located on one of the two straits that connect the inner sea to coasts of the Aegean and Black Seas, is part of a larger metropolitan area with other subcenters encircling the sea. The current case marks the largest ecological crisis on the local water ecosystem in recent years and marks an urgency to rescale the depth of urban studies in relation to nature and geography.

The coast of Istanbul has been subject to critical urban changes that mark a human-shaped geography, whose transformation embodies an interval of crises and critique of urbanization. In this context, the paper introduces a cartographic methodology to analyze the shaping of the coastlines in concert with their entangled ideologies and spatial agendas acting within Istanbul's urban geography between land and water. More specifically, the project of using the coastline as a research tool aims to test a way of seeing the historical production of the coast as a human-made and nature-shaped place. It argues that using cartographic evidence as a research tool can trace the materiality of the coastline in a *longue durée* process of spatial production. The maritime-territorial tension can be continuously traced in the history of urbanization, by looking at the formation of port geography. In this regard, materialization of the coastline sheds light on the displacements of the shoreline as its spatial alteration holds the records of material and ecological networks that are tied to multiple scales, from the geographic to architectural.

Urban Edge Studies in the Context of Planetary Ecological Devastation

Human impact on the planet has been rendered in divided representations that formed fractured worldviews in the past decade. While political ecology, and its repercussions, delved into the manifestations of flat ontology for humans as equal beings among wider ecosystems, habitats, and urban systems, the conventional divisions among the Western preconceptions of natural and cultural, urban and natural, human and nonhuman were breached. In discussions on the Anthropocene, Capitalocene, or the Chthulucene,[5] human dominance of established

1 "Bu su binlerce yıldır bu şehrin ve insanlarının kaderini çizmiş," Ecer Solakhan, *TEKerLEME*, 1985, video, 73:30, https://www.youtube.com/watch?v=QKVizC1CH-E.

2 For satellite images capturing the Marmara mucilage from space, see "Deniz Salyası (Müsilaj) Nedir, Neden Olur? İşte Marmara Denizi'ndeki Son Durum…," *Hürriyet*, May 20, 2021, accessed September 7, 2021, https://www.hurriyet.com.tr/galeri-deniz-salyasi-nedir-neden-olur-iste-marmara-denizindeki-son-durum-41814525/9. For more aerial photographs of the mucilage agglomerated at the coast of Pendik, Istanbul, see *ABC News*, "Aerial photographs show a harbor on Turkey's Marmara Sea near Istanbul beset by mucilage, a jelly-like layer of slime that develops on the surface of the water due to the excessive proliferation of phytoplankton," June 7, 2021, accessed September 7, 2021, https://abcnews.go.com/International/wireStory/turkish-president-vows-save-sea-sea-snot-outbreak-78103819.

3 For the drone footage of the coastline in the Marmara Sea, see "Sea snot covers Turkish coast threatening fishing industry," *The Guardian*, June 5, 2021, accessed September 7, 2021, https://www.theguardian.com/world/2021/jun/05/sea-snot-covers-turkish-coast-threatening-fishing-industry. On the other hand, a group of oceanographers, marine scientists, and environmentalists reported that this layer of thick, dead, organic material appeared in cycles in the recent past, such as the increase in the organic material in 1989, 2007, and now in 2021, and is linked the incidents to the decrease of oxygen levels of the sea that eventually caused massive death to phytoplankton.

4 A project has been on the agenda of the central government since 2012, first announced as the "Crazy Project," that pushes the limits of coastal geomorphology of Istanbul to an extreme by constructing a forty km long waterway between the Marmara and Black Seas for a marine traffic passageway, parallel to the Bosporus. "Kanal İstanbul," T.C. İletişim Başkanlığı, last modified 2020, accessed September 7, 2021, https://www.kanalistanbul.gov.tr.

5 Here I refer to a larger body of discussions over the Anthropocene and, more specifically, to Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016).

political economic systems over geographies and space crumble. Within the abundance of conceptual tools, spatial tools remain obscure about new versions of imagining the urban edge conditions in terms of their spatial precision in grounded research.

In the current dilemma of ecological devastation, space is increasingly networked by new forms of material displacement. In the current material turn, space adheres to a tactile, flesh, and ecosystemic rendering. The planet is pulled into a geosocially shaped entity which is grounded, local, and physical; what Bruno Latour calls "down to earth."[6] The coastline, by its nature, is argued here to mark an edge where physical and material alterations of urbanization become evident.[7] As this study argues, the cartographic presence of the coastline dividing land and water can become a conceptual and cartographic tool to decipher processes of spatial alteration by its materialization within planetary urbanization.[8]

Fragments of Coastline Histories in Istanbul

Earlier research on Istanbul has marked multiple aspects of the coastal formation. The historic evolution of the coast is mainly studied within two agendas: first, regarding the contemporary attention to the neoliberal rift starting from 1980s, and second, within the larger body of urban history narratives that covers Byzantine, Ottoman, and early republican eras. The first group of studies focusing on struggles of deindustrialization in the ex-port and ex-industrial areas, attend either to the loss or preservation of the port city identity. Themes such as conflicts over urban gentrification, social exclusion, or memory loss reframe the critical problems related to the agendas of the political economy and social struggle.[9] Here, the contemporary critical agenda of coastal transformation is rendered as a detached case from the narratives that form a second group within urban history. Such histories have highlighted struggles of port city modernization, development of architecture within urban geography, and urban planning history, as well as presented in-depth records about the physical transformation of the coastal architectures and sociology. Interest in the coast from an expanded field has defined a third way, using individual readings, artistic expressions, and collective exhibitions.[10] Questions concerning the transformational problems such as commodification, gender inequality, ecological disturbance, or simply the atmosphere of the waterbound space that surrounds the city have been expressed using multidisciplinary methods such as architectural representations, video, and digital media studies.[11] While it is clear that there is an extensive body of work on Istanbul's coast, further questions remain concerning its ecological and material geography.

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6 See Bruno Latour, *Down to Earth: Politics in the New Climatic Regime* (Cambridge: Polity Press, 2018).
7 This paper is extracted from a broader research which explores how coasts, as constructed environments between the land and sea, can be approached as landscapes to decipher processes of urbanization.
8 The term "planetary urbanization" is used here in reference to Henri Lefebvre, *The Urban Revolution*, trans. Robert Bonanno (Minneapolis: University of Minnesota Press, 2003); and as defined in the text by Neil Brenner and Christian Schmid, "Planetary Urbanisation," in *Urban Constellations*, ed. Matthew Gandy (Berlin: Jovis, 2011), 10–13.
9 See Serin Geambazu, "Dimensions of Urban Waterfront Regeneration: Case of Halic/The Golden Horn: An Assessment of Obstacles and Opportunities for Inclusiveness" (PhD diss., Berlin Technical University, 2014).
10 See Edhem Eldem, Daniel Goffmann, and Bruce Masters, *Doğu ile Batı Arasında Osmanlı Kenti: Halep, İzmir ve İstanbul* (Istanbul: Türkiye İş Bankası Kültür Yayınları, 2010); Namık Erkal, "'Bugün Liman Kara Olmuştur': İmparatorluk-Cumhuriyet Eşiğinde İstanbul Rıhtımlarının Dönüşümü," in *Osmanlı Başkentinden Küreselleşen İstanbul'a: Mimarlık ve Kent, 1910–2010*, ed. İpek Akpınar (Istanbul: Osmanlı Bankası Arşiv ve Araştırma Merkezi, 2010), 31–48; Erkal, "Haliç Extra Mural Zone: A Spatio Temporal Framework for Understanding the Architecture of the Istanbul City Frontier" (PhD diss., Middle East Technical University, 2001); Vilma Hastaoglou-Martinidis, "The Building of Istanbul Docks 1870–1910: New Entrepreneurial and Cartographic Data," *A/Z ITU Journal of the Faculty of Architecture* 8, no.1 (2011): 85–99; Çağlar Keyder, Eyüp Özveren, and Donald Quataert, *Eastern Mediterranean Port Cities / Doğu Akdeniz'de Liman Kentleri*, trans. Gül Çağalı-Güven (Istanbul: Tarih Vakfı Yurt Yayınları, 1994); Murat Güvenç, "Port of Istanbul: A Short History," in *Port City Talks: Istanbul. Antwerp*, ed. Murat Tabanlıoğlu (Wommelgem: BAI for Museum aan de Stroom, 2015), 122–127; Güvenç, "Transformation and Stability at the Istanbul Harbor throughout the Process of Modernization," in *Liman / Harbor*, ed. Can Kantarcı, exhibition catalog (Istanbul: İstanbul Modern, 2017), 178–187; Wolfgang Müller-Wiener, *Bizans'tan Osmanlı'ya İstanbul Limanı*, trans. Erol Özbek (Istanbul: Tarih Vakfı Yurt Yayınları, 1998).
11 See Esra Akcan, *(Land)Fill Istanbul: Twelve Scenarios for a Global City / Dolgu Istanbul: Küresel Sehre Oniki Senaryo* (Istanbul: 124/3, 2004); Feride Çiçekoğlu, Namık Erkal, and Vera Costantini, *Darzana: Two Arsenals, One Vessel / İki Tersane, Bir Vasıta*, exhibition catalog (Istanbul: Yapı Kredi Yayınları, 2016); Neyran Turan, "Strait, Beach, and Highway: Geographic Imagination of Istanbul 1935–1960" in *Landscapes of Development: The Impact of Modernization Discourses on the Physical Environment of the Eastern Mediterranean*, ed. Panayiota Pyla (Cambridge: Harvard University Graduate School of Design, 2013), 37–71.

This paper first introduces its conceptual and cartographic agenda, namely, the critical delineation of the coastline. It then assembles a series of cartographies and texts that cover one hundred years of coastal material disposition of the city among multiple scales, narratives, and fragments. It situates the historic record as materially stratified formations and generates new cartographies to establish the coastline fluctuations. Limiting the research, two main acts of shaping the coastline, landing and landfilling, are followed in four distinct cases: the ports of Galata, Golden Horn, Haydarpaşa, and Yenikapı.[12] The paper uses cartographic and archival materials to assemble a narrative that connects the material shaping of the coastline. The narrative addresses the following topics: elements of the port geography in Istanbul in Ahmet Hamdi Başar's *İstanbul Limanı*;[13] unscaling Istanbul's port: maritime charts and sea currents; the agency of weather in the maritime accidents of the port in Galata; *mavna*s and handling labor in Istanbul's port logistics; master plans, finger piers, and Istanbul's "troubled bridge issue"; constructing safe waters for the landscapes of container boxes in Haydarpaşa; the sweeping of the debris to the coast as an urban backyard; the impossible project of clearing Golden Horn's mud; and the coastal geography of the wasteland in Yenikapı and beyond. Overcoming scalar and temporal frameworks that support an urban historic narrative requires disassembly. The coastline itself becomes the research tool, a cartographic agent, and a form of drawing material relations that shaped the coastal geography. The material agency of the urban debris, or "quasi-actants,"[14] plays a role in the production of the urban space. In this case, these elements that shape the landscape are repositioned as entangled agents. The histories of barges, container boxes, pump lines, urban sediments, construction trucks, etc. bear witness to the production of the coastal space by human will in Istanbul. The presented cartographies—in other words, critical delineations—consequentially mark the key networks, landscapes, and infrastructures of urbanization that played a part in the expansion of the city.

A Conceptual Framework for the Critical Delineation of the Coastline

Seeing the Coastline in Longue Durée *and "Pleats of Matter"*

Timespans longer than the everyday chronology, such as the geological temporality, have become a focus of Anthropocene studies which tackle the human impact on the planet as a long process of habitation, extraction, and cultivation.[15] Fernand Braudel defined formations of centuries-long processes of economic, ecological, and geographic networks to narrate the complexity of environmental histories against the slowness of the human conception. His definition of "journalistic time" dealt with everyday events, in other words, with human scale chronologies; whereas the agenda of the *longue durée* expanded the ability to see time as a process of centuries-long systems of history.[16] Braudel's work is translated in the texts of Manuel De Landa, which are similarly concerned with the geological formations over long periods of time. In De Landa's argument, texts, languages, geological formations, cities, living bodies, and other infinite sets of elements are rendered as material bodies that assemble societies, in the *longue durée*.[17] His take on the historic evolution of urban form locates the rift between the speed of the human impact of designing the environment and the slowness of geological time. For him, daily rhythms and urban forms change extremely slowly as any acceleration

12 The generated critical cartographies that focus on these are performed loosely related in multiple scales. What holds these zones together is the performance of the port geography and its spatial manifestations of material disposition between land and sea.
13 Ahmet Hamdi Başar, *İstanbul Limanı* (Istanbul: Akşam Matbaası, 1929).
14 Troels Magelund Krarup and Anders Blok, "Unfolding the Social: Quasi-Actants, Virtual Theory, and the New Empiricism of Bruno Latour," *The Sociological Review* 59, no. 1 (2011): 42–63; after Bruno Latour, "On Actor-Network Theory. A Few Clarifications Plus More than a Few Complications," *Soziale Welt*, 47 (1996): 369–381.
15 For Anthropocene and aesthetics, see Eray Çaylı, *İklimin Estetiği: Antroposen Sanatı ve Mimarlığı Üzerine Denemeler* (Istanbul: Everest Yayınları, 2020).
16 Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* (Berkeley: University of California Press, 1996).
17 De Landa merged Braudel's legacy of the *longue durée* with Gilles Deleuze and Felix Guattari's turn to poststructuralism, where the heterogenous societies are pictured as an assembly of related ontologies. See Manuel De Landa, *A Thousand Years of Nonlinear History*, rev. ed. (New York: Zone Books, 2000).

determines a deliberate impact of design.[18] This study proposes to apply De Landa's take on the material assembly of urban forms to the case of Istanbul's coastline and its delineation. Revisiting Deleuze helps to situate the material stratification of the human and nonhuman impact on urban space. The folds of the earth and the "pleats of matter" become multiplicities of thought and cartographic fold. As connections among the concrete forms and abstractions, lines are "pleats of matter" in the folds of a text or the work of a cartographer.[19] Similarly, the main research methodology using the coastlines in this research suggests a follow-up on the material stratification. As the shoreline demarcates the dis- and re-assembly of the space between the land and sea, it holds records of the everyday and the *longue durée* on its body. As a cartographic project, how critical delineation discloses these formations is illustrated in the aerial photographs and maps provided in this article.

The Urban Nature Entanglement and Material Agency

The concept of what is human and what remains natural become increasingly invalid as the interdependence of the urban to nature is explored.[20] Recently, unrests concerning environmental justice, the climate crisis, and critique of urbanization in the anthropogenic era are echoed in the studies of political ecology, where the politics of producing nature are found within the production of urban landscapes.[21] In urban studies, for example, one manifestation of this material and ecological turn has been the increased focus on the history of nature and environmental history. Which actors and ideologies are playing roles in the making of the urban geography, and what kind of nature they are shaping are valid questions that promise to shed light on less explored areas of geographic production of space.

Some previous studies have given specific answers to the ideological particularization of the systems that produce human impact on the material assemblage of urban environment. For instance, water as a material agent has been frequently discussed within political ecology and nature's appropriation by ideology. In *City of Flows*, Maria Kaika treats the water distribution infrastructure as a modern apparatus of taming nature.[22] In *Liquid Power*, Erik Swyngedouw explores the materiality of hydraulic state apparatuses such as dams, sewage, and irrigation systems for their role in the territorial governance of amplified power systems of nations.[23] Likewise, Matthew Gandy, in *Concrete and Clay: Reworking Nature in New York City* highlights materials and urban infrastructures where elements of construction materials bore evidence to environmental histories bound with distant places that redraw the territorial spread of urban borders and colonization history.[24] Similar to matter and building materials, appropriation of landscapes and in particular wetlands was the subject of Caprotti and Kaika's article "Producing the Ideal Fascist Landscape," which specifically focuses on Mussolini's regime extinguishing the unproductive wetlands for agricultural reforms by landfilling.[25] In Shannon Mattern's *Code + Clay . . . Data + Dirt: Five Thousand Years of Urban Media*, the materiality of mud and brick is merged with writing and textuality and, in turn, the urban landscapes were rendered as spaces of transmitting messages.[26] Thus, this approach enables mud-brick

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18 Manuel De Landa, *New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum, 2006), 95.
19 Gilles Deleuze, *The Fold: Leibniz and the Baroque* (Minneapolis: University of Minnesota Press, 2006).
20 For example, environmental histories of metropolitan urbanization that followed William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1992), which rendered the modern invention of Chicago as a "natural" product through a web of material resources of its surrounding geographies, natural habitats, animal stocks, and the liberal economy. David Harvey famously postulated that "there is nothing unnatural" about megapolises. However, it could be compared to the impact of the ontological questioning of the very idea of nature in recent years that shakes the essence of how humans interpreted their presence on the planet as species of utmost power to manipulate the environment. David Harvey, "The Nature of Environment: Dialectics of Social and Environmental Change," *Socialist Register* 29 (1993): 1–51.
21 Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (New York: Oxford University Press, 2005); Donna Haraway, *Simians, Cyborgs, and Women: Reinvention of Nature* (New York: Routledge, 1991).
22 Maria Kaika, *City of Flows: Modernity, Nature and the City* (New York: Routledge, 2005).
23 Erik Swyngedouw, *Liquid Power: Water and Contested Modernities in Spain, 1898–2010* (Cambridge: MIT Press, 2015).
24 Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City* (Cambridge: MIT Press, 2003); Gandy, *The Fabric of Space: Water, Modernity, and the Urban Imagination* (Cambridge: MIT Press, 2014); see also Lindsay Bremner, "The Political Life of Rising Acid Mine Water," *Urban Forum* 24 (2018): 463–483.
25 Federico Caprotti and Maria Kaika, "Producing the Ideal Fascist Landscape: Nature, Materiality and the Cinematic Representation of Land Reclamation in the Pontine Marshes," *Social & Cultural Geography* 9, no. 6 (2008): 613–634.
26 Shannon Mattern, *Code + Clay . . . Data + Dirt: Five Thousand Years of Urban Media* (Minneapolis: University of Minnesota Press, 2018).

walls, clay tablets, concrete buildings, and landscapes to be observed as the "aggregated histories of communication and urbanization."[27] Materiality of geographies thereby have been cultivated and engineered for urbanization, openly entangled with writing in political, economic, cultural, and historiographical contexts.

A Short Archaeology of Coastlines and the Cartography of Land and Sea

An ontological archaeology of the coastline reveals that the line dividing the land and water is not only a cartographic form of representation but also a material engagement of humans with space. Beyond abstraction, a line is both a conceptual and a concrete form of demarcating things.[28] Hegel wrote about the qualities of separation and connection of the coast. A coastal zone splits rivers and seas from land; and as we are used to seeing water as a separator, this conflicts with the idea that states should be demarcated by water boundaries. According to Hegel, nothing could connect more than water because states are nothing more than territories that are connected to rivers and seas.[29] The connective nature of the coast between the land and sea is most visible in the formation of the port geographies; however, the differences between the land and sea have been politically presented as at war with each other. Carl Schmitt once wrote that the world history is the history of wars waged by maritime powers against land or continental powers.[30] The territorial and de-territorial confrontation of land and sea was later spatialized with the concepts of "smooth and striated," where the land usually referred to central states or empires with solid boundaries, while the water-bound spaces were defined by maritime networks and accessibility.[31] Such renderings belonged to a settled idea where port cities presented loci of the spread of capitalism, distribution of goods that brought freedom, and nomadism against territorial stiffness. Besides the ontology of coastlines, cartographic methods enable new ways of seeing urban history and geography that mark waterscapes.[32]

A Material Cartography: Critical Delineation of the Coastline

Critical delineation uses aerial photographs, coastal charts, maps, projects, and site visits to decipher evidence and witness changing landscapes of material displacements at the edges of the city through coastlines, at all scales and timespans. Bird's-eye view photographs spanning the photographic history of Istanbul provide close up evidence for ethical engagement with moments of construction and destruction in the city. Aerial photographs are material witnesses to the construction, operation, and erasure of coastal spaces such as the building and unbuilding of port logistics, landfills, coastal roads, or waterways. The human shaping of the environment through moments of construction bears evidence to material flows of coastal, urban, and environmental changes. Therefore, the coastline is a tool of historic record of the human-made stratification of dynamic coastal morphologies. Critical delineation of the coastline provides a critique of urbanization by highlighting ethical and aesthetic engagements with space and its construction, and the material displacement of land and water in Istanbul.[33]

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27 For studies on transnational infrastructures and geopolitics, see Andrew Barry, *Material Politics: Disputes Along the Pipeline* (Chichester: Wiley and Blackwell, 2015). The book highlights the extraction, manufacturing, and systems of repairing metals as they are used as transformative capacities of capitalism in post-Soviet Georgia.

28 Namely, drawing is about making a material deformation on things. It is important to note that in Turkish, *çizgi* (line) derives from notching (*çent-mek*) a surface and came from "*cirug*," which is a variant of the verb *yazı* (writing or text). *Nişanyan Sözlük*, "çız-mek," accessed August 26, 2017, https://www.nisanyansozluk.com/?k=çiz-&lnk=1.

29 Georg Wilhelm Friedrich Hegel, *Lectures on the Philosophy of History*, trans. J. Sibree, M.A. (London: George Bell and Sons, 1894).

30 Carl Schmitt, *Land and Sea: A World-Historical Mediation*, ed. Russell A. Berman and Samuel Garrett Zeitlin, trans. Samuel Garrett Zeitlin (Candor, NY: Telos Press, 2015), 48.

31 Gilles Deleuze and Felix Guattari, *A Thousand Plateaus Capitalism and Schizophrenia*, (Minneapolis: University of Minnesota Press, 1987).

32 For example, the cartographic narration of the geographic performance of water can be found in Dilip da Cunha's *Invention of Rivers* where India's colonial history was charted within an archaeology of maps and lines of the Ganges River. See Dilip da Cunha, *The Invention of Rivers: Alexander's Eye and Ganga's Descent* (Philadelphia: University of Pennsylvania Press, 2019).

33 For a preliminary study on using representations of planetary space, see Gökçen Erkılıç "Towards a Critical Delineation of Waterfront: Aerial Photographs as Evidence and Record in Istanbul," *A/Z ITU Journal of Faculty of Architecture* 16, no. 2 (2019): 91–103.

The term *port* can be defined as the landing place of sea vessels at the coast. However, the term also refers to an expanded ontology of geography in relation to material flows. A port functions as a system of flows among multiple elements that are both geographic—regional or planetary—and material. Elements of port geography are grouped as hinterland, foreland, cargo, carrier, and maritime space.[34] The hinterland and the foreland are geographies that reside in the land and waterward zone of the port geography. The port is the place of contact between hinterland and foreland. It is, therefore, a node where transport lines meet and intertwine. The cargo and the carrier form the logistics between the land and sea, as the vessels and handling technologies.

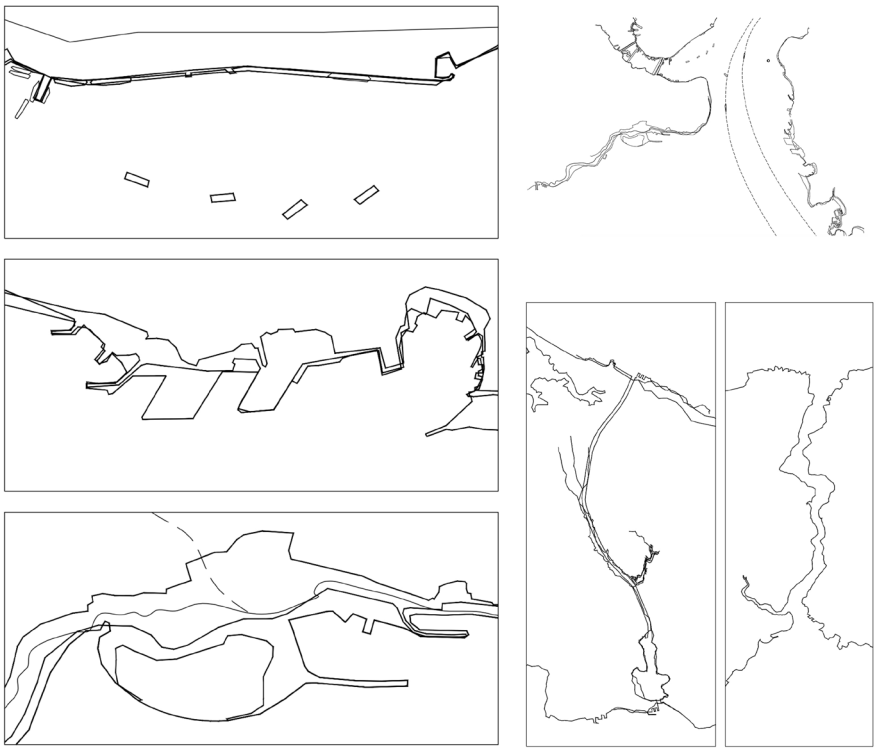
The coastline demarcates the points of contact where this geography and architecture meet to materialize the land-sea relation. Following the material shaping of the coastline, this research starts by presenting a set of coastline delineations that were produced by juxtaposing aerial photographs of the fluctuating landscapes of the port geography in Istanbul from 1945 until the present.[35] The coastline is seen as an element of unfixed cartography that has shifted, shaped, and reconstructed between the land and sea at multiple scales (fig. 1). Within the context of this paper, *landing* and *landfilling* are deciphered as two material flows in opposing directions that take place on the coastline. Landing, belonging to the logistic activity of the port is about carrying materials, goods, or people from seaward space to land and hinterland. Landfilling is the sum of acts that result in the growth of land towards the sea for terrestrial uses such as infrastructures, roads, infills, etc. The following section brings together landing and landfilling with cartographic and archival materials in order to assemble an alternative narrative for the shaping of the port geography in Istanbul.

Elements of Port Geography in Istanbul: Ahmet Hamdi Başar's İstanbul Limanı*, 1929–1930*

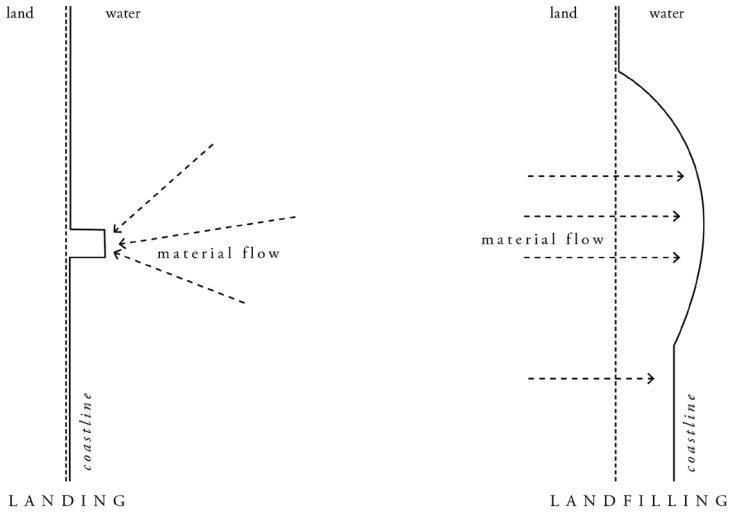
İstanbul Limanı (*The Port of Istanbul*), a 1929 book written by Ahmet Hamdi Başar the director of the Port Authority, opens with a prologue that immediately discloses his motivations for publishing such a document.[36] This section entitled "Why did We Write this Book?" shows how the book was written with the pressure of urgency that Başar felt for the responsibility of the new republic's port management and its survival through the interwar depression. The legacy of the old port's logistics was the low capacity and slow-paced handling of the goods, due to the rudimentary operation of barges and bargemen. Drawing a global panorama of the western port cities of Genoa, Trieste, Marseilles, Antwerp, Rotterdam, Hamburg, Amsterdam, and Duisburg, and oceanic ports of America, Başar stated the inferiority of Istanbul's port, with the open ambition of catching up with the modern West. What he aimed for was a modernist revolution of port logistics. He saw the port as a symbol, "a technological advancement of the modern state, such as air planes, automobiles, and communication infrastructures," and Istanbul had no other options but to catch up with Western modernity.[37]

The book opens with a hand-drawn aerial view of Istanbul's port (fig. 2). Depicting Istanbul over two continents of Asia and Europe, divided by the Bosporus, it delineates the city's urban macroform in the year 1929 within the surrounding countryside and vacant hilltops. Başar notes that Istanbul is at the intersection of two natural crossroads: the closest land connection between Europe and Asia, and the only waterway opening of the Black Sea and

34 In reference to Guido G. Wiegend, "Some Elements in the Study of Port Geography," *Geographical Review* 48, no. 2 (April 1958): 185–200.
35 See Erkılıç, "Critical Delineation of Waterfront."
36 Ahmet Hamdi Başar (1897–1971) was a public figure, outside his duties as the founder and director of Istanbul Port Authority, he was active as a member of several political and commercial institutions. He served as a deputy in the first Turkish Grand National Assembly, and later in the Free Republican Party and the Democrat Party. He was also a member of the Istanbul Association of Merchants. Having reformist and unorthodox thoughts about the establishment of democracy and economic development in the republic, he published several books such as *Demokrasi Buhranları* (Crises of Democracy) (Istanbul: Türkiye Basımevi, 1956); *Demokrasi Yolunda Nereye Gidiyoruz: En Büyük Milli Davamız Üzerine Bir Tahlil* (*Where are We Going in our Path of Democracy: An Analysis on Our Biggest National Cause)* (Istanbul: Ekicigil Matbaası, 1959); *Yaşadığımız Devrin İçyüzü (Truth Behind Our Times)* (Istanbul: Akyıldız, 1960).
37 Başar, *İstanbul Limanı*, 4. Unless otherwise noted, all translations are by the author.



Critical delineation of the changing coastline between the years 1945–2019: Galata, Haydarpaşa, Yenikapı; the core maritime space of Istanbul, and the unrealized Canal Istanbul Project.



Landing and Landfilling: two directions of material disposition of the coastline.

Figure 1: Above, fluctuations of the coastline in Istanbul. Below, conceptual diagrams for landing and landfilling. Gökçen Erkılıç, 2021.

Mediterranean.[38] Başar's visual and textual narratives in the book continue with a close depiction of the port geography; his hand-drawn maps show the multiple scales at which Istanbul, as a maritime passageway and a port, was anchored (fig. 3). The chart titled "The Position of Istanbul" delineates Istanbul's forelands, where the maritime trade extended overseas in

38 Ibid., 5.

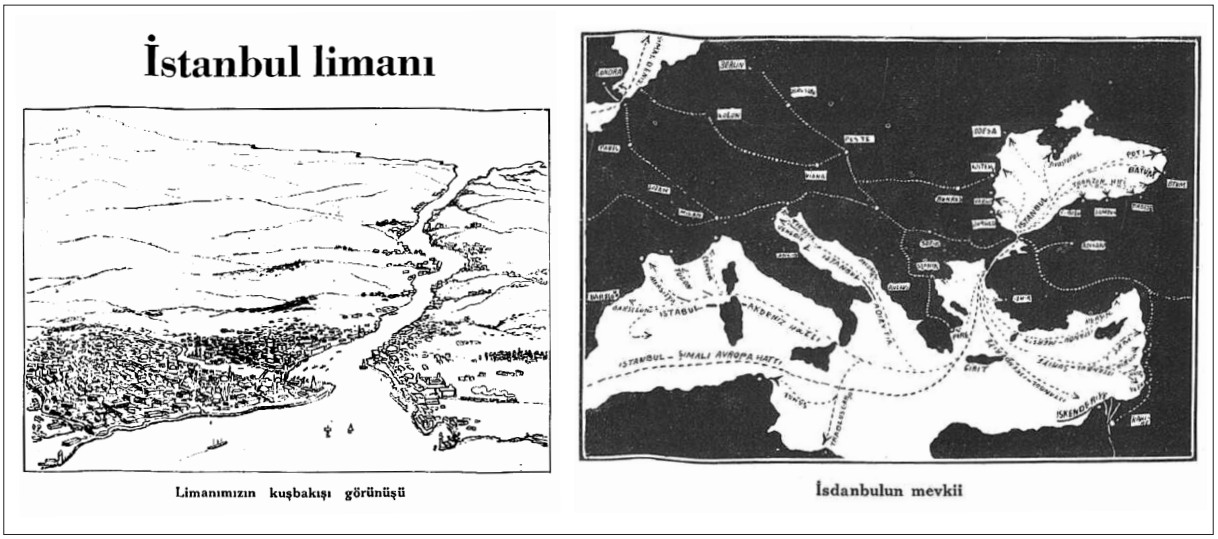


Figure 2: Bird's-eye view of the port of Istanbul (A. H. Başar, *İstanbul Limanı*). Istanbul Studies Center.

Figure 3: Foreland port geography of Istanbul (A. H. Başar, *İstanbul Limanı*, 1929). Istanbul Studies Center.

1929. The chart shows the material spread of the vessels and goods that crossed the Bosporus and Dardanelles Straits by the waterways and the railway connections networked inland.

Başar's descriptions of Istanbul's port continuously stress the spaces of sea and land, and the tension between the two. He adds that a "[modern] port should consist of the landworks" rather than the organization on the water, referring to the handling by the barge system on the sea. For him, the waterworks of the port were unstable and unreliable. The sea currents and weather conditions were always a threat to the functioning of a rudimentary port, whereas the modern port should be rooted "inland" and protect itself from natural confrontations, such as waves, winds, and extreme weather conditions.[39] According to Başar's lines, the Port of Istanbul stretches beyond the spatial framework of the urban center.

An unsigned hand-drawn coastal map shows the borders of the port within the seaward maritime space that was naturally marked by the estuary, the strait, and the seas, as well as by the Port Authority (fig. 4).[40] The Bosporus is marked as the "Outer Port," whereas the natural estuary is the "Inner Port," and situated in between was the Port of Galata at the mouth of the estuary, bordered by the Galata Bridge and a maritime line between Sarayburnu and Salıpazarı. Outside the lines of the outer port, "Free Anchoring Zones" mark the edge of Istanbul's maritime control zone. A line between Rumeli Feneri and Anadolu Feneri marks the "Istanbul Northern Border."

Unscaling Istanbul's Port: Maritime Charts and Sea Currents

Apart from Başar's port geography, the maritime space surrounding Istanbul had been charted by mariners, admirals, and travelers, which continue to help form an unscaled image of Istanbul's port, beyond the spatial framework of the urban core. At the scale of the Marmara Sea, the port was charted with maritime maps produced for the navigators of the Black Sea and Mediterranean. These maps marked the sea routes with the arrows of the winds and sea currents that naturally drifted vessels among the two straits. The currents of the water passed through the Bosporus, curved in and around the Bays of Izmit, Yalova, and Kapıdağ along the coast of the Marmara Sea. Locations of the smaller ports are visible along the Bosporus.

The transition of the Ottoman port legacy to the republic continued with a series of publications after Başar. In his 1930 book *Türkiye Coğrafyayı Sahilisi: Karadeniz Sevahili* (*Turkey's Coastal Geography: The Coast of Black Sea*), the cartography and marine authority director

39 Ibid., 7.
40 *İstanbul Limanı* (Istanbul: T.C. Ekonomi Bakanlığı İstanbul Deniz Ticaret Müdürlüğü, 1935), pl. 1–A.

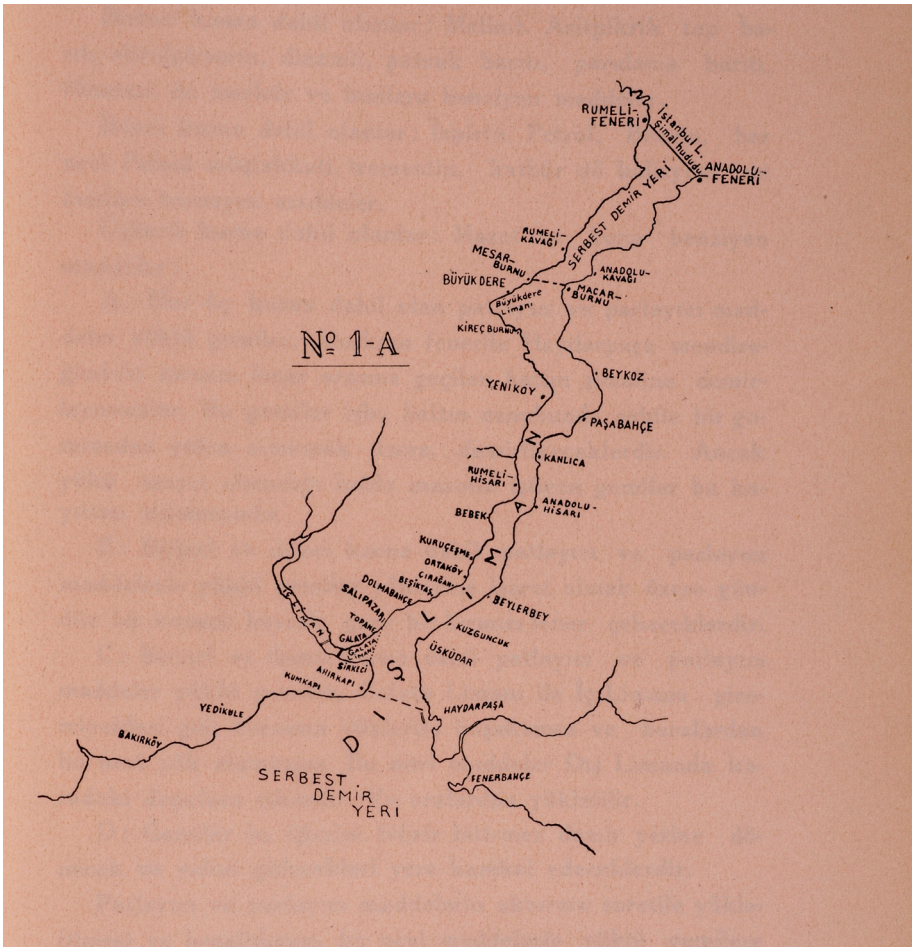


Figure 4: Delineation of the inner port, Port of Galata, and the outer port (*İstanbul Limanı*, 1935). Istanbul Research Institute Library.

Ahmet Rasim (Barkınay) presents textual records, maps, and over one hundred silhouettes of the coastal morphology around the coastline of the Black Sea and its port cities.[41] Each silhouette consists of a proportional sketch of the topographic scenery, mountains, hilltops, significant heights, as well as notes for the mariner, such as the locations of lighthouses, safe bays, castles, settlements, river mouths, sandbanks, reefs, rocks, points of bearing, and distances; namely, any geomorphological information relevant for navigation. The thick horizontal strips of coastal silhouettes shown from the perspective of a navigating sea vessel were hand-drawn one by one for most of the port towns delineated on a Black Sea map. For instance, the bearing drawing (*kerteriz*) for Istanbul depicts the Anatolian and Rumeli coasts as seen from the northern entrance of Bosporus, the strait of Istanbul, and the only waterway to provide a way through; specifically, Beyaz Badanalar, Karlı Tepe, Anadolu Feneri, Ceneviz Kalesi, and Yuşa Tepesi are depicted from approximately nine miles offshore (fig. 5). Similarly, a port and lighthouse chart of the Black Sea delineates the foreland of Istanbul in the Black Sea region, including the Danube River (fig. 6). The same year, Ahmet Rasim published another study on the currents of the Bosporus.[42] The lines of the water's surface on this map curve between the bays and capes of the strait, forming swirls at the entrance of the Port of Galata (fig. 7).

41 Ahmet Rasim, *Türkiye Coğrafyayı Sahilisi: Karadeniz Sevahili* (Istanbul: Büyük Erkânıharbiye IX. Deniz Şubesi, İstanbul Deniz Matbaası, 1930).
42 Ahmet Rasim, *Mesahai Bahriye İcmali İstanbul Boğazı Akıntılarının Tetkiki* (Istanbul: Büyük Erkânıharbiye XII. Deniz Şubesi, İstanbul Deniz Matbaası, 1930).

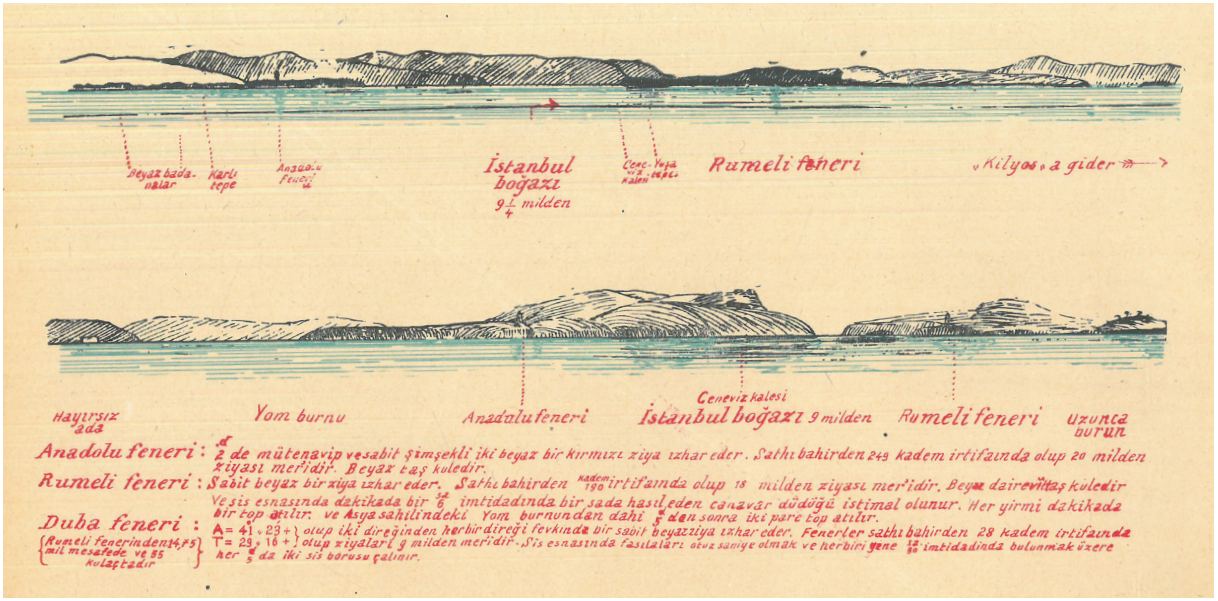


Figure 5: Bearing drawing of Anatolia and Rumeli coasts as seen from the northern entrance of Bosporus (Ahmet Rasim, *Türkiye Coğrafyayı Sahilisi*, 1930).

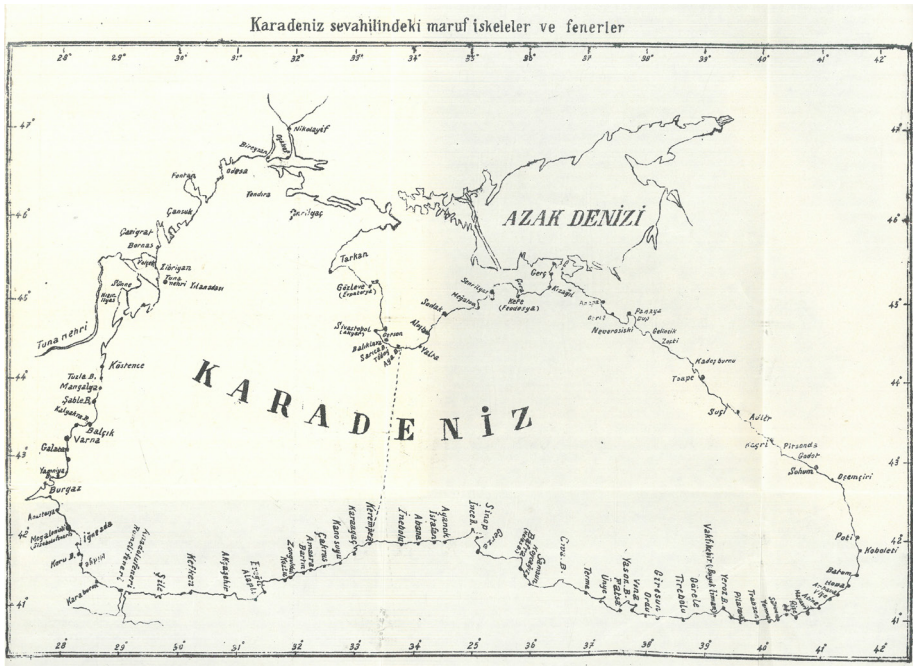


Figure 6: Port and lighthouse chart of Black Sea (Ahmet Rasim, *Türkiye Coğrafyayı Sahilisi*, 1930).

The Agency of Weather in the Maritime Accidents of the Port in Galata

As discussed above, in 1929, the weather conditions and the sea currents were part of Başar's agenda: "A port does not mean the calm waters where ships can safely escape the storms, but it is a place where cheap and speedy land handling takes place."[43] 1929 was a year of extreme weather conditions in Istanbul; the waters of the Golden Horn were frozen, and ice cubes from the Danube River swept across the Black Sea into the Bosporus.[44] A number of maritime accidents were recorded, mostly in the mouth of the estuary and the strait, and included all types of vessels, such as cargo ships, buoys, *mavna* (barge), *kayık* (caïque), *vapur* (a large steam-

43 Başar, *İstanbul Limanı*, 7.
44 Cengiz Kahraman, *İstanbul Kış Günlüğü 1929 ve 1954* (Istanbul: Yapı Kredi Yayınları, 2015).

boat), *sandal* (a small rowboat to carry passengers), and *salapurya* (a type of seagoing barge). *Mavna*s were the most prominent vessel of the maritime carriage and their accidents usually appeared in newspapers. Excerpts of some accidents from daily newspapers were as follows:

> January 6: At midnight, sirens of the ships in the port warned the citizens for the impending long cold days of stormy winter. Most of the citizens, while in deep sleep, did not hear the sirens, and those who have, did not know what to make of it.
>
> January 7: Some of the ships in the port crashed into each other, dredging on the sides. A British ship *Bantirya* unchained from its buoy and crashed into the steamboat *Neveser*. Moderate damage was seen in both ships [. . .] A steamboat sailing from Antalya to Istanbul crashed into an Italian ship in Bosporus. Some of the buoys of the port barely escaped sinking, and drifted away in the waters. Due to the storm, ships waiting to sail the Black Sea could not pass the Bosporus.
>
> February 21: The day had unsettled weather. The sun shined occasionally, following a heavy snow. Nothing extraordinary happened in the city except for the uncanny event of a ship with a Greek flag *Patsis* crashing into three barges at the port and sinking one. The loaded cargo was spread over the sea. The bargeman and the cargo were rescued from the water with the help of the nearby tradesmen.[45]

The maritime zone around the quays of Galata and Sirkeci, where most accidents were recorded, was subject to several attempts by the Port Authority to organize the floating port. A map from late nineteenth century, *Men-i Müsademe*, was intended to be an "accident prevention" guide for ships and sailboats (fig. 8).[46] On the map, mariners could see necessary information concerning underwater bathymetry and shelves, moorings, lighthouses, and coastlines of the city. The layout stacks the entrance of Golden Horn in two rows of moorings, in line with the coastline, and enabled a clearance for the passage under the Galata Bridge. A map for guiding mariners to prevent accidents delineates a detailed master plan for the organization of the anchoring ships and the barges at the Port of Galata (fig. 9).[47] The map depicted the offshore landing plan for ships and barges, grouped together to form islands of vessels across the waters of Galata and Sirkeci. The coastline shows the city walls and limited strip of landward space that made any installment of warehouse and landing logistics on land impossible. Showing the state of the port before the construction of the Sirkeci and Galata quays in 1901 to 1910, the coastline is crooked and shapeless, with a network of piers (*iskele*) and warehouses tightly packed in the urban fabric.

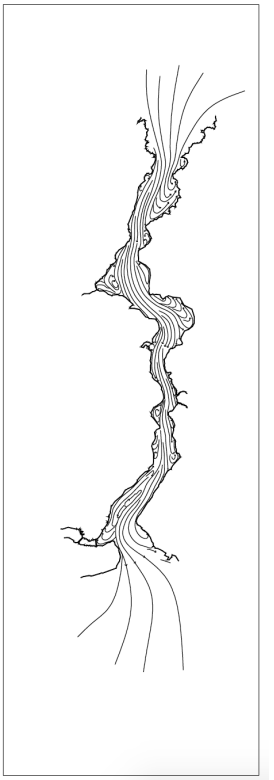


Figure 7: Surface currents of the Bosporus. Gökçen Erkılıç, 2021 (after Ahmet Rasim, *İstanbul Boğazı Akıntılarının Tetkiki*, 1930).

Mavna and Handling Labor in Istanbul's Port Logistics

Mavna is a Turkish-Ottoman word with Arabic roots for a large sailboat that carries loads from larger ships to nearby land.[48] It is a rare term to have an Eastern origin among the dominant maritime lingo of Greek and Latin languages, such as Italian (*maona*), Spanish (*magona*), and French (*mahon*). As the Golden Horn needed continuous maintenance, the *mavna* became the designated instrument to provide support. The bargemen of Istanbul were responsible for digging out the pools in the shipyards; providing excavation tools, ploughs, and laborers; removing the sediment or debris from the Golden Horn; preventing the estuary from unnecessary infills; carrying pebbles for the ballast of ships; and carrying stone cladding and sand for the roads that the palace commissioned for ceremonial promenades. These ships were used to keep the coast tidy. During southwestern winds, they could not sail offshore and had to unload the excavated sediment in the water around the Kız Kulesi (Leander's Tower) and Ahırkapı.[49] The architecture of the *mavnas* in Istanbul were different from the barges that were used in other ports located on oceans. Their bodies were easily overturned by the currents or the wind. Some had masts and sails while some only depended on oars.

45 Excerpts of daily newspaper *Cumhuriyet*, 1929, cited in Ibid., 32, 168.
46 Seyyid Ahmet Şefik, *Dersaâdet Men-i Müsâdeme Haritası* (1893). Istanbul Studies Center Library.
47 "Dersaadet Limanı'na giren ve çıkan vapurların birbirlerine çarpmaması için düzenlenen harita." BOA, Hrt.h..721 (6 Cemazeyilahir 1285 [September 24, 1868]).
48 *Nişanyan Sözlük*, "Mavna," accessed September 2, 2018, https://www.nisanyansozluk.com/?k=mavna.
49 Mehmet Mazak, *Osmanlı'nın Deniz Hamalları: İstanbul Mavnaları* (Istanbul: Yeditepe Yayınları, 2012).

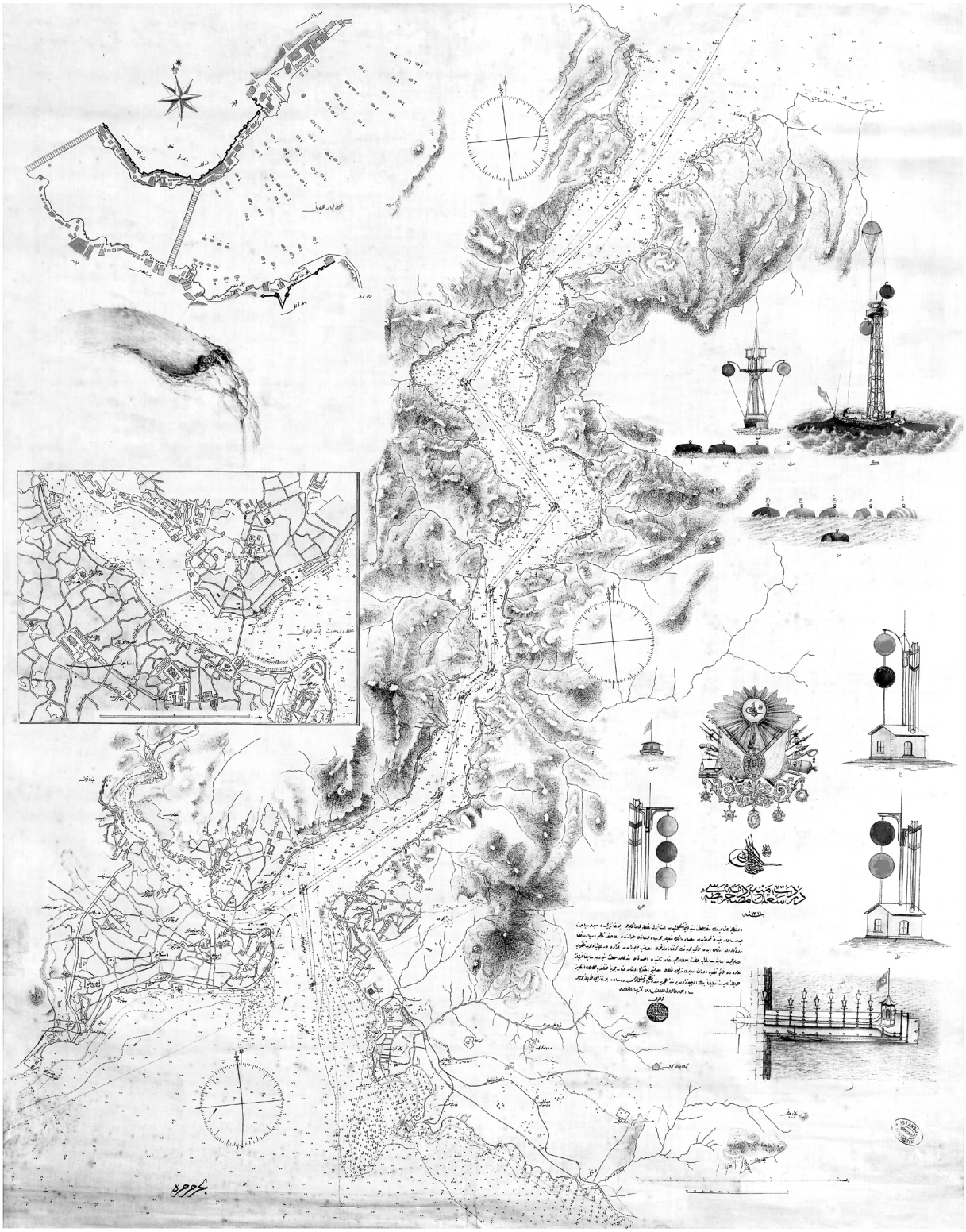


Figure 8: *Dersaadet men-i müsademe* map (Ahmet Şefik, 1893). Istanbul Studies Center.

Figure 9: Offshore landing plan for Galata and Sirkeci. BOA, Hrt.h..721 (6 Cemazeyilahir 1285 [September 24, 1868]).

As monitored in aerial photographs, the presence of these small logistic agents remained in the maritime space until the 1970s. "*Mavna* islands," formed of multiple *mavna*s attached to each other, are evident in the 1972 photographs, as they were anchored to the piers of Unkapanı and Perşembe Pazarı (fig. 10a–10d).

In 1929, Başar had written how the goods were handled using a *mavna* in exquisite detail. Once a ship arrived at the port, it was anchored to the pontoons and surrounded by small boats and barges to move the goods onto land. The cargo needed to be sorted out, then categorized. The goods were distributed to different vessels on the water. Barely one-third of the goods was transported to the customs, the others were sent to piers or warehouses for transshipment. Each destination, and each different good required a separate *mavna*. This was a complicated and inefficient distribution to be performed on water.

> Barges, towing boats, tallymen, and chief tallymen set sail to the anchored ships at 7:00 a.m. This is because until 6:30 a.m. the Galata Bridge is open for the passage of large ships. It should be closed to enable these small vessels to pass out of the inner port. All the commencement of landing of goods is tied to the closing of the bridge. If there is a delay in the big ships, it effects the bridge, and the entire schedule of the port is stressed. 8:00 a.m.: everything is ready, the small vessels have found their ships, and are ready for handling with required custom permits.
>
> Works begins. This is a period from 8:00 a.m. to 5:30 p.m. Tallymen record the goods and cross-check their quality and quantity. Barges are filling up with goods. Each tradesman asks for a separate warehouse for their own goods. When the loading of the goods change, barges sets aside from the ship's crane (*sapan*) and leaves space for the others. (There is only a single space for each ship to have one barge at a time.) All other barges, bargemen, and workers wait for their turn. Sometimes barges are not fully loaded by the end of a single day of handling, and they are brought on land overnight to wait for the next day.
>
> Once the barges are full, one needs to cover them with a cloth. Then they are brought to the watchman's place (*bekçi yeri*). This place requires ultimate security and control over the goods against any theft or weather conditions like rain or snowfall.
>
> Now the ships are empty, and the goods are on land, yet the difficult part is not over.

Figure 10a–10c: Aerial photographs of the Golden Horn, from the 1950s and 1980s, showing the landing barge islands in Sirkeci and Perşembe Pazarı. SALT Research, AHISTKARA286 (10a) and *İBB Şehir Haritası* (10b–10c).

> Customs are usually full, there may not be new space for the coming goods. The cranes on land are not strong enough to transport the goods. The work is left for a large number of hamals to carry. Sometimes the load in the *mavna* is way too much for a single day of unloading. So, they wait and wait at the coast to completely unload.
>
> Even when it seems like the job is done, the danger of goods being damaged, lost, or mixed up during the transportation on land is a threat for the company since the compensation is their responsibility. This needs to be carried out with extreme attention. Controls are made by the port company. The whole process may vary from two to thirty days. The port company's handling process from the ship to the customs (ship – barge – towing boat – watchmen's place – customs) which starts at the sea and ends on land costs 200 kuruş. The other expenses from the quay to entrepot and to the magazine by hamals requires 1050 kuruş. The first due to the rudimentary organization of handling at the sea.[50]

The Port of Galata was usually lively with fights among the bargemen and hamals, the porters. Quarrels were sparked at times because of their competition for carrying passengers or for other jobs, and at times for their rising dissidence to the port authorities against the modernization attempts.[51]

50 Başar, *İstanbul Limanı*, 11–28.
51 Donald Quataert, *Osmanlı Devleti'nde Avrupa İktisadi Yayılımı ve Direniş 1881–1908*, trans. Sabri Tekay (Istanbul: İletişim Yayıncılık, 2017), 157–188.

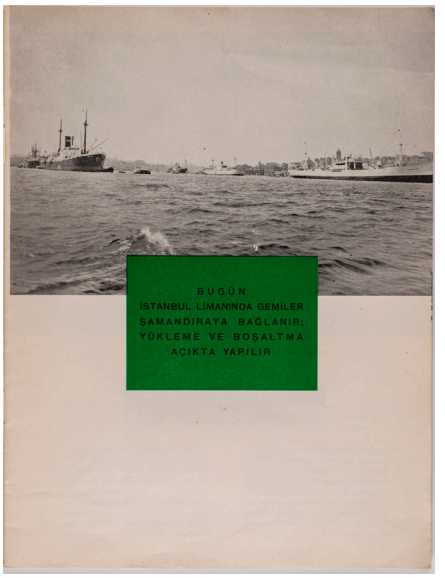


Figure 11: Physical model for the master plan of Istanbul's new port (*İstanbul Limanına Verilecek Yeni Şekil,* n.d.). Istanbul Research Institute Library.

Figure 12: Ships mooring offshore Galata (*İstanbul Limanına Verilecek Yeni Şekil,* n.d.). Istanbul Research Institute Library.

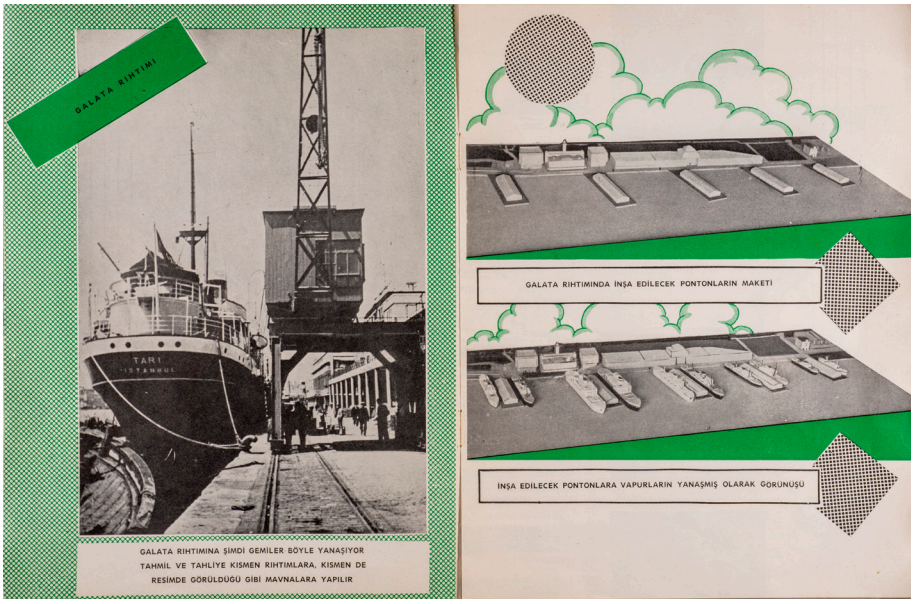


Figure 13: Landing of the cargo at the quay of Galata (*İstanbul Limanına Verilecek Yeni Şekil*, n.d.). Istanbul Research Institute Library.

Master Plans, Finger Piers, and Istanbul's "Troubled Bridge Issue"

Başar's dream to modernize the port remained an unresolved story for the years to follow. In the early 1950s, the Istanbul Maritime Bank and Port Authority published a pamphlet for the renovation of the ports in Galata, Sirkeci, and Haydarpaşa titled *İstanbul Limanına Verilecek Yeni Şekil* (*The New Shape for Istanbul's Port*) as a revision of the master plan (fig. 11–13).[52] The master plan was the second modern port project after the construction of the Salıpazarı quay in 1901.[53] Different from the straight lines of the quay, and instead parallel to the natural coastline, the 1952 plan proposed a vertical scheme for the coastline with a series of finger piers.

52 *İstanbul Limanına Verilecek Yeni Şekil* (Istanbul: Denizcilik Bankası T.A.O. İstanbul Liman İşletmesi, n.d.), [page numbers n/a]. The pages of the pamphlet are loaded with details on the existing state of the port organization. "Today at the Port of Istanbul, ships are tied to the buoys; loading and unloading is done offshore." "Shipment and discharge are done partially at piers and partially at barges, as seen in the picture." The project is presented in a physical model showing the model of pontoons to be constructed at Galata dock and the view of the ships as docked at the pontoons to be constructed.

53 Müller-Wiener, *Bizans'tan Osmanlı'ya İstanbul Limanı*.

Figure 14: Aerial photograph of the Port of Galata and the landing ships, 1950. SALT, AHISTBEYO095.

The plan suggested building five large finger piers with warehouses on each, a scheme to multiply the length of the shoreline for efficient landing. The shortage of land facilities, lack of storage areas, entrepôts, and the limited landing allowed for an average of sixteen to twenty ships docked at the harbor per day, only six or seven of which could be docked at the land harbor at stern. This proposal aimed to land the entire facilities of the port as an alternative to the water-dependent landing process. The finger pier was a North American port organization typology that was planned to fit the grid plan of the working port to the city grid. The increased depth of the seabed at the shore of Galata made the construction of finger piers impossible. This alien shape designed for the port was never realized, except for some entrepots plans. When the historic stratification of the port at Galata is mapped by critical delineation of the coastline, the lines of the premodern port, the quays, pontoon maps, and the finger pier typology reveal an unfixed landscape of shifting shapes (fig. 15).

Constructing Safe Waters for the Landscape of Container Boxes

The relocation of the working port from Galata to Haydarpaşa took more than half a century. The debate on the decision of where the new modern port was going to be located continued among port authorities and planners. The Galata Bridge marked a critical border of the maritime zone between the inner port and the waters of the Bosporus. Starting from the 1920s until the formal construction of the Port of Haydarpaşa in the 1970s, the bridge was considered a major cause for the inability of the port to expand between the years of modernization. For Başar, the bridge was considered a "wall of iron" (*köprüler iki demir duvardır*) that caused problems for the passage of cargo ships entering the estuary.[54] The bridge was opened late at night and early in the morning, its shifts effected the rest of the daily working schedule of the port. The core maritime space, the body of water between the quays of Galata and Sirkeci played a role in the birth of the fully modernized, human-made port of Haydarpaşa across the waters of the Bosporus.

54 Başar, *İstanbul'un Liman ve Köprü Meselesi* (Istanbul: İstanbul Ticaret ve Sanayi Odası, 1930), 24.

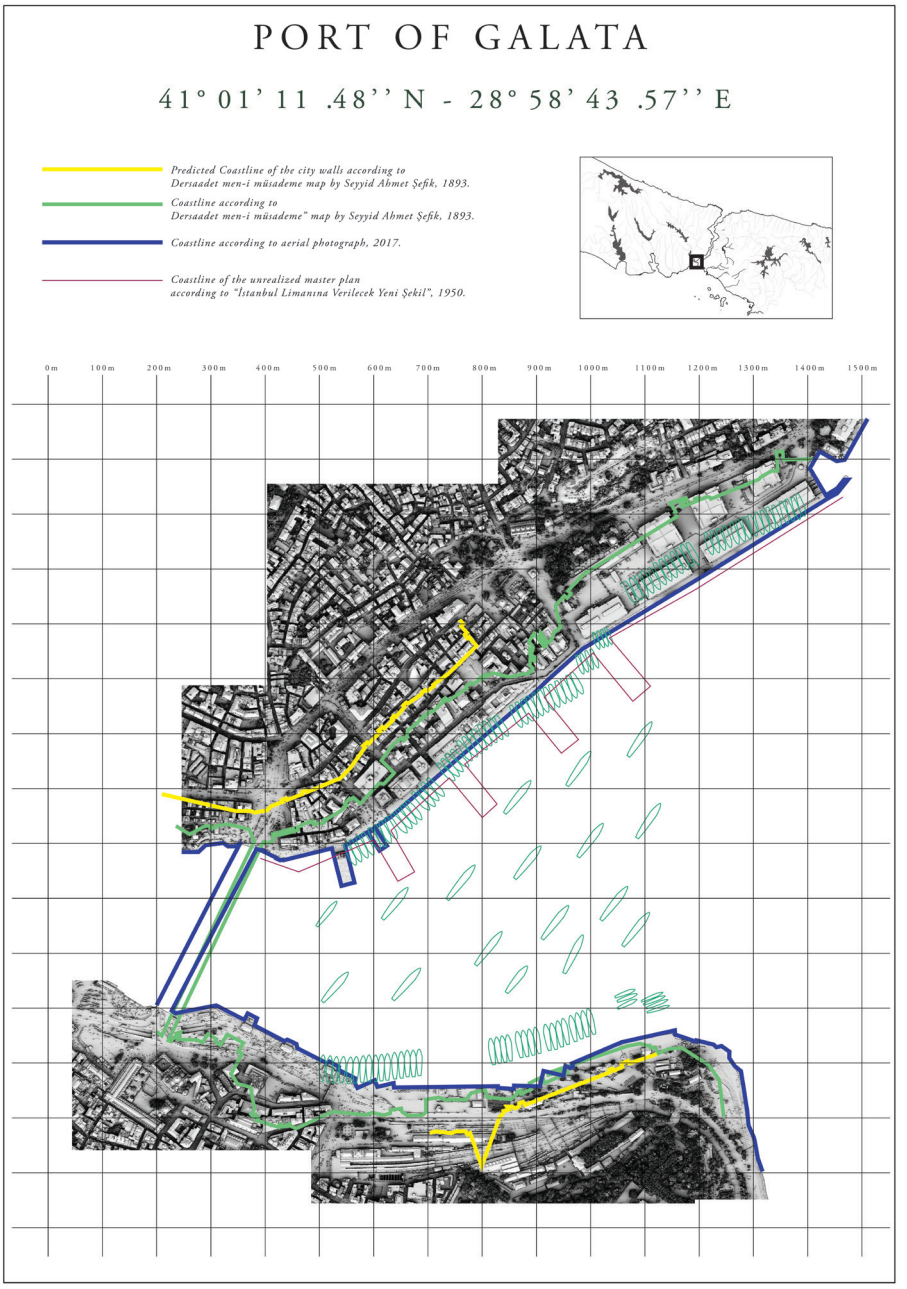


Figure 15: Critical delineation of the coastline, Port of Galata. Gökçen Erkılıç, 2021.

In 1973, a turn in longshore logistics took place in Istanbul, as it did elsewhere around the world. That year, the first container box was put into circulation, a revolution in maritime trade by its structure of worldwide standard dimensions.[55] The dimensions (6.06 x 2.60 m) of the container is still the standard today, designed for the maximum efficiency of transmitting the cargo from the carrier ships directly to trucks on land. It reduced the amount of storage at warehouses inland and allowing stacking. The container box marked a break in the landfilling capacity of Istanbul.

55 Since 1957, small containers had arrived in Istanbul's Ports of Salıpazarı and Haydarpaşa. Produced by an American military organization, Tuslog's "Koneks" company, these were smaller containers than the standard containers. The standardization of the container box required large winches that could handle thirty to forty tons of carriage. For a historic analysis of the container box, see Marc Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger* (Princeton: Princeton University Press, 2006).

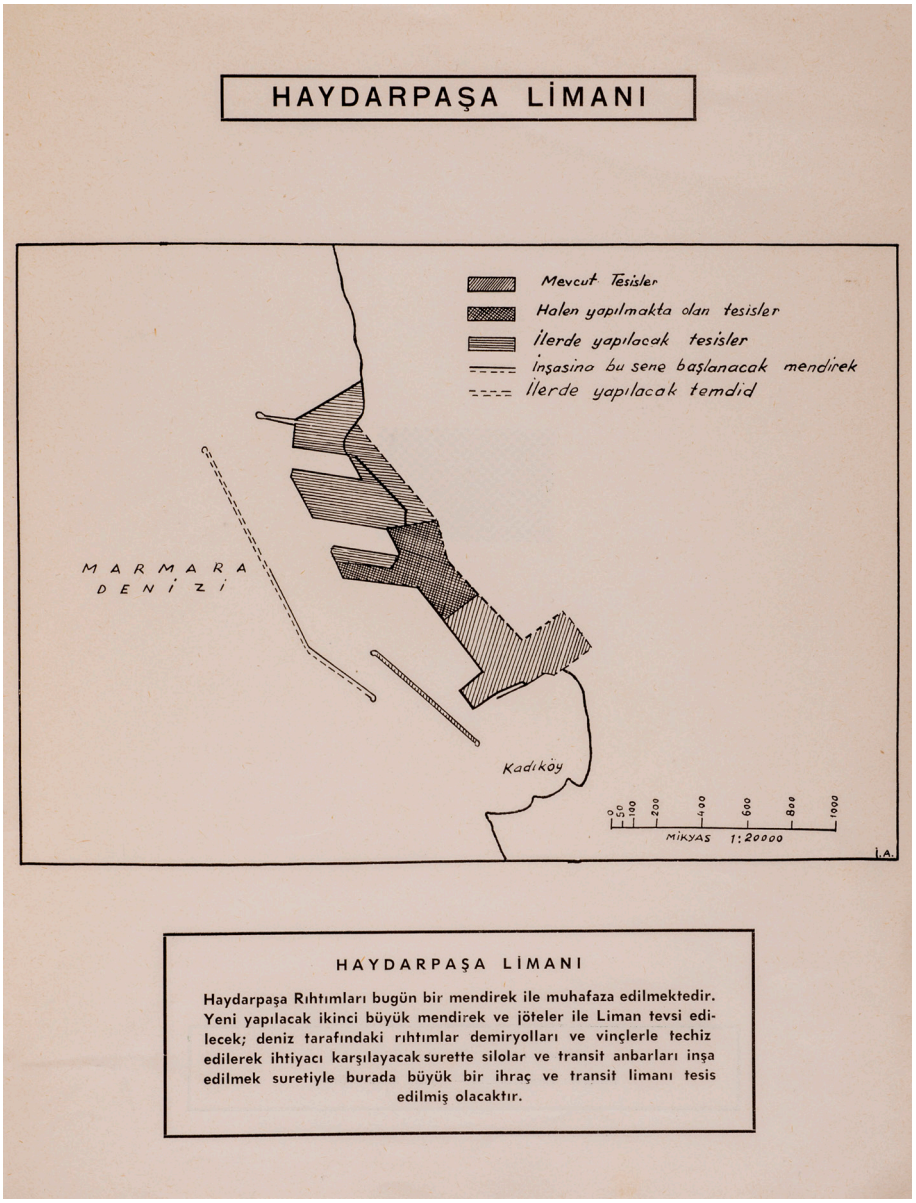


Figure 16: Extension plan of the Port of Haydarpaşa (*İstanbul Limanına Verilecek Yeni Şekil,* n.d.). Istanbul Research Institute Library.

The waters of Haydarpaşa, before the construction of the ship port, were recorded to be shallow and tidal. When the northern winds were blowing, the sea level would lower to sixty centimeters, and the seabed would surface. At the edge of the sea cliffs, the rhythm of the waves was unlike the tame waters of the natural harbor of the Golden Horn. This resulted in the construction of two breakwaters to protect this human-made port from southern waves. The quays of Galata and Sirkeci could never find space for container winches which carried boxes with the dimensions 6 x 2.5 x 2.5 m. The inland quays there were not suitable for the dimensions of this new box to land onshore.[56] If the Golden Horn was the natural harbor, and the Port of Galata was the port in transition, Haydarpaşa was the first modern port of the city. The removal of the working port from Galata to Haydarpaşa after years of debates came to an end with the container box. The box practically did the same work as a *mavna* with much less labor and more capabilities. The box could be stacked on the cargo ship, it was weather-proof, once landed on the port it could be stored up to three containers

56 Müller-Wiener, *Bizans'tan Osmanlı'ya İstanbul Limanı.*

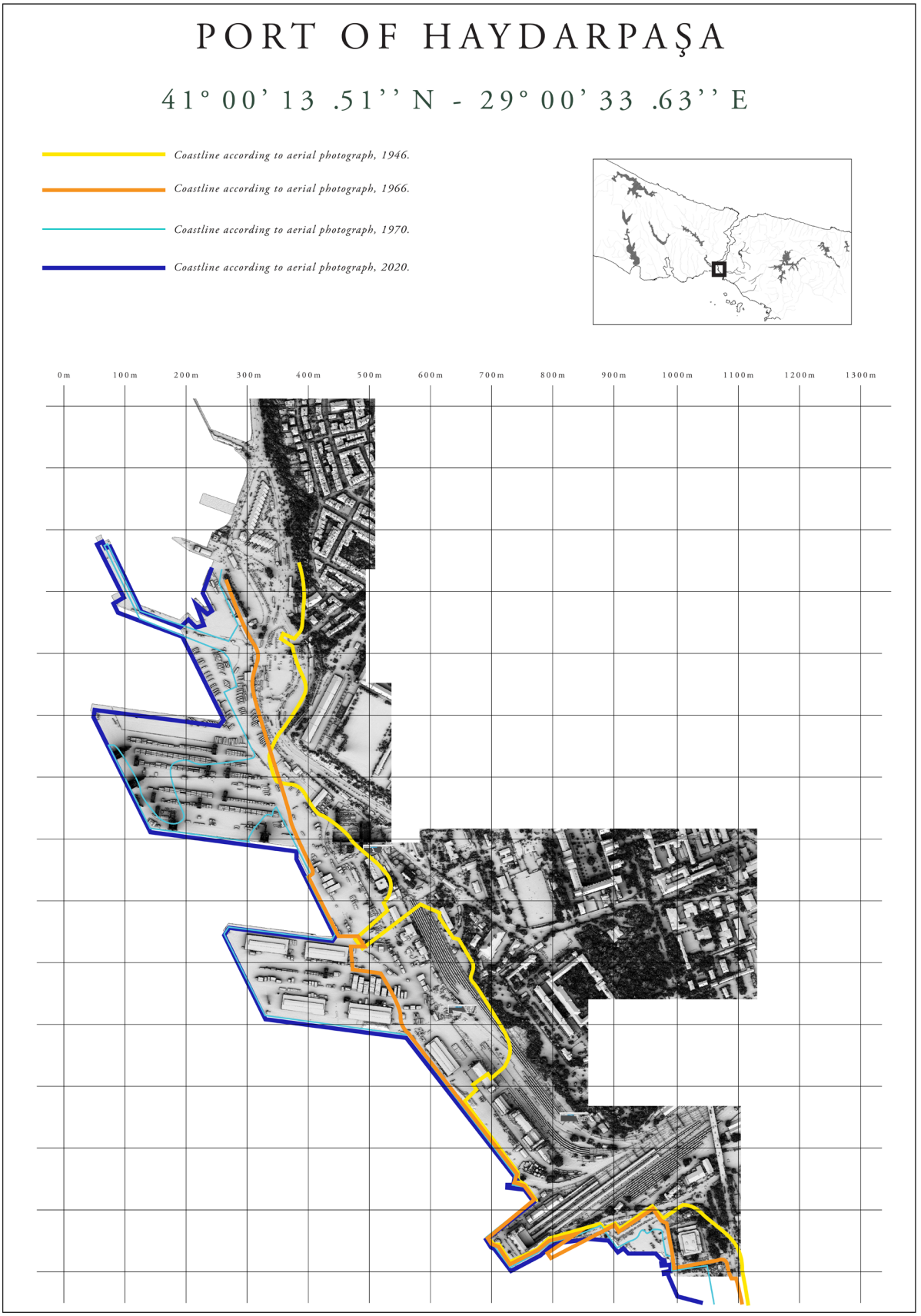


Figure 17: Critical delineation of the coastline, Port of Haydarpaşa. Gökçen Erkılıç, 2021.

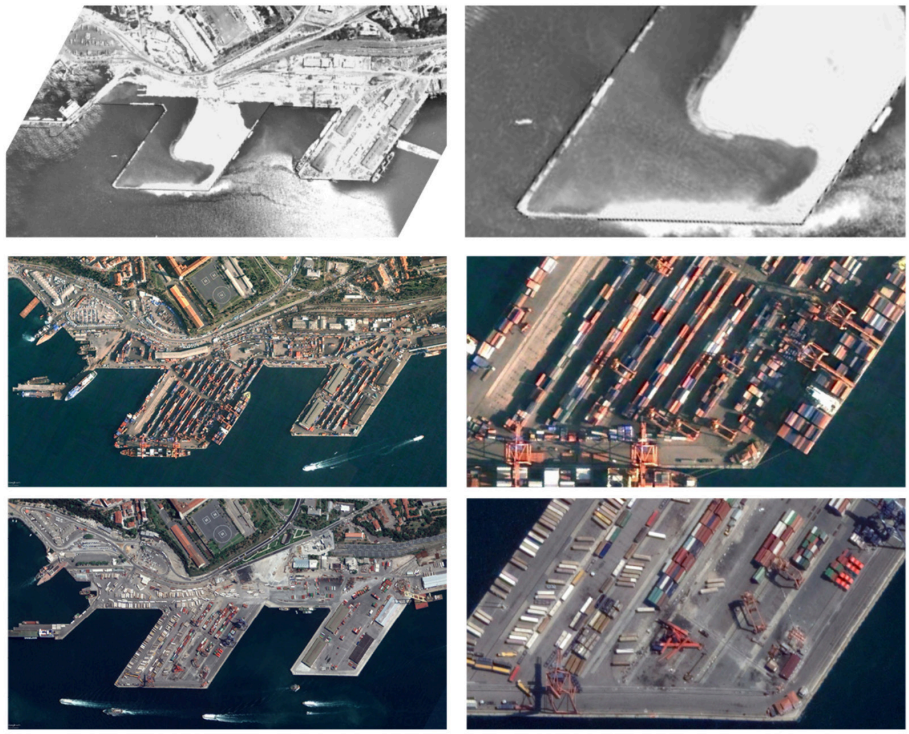


Figure 18a–18f: Aerial photographs of the construction of Haydarpaşa, 1970, 2012, and after a storm in 2017, *İBB Şehir Haritası*.

high, it would work as a self-sufficient warehouse, and the boxes could be easily mobilized by loading on the trucks and transported on land.

The last page of the pamphlet, *İstanbul Limanına Verilecek Yeni Şekil* was reserved for the extension plan of the Port of Haydarpaşa (fig. 16):

> The docks are protected by a breakwater today. The port will be expanded with the second breakwater and jetties to be built; the docks at the seaside will be equipped with railroads and cranes and with the construction of silos and warehouses to meet the demand, a large export and transit port will be established here.

The aerial photographs illustrate the moment when the second loading deck of Haydarpaşa was constructed for the new containers in 1970. When the long-term construction was completed, the dream of Başar's land-borne port was finally "on land" and shaped the coastline of Istanbul (fig. 18a–18f).

Sweeping the Debris to the Coast as Urban Backyard

In 1961, a geological map was produced for the construction of an underground subway line that pictured drilling surveys of the historic city center. *İstanbul'un Surlar İçindeki Kısmının Jeolojik Haritası / Geological Map of Istanbul* covered the Historic Peninsula and parts of Golden Horn and Pera (fig. 19).[57] The survey shows an accurate map for the filled land along the coasts. The legend of the map classified geological material as "landfills (natural and artificial), mactra limestone, clay and marn, sand and gravels, greywackes and shales." The grey zone covering most of the coastline shows the human-made aggregate that was swept along the coast as a geologic stratum. The underwater topography of Istanbul is as unique

57 Malik Sayar and Cazibe Sayar, "İstanbul'un Surlar İçindeki Kısmının Jeolojik Haritası / Geological Map of Istanbul, 1961," in Malik Sayar and Cazibe Sayar, *İstanbul'un Surlar İçindeki Kısmının Jeolojisi / The Geology of the Area Within the Ancient Walls of Istanbul, Turkey* (Istanbul: Kağıt ve Basım İşleri A.Ş., 1962). The metro line proposal in red, crossed Taksim, ran down to Karaköy, crossed the golden horn in Perşembe Pazarı, to Eminönü, Sirkeci then curved up to Beyazıt and ended in Aksaray, Yenikapı—a line that was never realized.

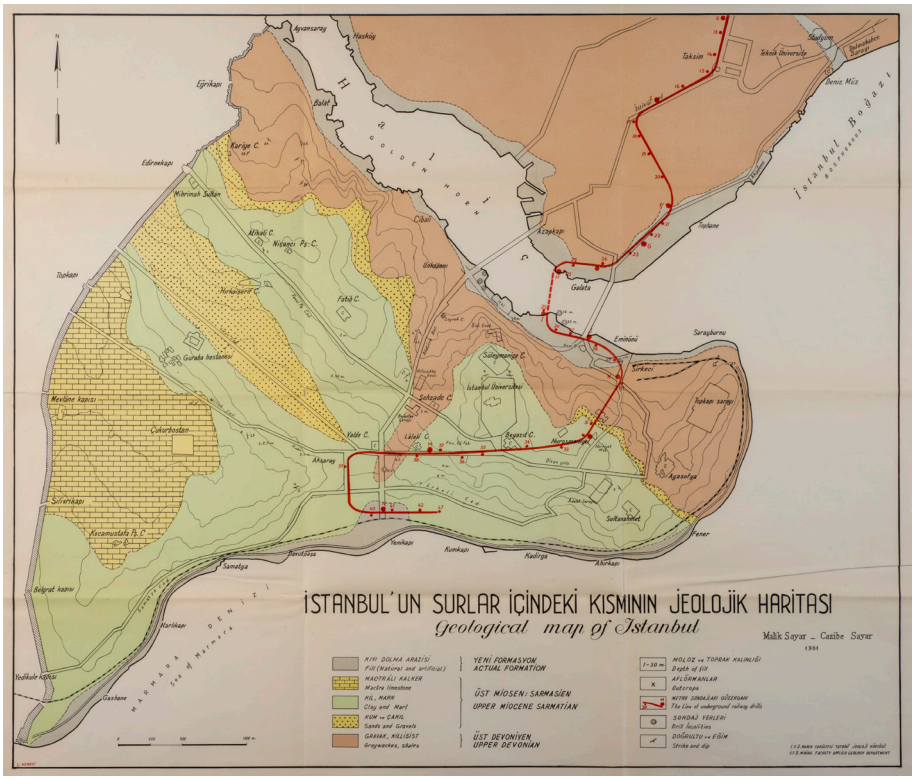


Figure 19: Geological map of Istanbul's intramural zone (Sayar and Sayar, *İstanbul'un Surlar İçindeki*, 1962). Istanbul Research Institute Library.

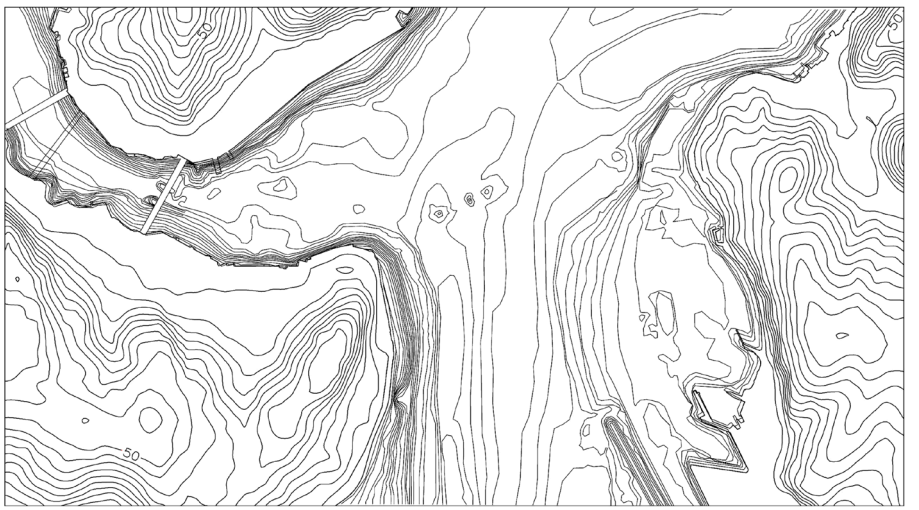


Figure 20: Topographic map of the Golden Horn and Galata, above and under water. Gökçen Erkılıç, 2021.

as the topography above the waters, including underwater islands, riverbeds, shallow waters, mudlands, cliffs, and rocks. The topography of the seabed defined the places of anchoring, places of frequent accidents of ships crashing on the rocks, and places of landing for large and deep ships.[58] A partial seabed topographic map shows underwater, specifically the depth of the maritime space, where the Marmaray metro connection from Üsküdar to Sirkeci at the seabed is evident in the lines of the present underwater geography (fig. 20).

58 If the water were to be emptied from the seas, the earliest riverbed that ran from the Marmara to the Black Sea would appear as a curved valley below Sarayburnu. It would also reveal that the sea is not as deep as the length of a large steamboat.

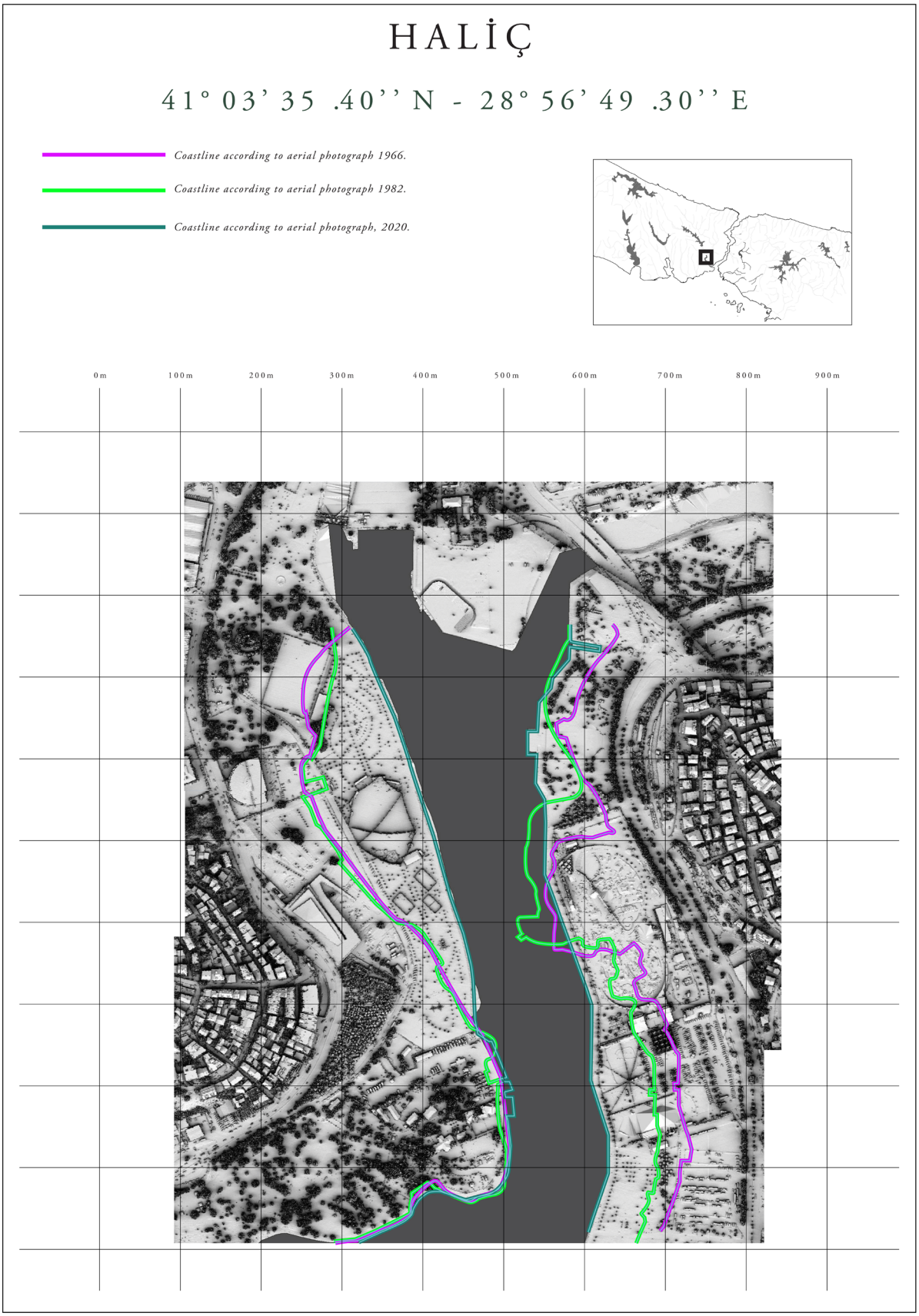


Figure 21: Critical delineation of the coastline, Golden Horn (Haliç). Gökçen Erkılıç, 2021.

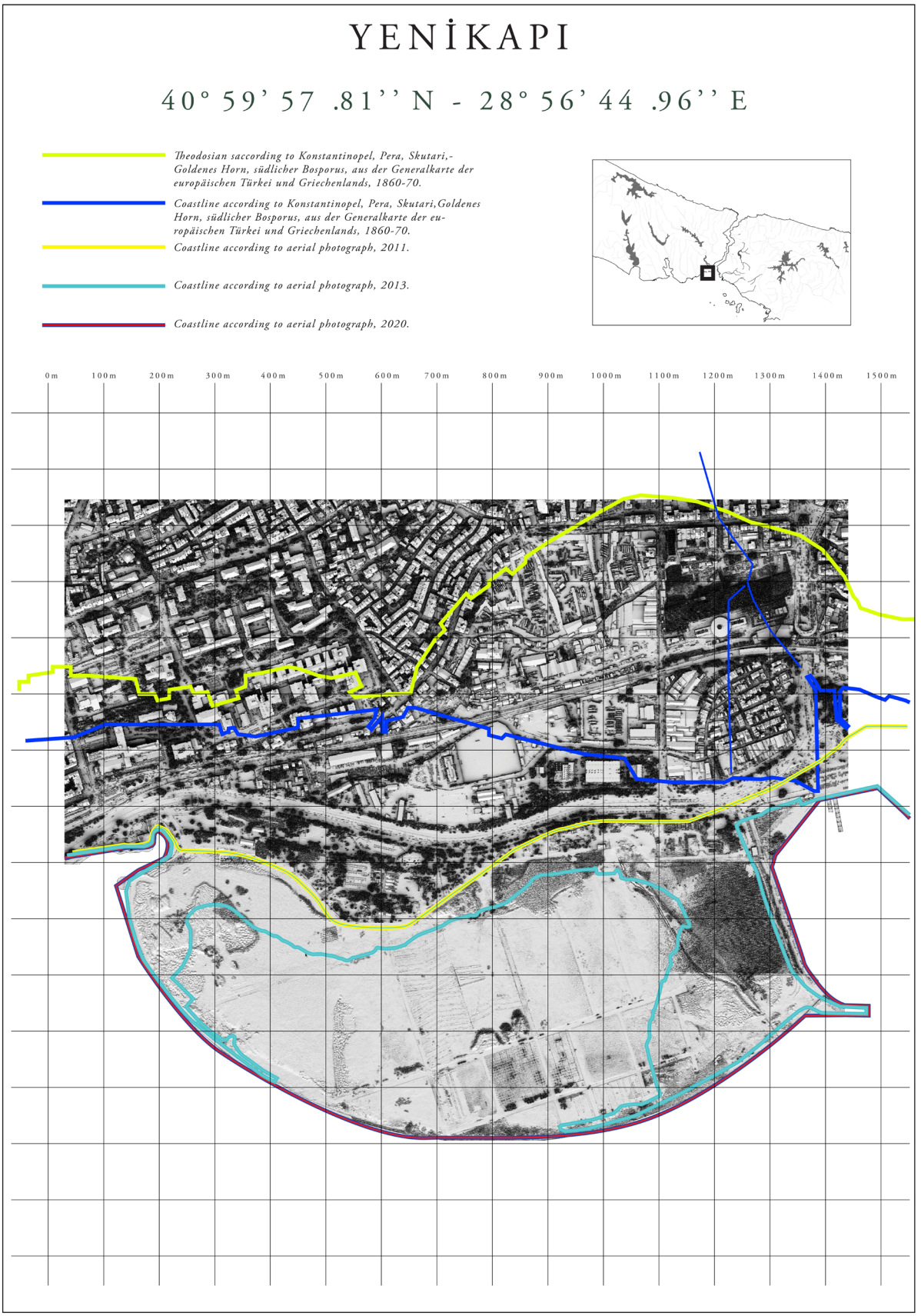


Figure 22: Critical delineation of the coastline, Yenikapı. Gökçen Erkılıç, 2021.

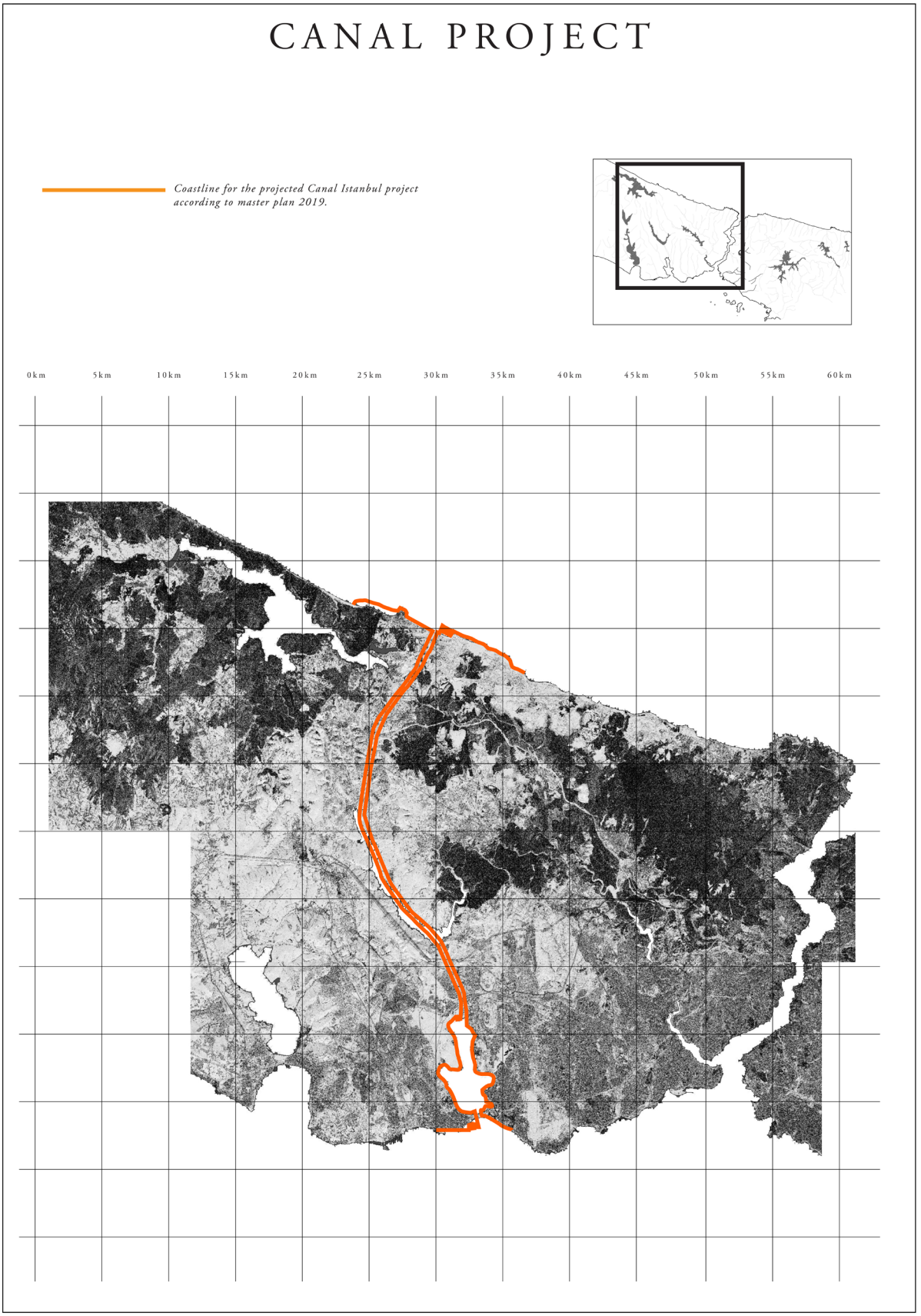


Figure 23: Critical delineation of the coastline, Canal Project. Gökçen Erkılıç, 2021.

The evidence of a thick stratum of mud covering the seabed of the Golden Horn has appeared throughout the history of the watershed's clearance. Başar mentioned the mud as one of the great obstacles for building a modern port in the Golden Horn. He saw the estuary as the best possible extension zone of the modern port and supported the option of the estuary's development as a new port.

> They say that constructions of quays at the coastline of the Golden Horn is extremely difficult. The advancement of technology leaves no doubt for this to be achieved. There are ways to construct over mudlands. The coasts of the Netherlands and the western ports have worse ground than the Golden Horn. Even in the Golden Horn, it is easier to construct quays, it is much more convenient than the sinking grounds and the ebb and flow of the oceanic coasts.[59]

Apart from the construction costs, the bottom mud of the Golden Horn demanded a continuous and laboring effort to be cleaned. For this obstacle, Başar proposed solutions such as dumping the mud to the offshore Sarayburnu, where he knew that the deep and flowing waters would easily carry it away.[60]

Half a century later, Bedrettin Dalan, the mayor of Istanbul (1984–1989) during the period of deindustrialization and evacuation of the industrial fabric, was responsible for the clearance of the Golden Horn. On the accumulation of debris under the estuary, Dalan said:

> If the circulation of the waters is allowed, the mud would not accumulate here. We built the new Galata Bridge. The older one is displaced in the farther shores of Golden Horn. That is why the water circulation stopped. The seabed turned into a giant sediment tank. If we waited a couple of years, the two shores would merge. Now we are clearing out this mud. We only have several meters to dig in.[61]

As the clearance of the estuary was on the news, rumors of the hidden Byzantine treasures beneath the mud surfaced. Dalan's words on this issue were: "There has always been rumors about hidden gold beneath these shores. Yet, for me, the largest treasure would be a blue estuary where the fish could swim happily and breed from the tip to the end."[62] The collected debris during the mayorship of Dalan, between 1981–1989, was first dumped in the shallow waters close to the river mouth of Kağıthane and Alibeyköy, and on the Tavşan Adası that marked the deepest end of the estuary. Aerial photographs from 1970, 1980, and 1990 show the landfilling operations. The debris of the Golden Horn remained an accumulating sediment tank. In 1997 and 1998, five million cubic meters of sediment were removed from the estuary and were pumped to fill the stone quarries in Alibeyköy.[63] Likewise, the domestic and industrial waste dumped into the estuary's waters were collected.

59 Başar, *Liman ve Köprü Meselesi*, 17. While port facilities were established in Galata and Sirkeci, the maritime traffic was opened directly to the Bosporus passageway. The Golden Horn, on the other hand, remained a secondary option. Other options were the Bay of Moda, Çekmece Lagoon, and Yenikapı.
60 Başar, *Liman ve Köprü Meselesi*, 20.
61 "Haliç'imi istiyorum!," *Yerel Yönetim Dergisi* (1997), accessed April 7, 2021, https://www.istanbulhizmetvakfi.com/?p-num=43.
62 Ibid.
63 "Haliç'in Temizliği 20 Yıldır Aralıksız Devam Ediyor," *Hürriyet*, March 1, 2016, accessed April 7, 2021, https://www.hurriyet.com.tr/gundem/halicin-temizligi-20-yildir-araliksiz-devam-ediyor-40062118.

Conclusion: "Shaping" the Port Geography and Production of Cartographic Meaning by the Coastline in Istanbul

The words "shape" and to "give shape" describe the relentless interest in appropriating the coastal space with various projects, realized and unrealized. In reference to the wording in *İstanbul Limanına Verilecek Yeni Şekil* (fig. 12), this conclusion echoes the word "shaping" and uses it within the *longue durée* history of appropriating the port geography.

The production of the coastal geography is coupled with the political discourse of governing the port and the city. Galata's coast was subjected to the struggles of modernization and technological upgrades with barges and offshore logistics. Similarly, Haydarpaşa's coastlines show the slow extension of land and the integration of Istanbul to global trade by container boxes and warehouses. The coastline of the Golden Horn bears the strata of deindustrialization, neoliberal clearance, and sanitation, as well as a continuous act of outpouring of coastal debris. The coast of Yenikapı, as the oldest among the ports, holds an amalgam of wasteland economy that is overruled by a landscape of power. In turn, the material agency of the coastline is coupled with the human agents and projects that shaped them. The port director Başar's modernizing master plans between 1929–1950; the sanitary project of revitalizing the Golden Horn between 1980–1990; and the urban mega project agenda after 2010, mark the rifts of urban government. These events cast light on the role of the port expansion in the urban explosion, as well as the shifting landing logistics from human labor from to machine labor. The operational remnants of these ideologies remain in the material body of the coastline in the "shaping" of the port geography of Istanbul.

The critical delineation of the coastline, as charted here (fig. 15, 17, 21, 22, 23), initiates research on one hundred years of shaping the shoreline of Istanbul that asks more questions than it answers. The delineated cartographies of Istanbul's coastline reveal that bodies of land and water have fluctuated in relation to political, geographic, and ecological structures, not only as mute construction sites but as generators of an entangled urban edge condition. In the material dispositions, the production of landfill and landing have played key roles in the shaping of the urban edge. The construction of the ports in Istanbul, its modernization, deindustrialization, and dislocation in the urban geography similarly redefine a multiscalar and relational geography.

Casting more attention on the urban edge, as a demarcation between the urban and its exterior, becomes more valid in such intriguing contexts of urbanization and ecological crises. As the mucilage issue raised in the beginning of the article demonstrates, urban borders can now only be assembled in multiple scales, with multiple human and nonhuman actors, and within broader temporal frameworks. The urban edge condition is shaped by the entanglements of the political with the ecological; the small and regional; and the historic process with present day. Beyond the cartographic image of the line, I would prefer to see the coastline as a site for the production of meaning. Presently, the interest in the material agency of the processes that shaped the coastline follows the material flows and their political ecologies. I would argue that the coastline itself, as a materially produced body, holds records, upon which new relations can be deciphered. As long as coastlines demarcate destinies, give birth to stories, and retain mysteries, they remain a subject worthy of further research.

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