URBAN METABOLISM OF İSTANBUL:
WATERFRONTS AS METABOLIZED SOCIO-NATURES
BETWEEN 1839 AND 2019

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submitted by **ESRA SERT** in partial fulfillment of the requirements for the degree of **Doctor of Philosophy** i**n Architecture, Middle East Technical University** by,

Prof. Dr. Halil Kalıpçılar
Dean, Graduate School of **Natural and Applied Sciences** _____

Prof. Dr. Cana Bilsel
Head of the Department, **Architecture** _____

Prof. Dr. Güven Arif Sargın
Supervisor, **Architecture, METU** _____

Examining Committee Members:

Assoc. Prof. Dr. Ela Alanyalı Aral
Architecture, METU _____

Prof. Dr. Güven Arif Sargın
Architecture, METU _____

Prof. Dr. Ayşen Ciravoğlu
Architecture, YTÜ _____

Prof. Dr. Zuhal Ulusoy
Architecture, Bilgi Uni. _____

Prof. Dr. Himmet Murat Güvenç
Economics, Administrative and Social Sciences, KHAS _____

Date: 25.12.2020

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: Esra Sert
Signature:

ABSTRACT

URBAN METABOLISM OF İSTANBUL:
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Sert, Esra
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Viewing the construction processes of urban spaces through urban political ecology reveals a context that deals with the production of nature as space. Considering the age of ecological rift in which we live, the urgency for understanding and altering the complicated relationship between society and nature, institutionalized mainly through urban design and architectural projects in modern times, is apparent. For doing this, unfolding the urban metabolism of cities will have an essential place in the future. This dissertation explores the concept of urban political ecology as a perspective for understanding the shifting urban metabolism of İstanbul in the period between 1839 and 2019. It aims to develop an approach for understanding socio-natural production and the transformation of the urban space concerning the actions of political events and forces in the context of waterfronts through urban metabolism embedded in particular metabolic flows. First, it traces the particular metabolic flows that constitute the space-making agenda embedded in the political-economic vision, projection, and struggle of each studied sub-period. Second, it records the transition and struggle from a labor-intensive urban metabolism to a capital-intensive urban metabolism in İstanbul between 1839 and 2019. Third, it follows the critical role of architectural practice and urban agenda as political instruments that operate through metabolic flows concerning the shifting urban metabolism of İstanbul within the

perspective of urban political ecology. In short, this dissertation makes an original contribution to the context of urban metabolism and the efforts of urban studies at large to transcend the dualities between the social and natural. Moreover, it contributes to discovering the shifting ideology of nature through the space-making agenda and keeping the records of the unfinished urban projections of one period in İstanbul that were completed in another. Above all, this dissertation aims to criticize waterfronts as metabolized socio-natures under the capitalist mode of production. It focuses on the evolution of different types of visions and projections for waterfronts and relationally inner parts of the city throughout the metabolic flows of land, water, urban voids, oil, coal, iron, and cement, respectively. Accordingly, this study seeks to provide critical insights for the next generation of research on the urbanization process in critical architectural and urban studies as well as how this process may affect the socio-natural landscapes of human health and ecosystems.

Keywords: Waterfront, İstanbul, Metabolic flows, Urban Political Ecology, Urban Metabolism.

ÖZ

İSTANBUL'UN KENTSEL METABOLİZMASI: 1839-2019 ARASINDA METABOLİZE OLMUŞ SOSYO-DOĞALAR OLARAK KIYILAR

Sert, Esra
Doktora, Mimarlık
Tez Yöneticisi: Prof. Dr. Güven Arif Sargın

Aralık 2020, 396 sayfa

Modern kentsel mekanların oluşum süreçlerini kentsel politik ekoloji perspektifinden ele almak doğanın mekan olarak üretimini ele alan bağlamı ortaya çıkarmaktadır. İçinde yaşadığımız ekolojik yarılmalar çağında, temelde kentsel tasarım ve mimari projelerle kurumsallaşan toplum ve doğa arasındaki karmaşık ilişkiyi kavramak ve değiştirmek için bir şehrin kentsel metabolizmasını ortaya çıkarmak gelecekte önemli yer tutacaktır. Bu tez 1839-2019 yılları arasında İstanbul'un değişen kentsel metabolizmasını anlamak için kentsel politik ekoloji perspektifini araştırmaktadır. Öncelikle, kentsel mekanın karmaşık sosyo-doğal üretiminin ve dönüşümünün kıyılar özelinde belirli metabolik akışların politik güçler ve mücadeleler aracılığıyla gömülü olduğu kentsel metabolizma konsepti bağlamıyla eleştirel bir yaklaşım geliştirmeyi amaçlamaktadır. Bunu yaparken ilk olarak, her dönemin politik-ekonomik vizyonunda, projeksiyonunda ve mücadelesinde gömülü olan mekan üretim ajandasını oluşturan belirli metabolik akışların izini sürmektedir. İkinci olarak, tez İstanbul'un 1839 ve 2019 yılları arasında "emek-yoğun kentsel metabolizmadan" "sermaye-yoğun kentsel metabolizmaya" geçişi ve mücadeleyi kaydetmektedir. Üçüncü olarak, kentsel politik ekoloji perspektifinde İstanbul'un değişen kentsel metabolizmasına ilişkin metabolik akışlarla işleyen politik araç olarak mimarlık pratiğinin ve kentsel ajandanın kritik rolünü takip etmektedir. Bu

doktora tezinin özgün katkısı, genel olarak kent çalışmalarındaki kentsel metabolizma bağlamına ve sosyal ile doğal olan arasındaki ikilikleri aşmaya bir katkı sağlamaktır. Ayrıca, değişen doğa ideolojisinin mekân oluşturma ajandası üzerinden keşfedilmesi ve İstanbul'da bir dönemin bitmemiş projeksiyounun başka bir dönemde tamamlanmasının açığa çıkarılması da diğer özgün katkılarını oluşturmaktadır. Hepsinin ötesinde, bu tez kıyıyı kapitalist üretim ilişkilerinde metabolize olmuş bir sosyo-doğa olarak ele alarak, farklı politik vizyon ve projeksiyonlar ışığında, kentin iç kısımlarıyla bağlantılılığını kaybetmeden karanın, suyun, kentsel boşluğun, petrolün, kömürün, demir ve çimentonun metabolik akışları aracılığıyla mekansallaşmasını sorgulamaktadır. Bu bağlamda, bu çalışma eleştirel mimarlık ve kent çalışmalarındaki gelecekteki kentleşme süreçlerine dair araştırmalara ve bu sürecin sosyo-doğal peyzajları, insan sağlığını ve ekosistemleri nasıl etkileyeceğine dair eleştirel bir öngörü sunmayı amaçlamaktadır.

Anahtar Kelimeler: Kıyı, İstanbul, Metabolik Akışlar, Kentsel Politik Ekoloji, Kentsel Metabolizma

To My Beloved Mom and Dad

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ABBREVIATIONS

ANAP- The Motherland Party
AP- Justice Party
APHA- American Public Health Association
BİA- Independent Communication Network
BOA- Prime Ministry's Ottoman Archive
CIAM- Congrès Internationaux d'Architecture Moderne
ÇED- Environmental Impact Assessment
DDT- State Planning Agency
DP- Democrat Party
DPT- State Planning Organization
DİSK- Revolutionary Labor Union Confederation
EPA- Environmental Protection Agency
EU- European Union
GND- The Green New Deal
HBB- Ready Mixed Concrete Association
IPC- İstanbul Policy Center
ISUF- International Seminar on Urban Form
İETT- İstanbul Electricity, Tramway, and Tunnel
İSKİ- İstanbul Water and Sewerage Administration
KHK- Delegated legislations
KOS- Northern Forest Defense
MİA- Central Business Areas
MD- *Mühimme* books
OAIB- Central Anatolian Exporters' Union
RPP- Republican People's Party
TBMM- Grand National Assembly of Turkey
TEMA- Turkish Foundation for Combating Soil Erosion
TEKEL- Tütün, Tütün Mamulleri, Tuz ve Alkol İşletmeleri A.Ş. Genel Müdürlüğü
TMMOB- Turkish Union of Chambers of Architects and Engineers
TOKİ- Mass Housing Administration of Turkey
TİSK- Turkish Unions of Employers
TUMAS- Turkish Engineering Consulting & Contracting Co.
UNEP- UN Environment Programme
UNESCO- The United Nations Educational, Scientific and Cultural Organization
WHO- World Health Organization
WWF- World Wide Fund for Nature

CHAPTER 1

INTRODUCTION

1.1 Reading the Urban Metabolism of İstanbul through Urbanization of Waterfronts Between 1839 and 2019

"Metabolism" and "circulation" embody what modernity has been and will always be about – – that is, a series of inter- connected heterogeneous (human and non-human) and dynamic, but contested and contestable, processes of continuous quantitative and qualitative transformations that rearrange humans and non-humans in new and often unexpected ways."
(Eric Swyngedouw 2009, 63)

"...it seems to me, in the idea of nature is the idea of man; and this not only generally, or in ultimate ways, but the idea of man in society, indeed the ideas of kinds of societies."
(Raymond Williams 1980, 71)

It is possible to see the urbanization of nature as a perpetual state of transformation as flow (Kaika 2005), a circulatory conduit (Merrifield 1993, Sennet 1994, Harvey 1996), and as a continuous deterritorialization process that is organized within social and physical channels (Swyngedouw et al. 2003, 898-918). Today, this idea emphasizing that nature cannot be grasped without considering the social is being reworked again.[1] The field of political ecology is developing through debates around how our socio-natural worlds are shaped and reshaped by varied productions, flows, imbroglios of society with other diverse ecosystems, tangible and intangible

[1] The Green New Deal (GND) debates and scholarly debates around urban political ecology may be mentioned in this regard. The GND is a proposed package of United States legislation that aims to address climate change and economic inequality. The name refers to the original New Deal, a set of social and economic reforms and public works projects undertaken by President Franklin D. Roosevelt in response to the Great Depression. The GND combines Roosevelt's economic approach with modern ideas such as renewable energy and resource efficiency. Wikipedia, April 2020.

apparatuses, and artifacts (Swyngedouw 2003, Heynen et al. 2006, White and Wilbert 2009, Kull et al. 2015, Bassett and Peimer 2015). The concept of metabolic flows as used in this study emphasizes the circulation and recirculation of materials, power, and labor not only in industrial production methods but also as constituents in the production of space.[2] This study attempts to situate the production of nature as space[3] in İstanbul within the context of capitalist urbanization from the 19th century to the 21st century via urban political ecology. It is argued here that trying to understand the transformation of waterfronts through particular metabolic flows within a social context, rather than within biophysical limits, is the critical new dimension of urban metabolism studies in the context of İstanbul.

For Henri Lefebvre (1991), material, representational, and symbolic discourses, each of which embodies the dialectical relations construed by the others, are essential regarding the production of space. With reference to Lefebvre (1991), who insisted that the production of space goes beyond material processes, this study proposes that the waterfronts of İstanbul be seen as metabolized socio-natures embedded in metabolic flows favoring the production regime, administrative management, and class conflict via constant struggles.[4] In the context of İstanbul, although these intellectual premises seem to be separate,[5] this dissertation attempts to transcend the separation by searching the shifting urban metabolism of İstanbul

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[2] We can see this perspective in Lefebvre's description of a house in Henri Lefebvre, *Production of Space*, trans. Donald-Nicholson Smith (Oxford, Blackwell, 1991), 92-93. See also Section 4.2.2.3 in Chapter 4 of this dissertation.

[3] This understanding and context of "nature as space" was inspired by Güven Arif Sargın in *Nature as Space: (re)Understanding Nature and Natural Environments*, ed. Güven Arif Sargın (METU Faculty of Architecture Press, 2000). Moreover, the context of the "production of nature" is borrowed from Neil Smith, *Uneven Development: Nature, Capital and the Production of Space* (Basil Blackwell, Oxford and Cambridge, 1990). I attempt to reconcile them as "production of nature as space" throughout the chapters of this dissertation.

[4] In terms of structure, actors, and networks, Şengül has suggested transcending the separation or the duality of these areas and taking them as integral parts of and contributors to each other for understanding spatial processes. Tarık Şengül, *Kentsel Çelişki ve Siyaset* (İmge Yayınevi, 2000).

[5] The production phase is generally bordered by meta-narratives, mainly accepted as a part of the structure debate, while individuals and daily life seem to be the concern of actor-network theory (see Latour's actor-network theory).

entrenched in metabolic interactions through the shaping and reshaping processes of the modern waterfronts of the city.

In this study, **the context of "metabolic interaction" emphasizes "labor**"[6] as an agent for the very production of nature as space. In the production of nature as space, socio-natural urban conditions emerge in various moments and mediums. Trying to understand the waterfronts of the past, present, and future as metabolized socio-natures through exploration of urban metabolism blending with political economy and constant struggle is an essential effort of this study. From Haraway, Latour, Wolman, and Swyngedouw to Gandy, we can see the trials of different aspects of this effort. The transition of urban metabolism, embedded in the urban pattern of growth, has a far-reaching impact on past and future metabolic flows and programs in the urbanization process. Specific attempts and struggles can be seen throughout urban waterfront landscapes developed under different economic and political regimes undertaking urbanization processes. In this regard, it may be possible to speculate that the current processes of the urban pattern of growth in İstanbul reflect and define the evolution of a historical metabolism of the landscape within a spatiotemporal dimension, based on the historical rhythm of urban metabolism.

This study offers a new model for understanding the relationship between metabolic flows and urbanization processes in critical urban studies and architectural theory. Rhythm is a container against the *annihilation of space by time* that is endemic to capitalist urbanization. It is also a container against the universalizing tendency of the capitalist mode of production. At this point, in particular, İstanbul's waterfront has experienced dramatic socio-natural changes in the last few decades, as is the case for many other metropolises around the world, but it has also been facing continuous changes over the centuries. In other words, the remaking of the

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[6] The context of metabolic interaction appears many times throughout the chapters of this dissertation. The concepts of urban metabolism and metabolic interaction have foundational roles as the philosophical background for this work. These concepts are not new, but the context in which Marx used them was new. Marx added "labor" to the context of metabolism and metabolic interaction. For a detailed explanation, see Chapter 1.3.

waterfront of İstanbul and the understanding of it as overlapping historical layers is not new, and some scholars have worked on these topics (Çelik 1984, Erkal 2011, Güvenç 2016). However, capturing the production of nature as space (waterfronts) through metabolic flows concerning different political-economic regimes is quite a new context for research and it defines a new critical dimension for the spatial organization of current metabolic interactions in the context of İstanbul. Approaching urban metabolism from the perspective of urban political ecology is seen as necessary in this dissertation for intervening in the urban agenda of creating livable urban landscapes of the future and perhaps giving possible answers for fulfilling the unfinished projections of the past for equality and desire for the right to the city.

İstanbul is a unique city for the Mediterranean basin in terms of its coastal and urban interface. This dissertation examines the waterfront transformations of İstanbul through metabolic flows under different political-economic regimes and agendas in the period from 1839 to 2019. While the urban metabolism of İstanbul is heavily dependent on "complex" material, labor, and social processes in the 21st century, in the 19th century, it had a more direct character. Accordingly, it was easier to follow these metabolic interactions in the 19th century. Therefore, it was easier to intervene in the urban agenda, unlike the current conditions, which are very difficult to tackle or to change. Regarding İstanbul in the 21st century, the current rhythm of urban metabolism is more hidden and it is hard to follow the complicated networks and relations behind it. Thus, demonstrating the transition from the "labor-intensive metabolism" to the "capital-intensive metabolism" of İstanbul in the context of production and reproduction of nature as waterfronts over nearly 200 years through particular metabolic flows is a new contribution of this dissertation. Efforts are made here to strengthen the current scholarly debates and actions for the environmental crises of dense coastal urban areas in a socio-natural manner.

Waterfront areas are remarkable places where land meets water, and they display unique spatial and ecological characteristics in both the urban landscape and the aquatic environment. Unlike broadly accepted works that focus on slums and

squatter settlements as the underlying factors of modern urban problems such as environmental issues and radical urban transformation attempts, this dissertation claims that İstanbul's waterfront landscape, its characteristics, and its metabolic backgrounds provide significant elements today for understanding the production of nature as space in terms of urban metabolism. In particular, the waterfronts of İstanbul will be examined in this dissertation as a specific *metabolic medium* that can be grasped via particular metabolic flows through history and is both a result and a cause of the characteristics of the space-making agenda in the context of middle-income capitalist countries like Turkey. The labor and the organization of the labor force via culture, technology, and struggles that define the mode of production are significant for exploring the relations of the production of nature as space for an understanding of the body of metabolic interactions as flows in this dissertation.

Trying to understand the metabolic interactions needed to sustain the city's inhabitants at home, at work, and at play (Wolman 1965), such as water, waste, land, gas, oil, iron and cement, and coal, can be an insightful starting point for the socio-natural production and reproduction of waterfronts as space, particularly within the context of İstanbul. This organization has heavily depended on the production regime and its spatial agendas through administrative management (government forces) and social classes as well as struggles and daily life in İstanbul. The periods defined by Tekeli are the Pre-Modernity Period (from Selçuk times to the second half of the 19th century), the Shy Modernity Period (1880-1923), the Jacobin (Radical) Modernity Period (1923-1950), the Populist Modernity Period (1950-1980), and the Fading Modernity (from 1980 to today).[7] We borrow some parts of Tekeli's periodization, in which he emphasizes the role and tradition of urban planning tradition in Turkey. This dissertation aims to further extend that conceptualization

[7] İlhan Tekeli, *İstanbul'un Planlanmasının ve Gelişmesinin Öyküsü* (2013), *Türkiye'nin Sağlık Tarihi Bağlamı İçinde 1593 Sayılı Umumi Hıfzısıhha Kanunu ve Cumhuriyetin Sağlık Sorununa Yaklaşımı,* Türkiye Bilimler Akademisi (TÜBA). On the other hand, Tarık Şengül (2009, 97-149) defines the period from 1980 to today by the urbanization of capital, while the period between 1950 and 1980 represents the urbanization of labor power and that between 1923 and 1950 the urbanization of the nation-state. For details, see Tarık Şengül, *Kentsel Çelişki ve Siyaset: Kapitalist Kentleşme Süreçlerinin Eleştirisi* (İmge Kitabevi, 2009).

by exploring how the production of nature is materialized through metabolic flows along and beyond waterfronts that help to define the urban metabolism of İstanbul under each specific mode of urbanization in that borrowed periodization. The socio-natural understanding of İstanbul from the perspective of urban political ecology is new and essential; it records the unfinished urban projections of one period in İstanbul completed in another. The urban agenda has continuity, and the visions and projections in the 21st century were rooted in the 19th century.

Concerning the complex metabolism of the urban landscape of İstanbul in the 2000s, the agendas and metabolic flows of urban debris[8] as space between the waterfronts and inner city provide both a very fruitful and intricate vision and a lens of the dramatic expansion of urban land via coastal land reclamations (Sert 2019). The idea of nature carries a loaded human history, and it remains a fact that the urbanization process provides fertile atmosphere for transcending the dichotomous language of first nature and second nature and reaching the idea of the production of nature throughout history. Scholars such as Cicero, Hegel, Kant, Marx and Engels, the Frankfurt School members, and Smith constructed the debate around first and second nature. First nature is explained as God-given raw material and the background or input for second nature (e.g., agriculture), a dichotomy defined as early as Cicero (45 BC). Until Neil Smith (1990), more or less the same arguments have been maintained concerning first and second nature. However, Marx and Engels, who placed human labor between the relationship of human beings and nature, differed from the others in their viewpoint. A materialist vision of nature, explaining that we have mixed our labor with the earth within a historical dimension, can be found in Marx and Engels's writings. These include *German Ideology*, *Grundrisse*, and *Capital I*. William Cronon (1991), Neil Smith (2008), Noel Castree and Bruce Braun (1998), and David Harvey (1996) adequately outlined the relationship between human societies and the production of nature, along with the context of "social natures." According to Smith (2008), the usage of arguments such

[8] Urban debris is understood as a secondary form of metabolic flows of iron and cement through the massive urban transformations of İstanbul.

as “domination of nature” is linear and promotes the dichotomous language of first nature, second nature, nature versus culture, and so on. He tries to develop the idea of the production of nature in his study.[9] However, on the other hand, Marx and Engels are the ones who give us insight into the idea that offers “production of nature,” explaining it as something determined by political forces. At this point, concerning spatial references, what we call “natural landscape” confirms this idea. Raymond Williams (1980, 78) asserts that what we call natural landscapes are the product of human design and labor for the most part, but this acceptance is based on suppression of the history of human labor[10] and political forces. Furthermore, he criticizes how the idea of humans reentered the idea of nature in the modern world by power-seeking in capitalism with the introduction of Darwin’s notion of natural selection into popular imagery.

The developing concept of urban metabolism is based on the unhistorical human body in scientific thought. Research on metabolism has shifted from the human body to private households, to industry, to urban areas, and to regions as larger anthropogenic systems throughout history. The concept of metabolism entered scholarly debates through research on the human body performed at the beginning of the 17th century by a medical doctor, Santorio Santorio (1561-1636). For 30 years, Doctor Santorio took measurements of his own weight through both all the food he consumed and all the feces he passed (Baccini and Brunner 2012, 21).[11] He was trying to find the missing link between the input and output of his body, but that had to wait until the discovery of “combustion” by chemist Antoine Lavoisier (1743-1794) in the 18th century. In the second half of the 20th century, thanks to the work of Santorini and Lavoisier, studies on the metabolisms of cosmonaut Yuri Gagarin and astronaut John Glenn came to the fore concerning space habitats. Furthermore,

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[9] Neil Smith, *Uneven Development: Nature, Capital and the Production of Space* (3rd edition. The University of Georgia Press, Athens and London, 2008).

[10] Raymond Williams, *Ideas of Nature in Problems in Materialism and Culture* (London, Verso, 1980), 78.

[11] Peter Baccini and Paul H. Brunner, *Metabolism of the Anthroposphere: Analysis, Evaluation, Design*. (2nd Edition, Cambridge, The MIT Press, 2012)

it is important to underline that in the same period, designs for self-sufficient systems for living were discussed as a possible ticket to "colonize Mars" (Baccini and Brunner 2012, 28). The general tendency is to take the concept of urban metabolism just as it came to the stage in the 1960s, but it was historically rooted in the 19th century. John Bellamy Foster (2002, 2015)[12] has shown in his works on Marxism and ecology that Marx and Engels had an interest in the natural science of their day (Liebig, Ernst Haeckel, Darwin, Huxley, and the like) and made significant contributions to the question of the relationship between society and nature, as well as to the materialist conception of nature. Marx and Engels used the term "metabolism," which spread in the 19th century, defined as the exchange of matter between man and nature affected by labor.[13] *Stoffwechsel*, the original word for metabolism in German, means "change of matter." The concept of metabolism, taken from Justus Freiherr von Liebig (1803-1873), who is considered the founder of organic chemistry, was used by Marx and Engels for the first time in the context of the dynamics of socio-environmental changes through labor.[14] That is to say, the concept of metabolism itself is not new, but the context in which Marx used it was new and worthy of notice. The industrial revolution was a turning point for the shifting of animal and muscle power to the modern *labor process* (as Marx called it) or what current ecological Marxists call the "socio-natural metabolism" (Foster 2000, Heynen et al. 2006, Swyngedouw 2009) for explaining the power relations reshaping life and space between humans and nature.

Accordingly, this dissertation attempts to explore urban metabolism in the context of İstanbul beyond the limits of input-output calculations of materials that keep us at work, at play, and at home using calculations, mathematical modeling, or simulation tools, as some scholars have done before (Santorio 1614, Batty 2013,

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[12] John Bellamy Foster, "Marx's Ecology in Historical Perspective," *International Socialism* 2, no. 96 (Autumn 2002): 71-86; John Bellamy Foster, "Marxism and Ecology: Common Fonts of a Great Transition," *Monthly Review* 67, no. 7 (December 2015).
[13] Karl Marx, *Capital: A Critique of Political Economy, Volume Two*, introduced by Ernest Mandel, trans. David Fernbach (Penguin Books in association with New Left Review, 1992), 29, 68, 226 (also see Volume 1, Chapter 7, 283).
[14] Ibid., 29, 68, 226.

Ferrao and Fernandez 2013). Furthermore, data availability and access and the matter of the reliability of data on inputs as well as outputs for a city are matters to be questioned for various reasons such as security that have emerged as challenges in computational and mathematical models (Aiu 2016, 29). In other words, urban metabolism is grasped in this study by particular metabolic flows of precise moments, focusing on their relationality with the production of urban waterfronts under different socio-natural processes and political forces as visions, projections, and struggles.

Swyngedouw (2009) briefly summarizes the historical background of metabolism by embodying the concept of "circulation" from its identification in the body's vascular system in 1628 to the circulation of e-wastes today.[15] Different scholars approach the concept of urban metabolism in various ways. For instance, Wolman (1967, 180) was one of the very first in urban literature to offer a definition as "… all the materials and commodities a city's inhabitants need to sustain themselves at home, at work, and at play." Decker (2001, 54) states in her dissertation that human habitations are the main sources for material and energy flows, and materials are translated into urban structures, urban waste, and energy. Ferrao and Fernandez (2013, xi) define urban metabolism via the four main flows of "water, materials, energy, and nutrients" and take the concept to a broader scale, a planetary scale. Nevertheless, rather than focusing on biophysical flows as a matter of calculation as in the studies mentioned above, this dissertation tries to grasp the more striking features of "how these flows are politically contested and struggled over" (Huber 2008, 106)[16] as well as the shaped and reshaped socio-natures of İstanbul. This dissertation uses particular metabolic flows for embracing the urban

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[15] The historical background of metabolism embodying the concept of "circulation" is explored in detail, from its identification in the body's vascular system in 1628 to the movement of money, and from its usage in daily life (ideas, newspapers, air, etc.) in the days of the French Revolution to the *flaneur*, a literary character of Baudelaire, and later Walter Benjamin in the mid-19th century through circulation and within urban space, on to the idea of the circulation and flow of waters through urban space for the first time by Edwin Chadwick, and from the circulation of labor and capital to the circulation of e-wastes today. See Eric Swyngedouw 2009, 68-72.

[16] Huber only focuses on energy flows in his study. Matthew T. Huber, "Energizing historical materialism: Fossil fuels, space and the capitalist mode of production," *Geoforum* 40 (2008): 106.

metabolism of İstanbul under different regimes and in different moments. Moreover, these flows are accepted not as a source or material but as a socio-natural relation embedded in the political reconfiguration of space via struggles. With this theoretical background and these considerations, the arguments of the following chapters will now be summarized. This introductory chapter first aims to display and criticize the historical urban metabolism through the production of nature as space. Therefore, attempts are made to structure the urban political ecology through outlining historical materialist inquiry and dialectical understandings, as well as the ideology of nature.

Chapter 2 examines the Tanzimat Era, representing a turning point with its political environment, economic relationships, and essential socio-natural relations embedded in the efforts of reshaping the waterfronts of İstanbul in a modern manner. Before the 19th century, land and water resources could not be bought or sold and were secured as inalienable properties. This rule was the most crucial aspect of the prevention of the division and alienation of humans from nature before Tanzimat. The emergence of a new urban metabolism of İstanbul between 1839 and 1923 is explored through the metabolic flows of land and water. Chapter 2 explores the metabolic flows of land in the case of property rights through *yalı*s and summer palaces, quays and ports, sea baths, great fires, steamships-boats-trams, and *çayır*s, respectively, while it examines the metabolic flows of water in the contexts of tap water, cholera, and waste and sanitation.

Chapter 2 explores the transition and the conflict between labor-intensive metabolism and capital-intensive metabolism within clear examples such as the manufacturing process, waste management, water distribution, water health and security, firefighting, recreation, housing along waterfronts, land reclamations, and transportation. Towards an industrial discipline, the water and the human labor were acting together as a significant catalyst in the early mechanization period of the early 19th century. This chapter reveals the mutual relationship between changing the metabolic flows of land and water through the urbanized nature of İstanbul in the 19th century, both rendering and affected by uneven urban environments in the cases of accessing tap water, drainage systems, *yalı*s and summer palaces, and

transportation as well as being influenced by fires and disease conditions. On the one hand, this chapter emphasizes the loosening character of the strict social organization of the metabolic flows of land and water in terms of protection and production by direct human and animal labor. On the other hand, emerging techno-managerial aspects of the social production of nature by technology-driven private companies and in terms of management by the municipality are shown to still meet the needs of the Palace in this chapter.

Chapter 3 focuses on the political project of the young Turkish Republic that defines a particular climax considering socio-natural relations embedded in metabolic flows of urban voids. This political project sees landscapes as well as humans as pristine and open to being designed by the mechanisms of universalization and externalization of nature according to the needs of the young capitalist republic. Separating the use-value from the exchange-value regarding nature defines the triumph of the modern bourgeois concept of nature. The imaginary projections and essential contradictory vision of capitalist Turkey were embodied through the waterfronts of İstanbul via the urban design proposals of Prost. "Creative destruction" came to help for the sake of creating "urban voids" in urban landscapes as a foundational context in Prost's plans and reports. It was not only an engineering or design issue; it was also a matter of inventing those urban areas by creating a consensus: nature should be disciplined. The vision of the design or plan as well as the production of nature with scientific rationale and bourgeois ideology of nature are the underlying motives for the development of the urban voids along and beyond the waterfronts of İstanbul. Chapter 3 explores the metabolic flows of urban voids through coastal roads and boulevards, woods/parks and gardens, public squares of İstanbul, and *plaj*s, respectively. Chapter 3 shows that Prost influenced Menderes's projections of the urbanization processes and İstanbul's problematic future environment in many ways.

The main focus of **Chapter 4** is the flourishing industrial bourgeoisie and the working class in the transition from agricultural capitalism to industrial capitalism via a particular space-making agenda through waterfronts. This period was marked

by the first apparent increase in CO_2 emissions, and it contributed to the development of a high-carbon society via a new urban agenda in which motorized urban metabolism flourished. The uneven production of nature through the metabolic flows of oil and coal remade the waterfronts as the new periphery, creating more complex relations and impacting the future urban agenda. Since this era, the waterfronts have been addressed for the celebration of movement, deepening the uneven production of nature through metabolic flows of oil and coal.

Chapter 4 explores the decentralization agenda and creative destruction through the realization of the metabolic flows of oil embedded in road constructions, the first bridge over the Bosporus, and quays for fuel oil in İstanbul. The chapter's findings demonstrate that the installation of new infrastructures, such as signalization, illumination, telecommunication, and wire fencing, with land clearance for the sake of national oil projection embedded in the road-making agenda, put pressure on the ecosystem. This chapter explores the metabolic flows of coal through coal discharge, storage, and distribution; the Silahtarağa Power Plant; and *gecekondu*s. It further shows that the Kuruçeşme coal storage area had been a unique hub for the very source of energy via the Silahtarağa Power Plant and the marble industry on Marmara Island, particularly concerning the building sector in this period. The coal coming from the Kuruçeşme depot was used there, and the power plant produced a particular waste recycled in the cement and brick industry along the waterfronts of the Haliç.

Chapter 5 focuses on the disappearing industrial city with the unique socio-natural relations of the laboring class throughout waterfronts that were legalized with the postmodern understanding of nature under the cover of "environmental" concerns that agree with melting away the human content and mutually the labor context. Between 1980 and 2019, the neoliberal vision and projection essentially attacked and directed the "scientific production" of nature as space, which had been specific for the first three-quarters of the 20th century through the waterfronts of İstanbul. Besides, it imposed the "financial production" of nature as space for capitalist accumulation. While the bourgeois ideology of nature separates humans

and nature, embedded in the countless efforts by nation-states to combine them, the neoliberal ideology of nature deepens this duality by the declaration of freeing nature from human and labor contents. Human content is replaced by capital in the period between 1980 and 2019. Chapter 5 explores the new socio-natural agenda through metabolic flows of iron and cement embedded in urban solids, such as villa and tower contexts, and urban voids, such as coastal land reclamations, especially in this moment of the neoliberal vision and its projection along the waterfronts and skyline of İstanbul.

Chapter 6 presents the conclusion. It shows the findings and contributions of the thesis via an overall reading through the chapters between 1839 and 2019 in İstanbul. The original contributions of the dissertation and potential further studies are also examined at the end of this chapter.

In short, the shift from labor-intensive to capital-intensive metabolism brought about an increase in CO_2 emissions and contributed to the development of a high-carbon society as well as bringing the health of İstanbul's ecosystems into question via an urban agenda with mega-scale visions. Regarding the structure of the thesis, the moments are explained in five chapters with unique conceptualizations of each period. Furthermore, the waterfront of İstanbul as a metabolized socio-nature is chosen for the discourse of metabolic medium within the terminology of space for exploring the urban metabolism of İstanbul between 1839 and 2019. The periods chosen for this study were selected based on the question of how we produce nature and who controls it. This dissertation tries to problematize the socio-natural transformations of the urban space from the late Ottoman Empire through the Republican Period and up to the regime of the 21st century by looking at waterfronts as the critical locations and scales of urban transformation.

This research tries to explore socio-natural transformation concerning the actions of political forces (contested through visions, projections, and struggles) in the context of waterfronts. Emphasis is carefully placed on a political basis via the urban political ecology perspective in order to refrain from the "material determinism" that breaks up the urban metabolism debate from its very socio-natural,

or, in other words, both hybrid and political ground. Furthermore, this research aims to contribute to critical urban and architectural theory, urban environmental history, urban form, urban metabolism debates, and the understanding of the urbanization process of waterfronts in the context of middle-income capitalist but also developing countries like Turkey. With this general perspective and theoretical background, **this study first aims** to develop an approach for understanding the socio-natural transformation of the urban space concerning the actions of political events and forces in the context of waterfronts through urban metabolism embedded in particular metabolic flows. **Secondly**, it tries to prove the transition and struggle from the "labor-intensive urban metabolism" to the "capital-intensive urban metabolism" of İstanbul from the 19th century to the 21st century. **Thirdly**, it is essential to reveal how architectural practice operates through the metabolic flows as a political instrument in the context of İstanbul, as it has had a critical role in the urban metabolism of İstanbul throughout history. Next, the arguments, methodological considerations, and data collection methods of this dissertation will be outlined.

1.2 Arguments, Methodological Considerations, and Data Collection

This study examines the transformations of waterfronts within the world-historical context and the concomitant economic and socio-natural relations in İstanbul. We will be seeking the relations, contradictions, and uneven landscapes of class conflict and changing labor processes as the underlying cause of all. We will follow the paths of the production of nature as space in İstanbul through production regime, administrative management, and social classes with their constant struggles as integral parts of metabolized socio-natures in the context of the waterfronts of İstanbul for each period. This research mainly focuses on the urbanization of waterfronts embedded in metabolic flows of land, water, urban voids, oil, coal, and iron and cement via the reading of urban metabolism through waterfront areas of İstanbul from 1839 to 2019. Notably, the transformation of waterfront areas through metabolic flows in the context of urban political ecology will be explored under

dialectical historical-geographical materialist considerations for understanding the urban metabolism of İstanbul via qualitative methodology. This methodology involves a critical commitment with content analyses of historical accounts from journals, archives, reports, social media, and secondary sources dealing with the evolution of metabolized socio-natures via the metabolic flows mentioned above in different chapters. Therefore, architects, geographers, politicians, travelers, mayors, and historians are studied according to their speeches or writings with analyses of communication content.[17] Archival research, including legislation, codes, policy papers, local architectural journals, reports, photos, maps, documents from the Turkish Republic's Directorate of the Archives of the Prime Ministry, and reports and archives of the Chamber of Architects have been of particular importance, as well, in considering the spatial analyses. The next subsection focuses on the arguments and methodological considerations, followed by an explanation of the data collection in detail.

1.2.1 Arguments and Methodological Considerations

1.2.1.1 Historical-geographical materialist enquiry and dialectical understandings

There has always been a search for grounds for a better understanding of the complex relationship between nature and city. At first glance, city and nature seem to appear in different research fields, in human sciences and natural sciences, respectively. At this point, it can be said that architectural knowledge has strong potential for transcending this dichotomy. It is possible to present some studies with a critical discourse, belonging to constructionist epistemology, which has essential potential in rethinking the relationship between built and natural environments in terms of

[17] D. W. Moodie, "Content Analysis: A Method for Historical Geography," *Area* 3, no. 3, (1971):146-149.

social, historical, and ecological dimensions. It is also possible to argue that, in the period from the 1920s to the 1970s, the views of nature and urban significantly seerated. Furthermore, in this period, the widespread mode of analyzing urban and nature relied on a precise and more scientific foundation in sociology and architecture under the strong influence of the Chicago School.[18] "Human ecology" was established by the Chicago School as a new empirical method that had a strong effect on scholarly debates. In the 1970s, the paradigm shifted from objectivism to constructionism. At this point, on the one hand, qualitative methodologies and the constructionist paradigm reflect a precise approach to what establishes the production of knowledge about the ecological context in the urban field, while on the other hand, they do not claim the permanency of that knowledge and knowledge production. Instead, they offer that things become fixed only in partial and conditional ways.[19] The field of political ecology developed within the background of "political economic critiques of cultural ecology and system ecology"[20] in the 1970s and early 1980s (Bassett and Peimer 2015, 157).[21]

The city's socio-natural context as an essential part of urban theory and practice has now become inevitable. Questions and problems regarding the urban as a set of complicated relations in the socio-natural context are crucial for research in the field of architecture. Considering the level that cities have reached today to create

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[18] The Chicago School is best known for its urban sociology and for the development of the symbolic interactionist approach, notably through the work of Herbert Blumer. As applied to humans, who are considered responsible for their own destinies, members of the school believed that the natural environment, which the community inhabits, is a major factor in shaping human behavior, and that the city functions as a microcosm: "In these great cities, where all the passions, all the energies of mankind are released, we are in a position to investigate the process of civilization, as it were, under a microscope." Wikipedia, May 2020.

[19] Abra K. Adamo, "Intensifying inequality in the 'sustainable city': A political ecology of 'smart growth' in an era of neoliberal urban governance in the City of Ottawa, Canada." PhD diss., Carleton University, Ottawa, Canada, 2012, 63.

[20] Systems ecology is a "branch of ecosystem ecology (the study of energy budgets, biogeochemical cycles, and feeding and behavioral aspects of ecological communities) that attempts to clarify the structure and function of ecosystems by means of applied mathematics, mathematical models, and computer programs. It concentrates on input and output analysis and has stimulated the development of applied ecology: the application of ecological principles to the management of natural resources, agricultural production, and problems of environmental pollution." Britannica, April 2020.

[21]Thomas J. Bassett and Alex W. Primmer, "Political ecological perspectives on socioecological relations," *Natures Sciences Sociétés* 23, no. 2 (2015): 157-165.

livable urban environments, it is evident that both correct and current understandings of the socio-natural environments, studies in interdisciplinary areas, and the gaining of experience in this direction are vital needs. Urban space and the ecology context have increasingly become a matter of interdisciplinary studies over the years. In short, the human being's relationship to nature has opened a new door into the socio-natural and political-economic transformation of both nature and, relationally, society. Furthermore, considering the urban and ecology contexts, architecture and other disciplines cannot avoid dealing with foundationalist approaches, in-betweenness, and critical thinking. This study follows in Harvey's footsteps in its general stance, which is (Harvey 1996, 9):

> …a dialectical, historical-geographical and materialist theory, because it deals with totalities, particularities, motion, and fixity in a certain way, hold[ing] out the prospect of embracing many other forms of theorizing within its frame, sometimes with only minimal loss to the integrity of the original.[22]

It is valuable to note here that architectural knowledge brings a fertile ground for transcending multiple fragmentations and totalities of knowledge. Furthermore, concerning the transcending of dualities and fragmentations of nature and urban, this study undertakes a dialectical historical-geographical materialist inquiry. In the historical-materialist tradition, the production phase occupies a significant place. However, contrary to the popular belief that holds that production is unchanging, linear, and solid in an ever-changing world, this dissertation conceives of it as an open moment in the continuous flow of social and political life[23] and suggests a historical future that is still to be determined by political events and forces (Smith 2008, 48).[24] The first important conceptualization for this dissertation within urban political ecology is the "metabolic medium," or, in other words, "metabolized socio-natures," opposed to the position that reduces the former production process of

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[22] David Harvey, *Justice, Nature and the Geography of Difference* (Blackwell Publishers, 1996), 9.
[23] Ibid., 74.
[24] Neil Smith, *Uneven Development: Nature, Capital and the Production of Space* (3rd edition. The University of Georgia Press, Athens and London, 2008), 48.

nature to a representation, an image, a silhouette, or a kind of physical line that needs to be protected. The waterfront is not grasped as a physical line or as a fixed and narrow landscape. This study broadens the boundaries of the perception of waterfronts towards a more hybrid (socio-natural) and dialectical one. It grasps the waterfronts of İstanbul as a dynamic metabolic medium relationally to the inner city. Furthermore, it focuses on the relation between land and water within the socio-natural context throughout the chapters. It is still possible to capture the metabolic medium as a collective metabolic material interwoven with our socio-natural multi-practice, embedded in geography and time, for our historical future. Capitalist urbanization results in spacelessness or, in Lefebvrian terminology, "absolute space," alongside the current chain of mega visions and projections in İstanbul.[25] Transformation of the waterfronts of İstanbul will be conceptualized within "moments," using the language of time, and "metabolic medium," reflecting the involvement of socio-natural space, following architectural theory. Regarding the historical rhythm of the production of nature as space in İstanbul, which has parallels with the space-time compression caused by the urbanization processes of the 20th century and their acceleration in the first two decades of the 21st century, Harvey's concept of moments is the second important conceptualization for the elaboration of the methodological considerations in this study. According to Harvey[26] in the capitalist mode of production, exchange, distribution, and consumption, any "moment" can only be explained in terms of the process as a whole and it is interrelated with all other moments.

In this study, based on Harvey's concept, four moments of İstanbul are explored as shifting regimes of interrelated production, consumption, exchange, and distribution flows for understanding the past, the current moment, and the possible next moment. **The first moment (1839-1923)** is the moment for the "**emergence of a new urban metabolism**," and this metabolism is explored through metabolic

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[25] For details about mega projects of İstanbul, see https://megaprojeleristanbul.com, accessed May 17, 2020.
[26] David Harvey, *The Condition of Postmodernity* (Cambridge, MA, USA, 1990).

flows of land in the cases of *yalı*s, piers and ports, sea baths, great fires, steamships, boats, trams, and *çayır*s and metabolic flows of water in the cases of tap water, cholera, and waste. **The second moment (1923-1950)** is explored through **metabolic flows of urban voids** in the cases of coastal roads and boulevards, woods, parks and gardens, public squares, and *plaj*s. **The third moment (1950-1980)** is explored through metabolic flows of oil and coal in the cases of road constructions, the first bridge over the Bosporus, quays for fuel/oil, coal discharge and storage and coal distribution, the Silahtarağa Power Plant, and *gecekondu*s. **The fourth moment (1980-2019)**, namely the **neoliberal moment**, is organized through metabolic flows of iron and cement in the cases of villas, towers, and coastal land reclamations.

The link between nature and urban is intentionally drawn throughout this dissertation since it recalls other dichotomies, such as nature versus society and nature versus space, within architectural and critical urban theory. These dualisms are historically loaded and controversial. In the age of ecological rift in which we live, all questions and positions related to the complicated relationship of nature and society are more substantial and foundational than ever before. Modern critical urban theory and architecture have been focused on nature/city dualism. We are now confronted by a reemerging cultural sensibility about nature seen as a source of leisure and the "image of the design," rather than a constitutive part of the city. Moreover, according to Tafuri (1976, 8), efforts toward "naturalizing" the urban—or, in other words, Lefebvre's "fetishism of nature"—have their roots in the rhetorical and Arcadian naturalism of the 17th century.[27]

Current efforts to transcend the dualities involved in understanding the urbanization process are emanating from urban political ecology scholars such as Eric Swyngedouw, Roger Keil, Maria Kaika, Nik Heynen, Noel Castree, and Matthew Gandy. In his excellent book,[28] Neil Smith elaborates on the roots of the

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[27] Manfredo Tafuri, *Architecture and Utopia Design and Capitalist Development*, trans. from the Italian by Barbara Luigia La Penta (The MIT Press, Cambridge and London, 1976), 8.
[28] Neil Smith, *Uneven Development: Nature, Capital and the Production of Space* (3rd edition, The University of Georgia Press, Athens and London, 2008).

geography of capitalism, and he claims that it is a product of a social division of labor through the historical rhythm of nature. Furthermore, he plants the seeds for a mindset regarding the "production of nature" that engenders an urban political ecology context based on carrying forward Lefebvre's Marxist elaboration of the concept of the "production of space." This concept is in harmony with David Harvey's inspiring argument that "there is nothing unnatural about New York City"[29] and offers a new critical agenda to Swyngedouw's urban socio-natures[30] under the influence of urban political ecology. According to Smith (2008), the production of nature has been a multilayered complex production of space through the division of labor. Concerning the historical rhythm of nature, similarities and differences can be seen in urbanization processes in the third world and Europe or the United States, as Harvey and Smith agree. In the search for a sophisticated understanding of planetary urbanization and a vision of future landscapes, there is essential seesawing between different scales, and middle-income capitalist geographies are brought to light via current examples of radical spatiotemporal change, of the kind seen in the metropolitan landscape of İstanbul.

In urban-based studies in recent years, interest in urban space has increased while taking into account social networks and the flow of materials and ecosystems as well as the complex relationship between environmental issues and the urban context (e.g., *The New Science of Cities* (Batty 2013), *Sustainable Urban Metabolism* (Ferrao and Fernandez 2013), *Understanding Urban Metabolism: A Tool for Urban Planning*, eds. Chrysoulakis, Anselmo, and Moors 2015). There has been a type of restoration of urban theory based on considering the city as an ecological system, and a related debate has emerged.[31] Recently, the growth of a shared ecological perception and a different turn in the relationship between the capitalist economy and nature have reinforced the need for a more critical discourse

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[29] David Harvey, *Justice, Nature and the Geography of Difference* (Blackwell Publishers, 1996), 186.
[30] Erik Swyngedouw. "The city as hybrid: On nature, society and cyborg urbanization", *Capitalism Nature Socialism* 7, no.2 (1996): 65-80.
[31] Keil 2005, Short 2008.

about the city.[32] In this dissertation, the concept of urban political ecology was chosen as the starting point for a critical discourse about the city in terms of historical-geographical materialist methodology. Urban political ecology approaches the city and nature as a single interacting system, whereby change in any part will have results for the whole.[33] The works of Joel Tarr have also helped to develop a holistic thinking on the context of infrastructures, urban growth, health, and pollution.[34] Besides these efforts, however, insufficient interest has been paid to these topics. Even in the urban political ecology literature, considerations of the city as a process of socio-natural change have received little attention.[35] Precisely on these grounds, this dissertation contends that there is a need for critical discourse and focus on the new urban studies. It is aimed here to fill that gap, in the context of Turkey, and thereby to contribute to critical urban studies.

The dialectical historical-geographical materialistic approach tells us that organisms affect and transform their environment while being affected and changed by it in turn. This process is different from a straightforward adaptation. Current studies try to capture this approach within the context that cities are affecting and being affected by the evolution of many species (e.g., gene flow, animals, plants, microbes, viruses) and life. Marx explains this as a metabolic relationship. According to Marx, the roots of this metabolic relationship are in the transformation (created by human hands through labor) and production achieved by means of the relationship between humans and nature and the relationships between humans themselves. Moreover, if we seek the very roots of the materialist conception of nature, we find Epicurus, the ancient Greek philosopher seen as its originator. On the other hand, until Alfred Schmidt's *The Concept of Nature in Marx* (1962), there was no work

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[32] Güven Arif Sargın, "Nature of Resistance and Counter-Hegemony in Post-Structural Society," in *Nature as Space: (re)Understanding Nature and Natural Environments*, ed. Güven Arif Sargın (METU Faculty of Architecture Press, 2000), 59-80.
[33] Maria Kaika, *City Of Flows: Modernity, Nature, and the City*, (Routledge Taylor & Francis Group, 2005)
[34] Martin V. Melosi "Foreword," in *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective*, by Joel Tarr, (The University of Akron Press, 1996), xxiii.
[35] Nik Heynen, Maria Kaika, and Eric Swyngedouw, *In the Nature of Cities*, (Routledge, 2006).

after Engels in this regard.[36] Nevertheless, as the fetishism of commodities was explained by Marx, the Frankfurt School and Schmidt insisted on fetishism of nature instead of "vulgar economism," and this conception gave a rigid separation of use-value from exchange-value.[37] At this point, breaking off use-value away from exchange-value regarding nature is defined as the triumph of the modern bourgeois concept of nature. Separation of nature from the mode of production is still carrying its traces in urban studies. On the other hand, since the second half of the 1990s, many scholars have written on the issue of nature in the current mode of production (Haraway and Harvey 1995, Castree 1995, Harvey 1996, Smith 1996, Short and Short 2008, Foster 2010) and many of them have worked in particular on the urban political ecology concept, including Kaika (2005), Keil (2005), Swyngedouw (1996, 2003, 2009), Gandy (2006), Heynen (2006), and Smith (2008). The expanding literature on urban political ecology reflects how changes in the production of nature are strongly related to urbanization processes.[38] In short, this dissertation has its foundational roots in dialectical historical-geographical materialism, seeing the urbanization process as the production of nature materialized through political actions and forces.

From the time of Marx and Engels up to the 1960s, Marxists did not study cities but were rather more explicitly concerned with matters such as factories, laborers, working conditions, and the like. From the 1960s on, they began to consider workers' settlements and their living conditions in cities. Major topics were segregated living arrangements, the pattern of accommodations in the urban landscape, and how lands were taken from the poor via governmental tools. Current efforts are somewhat different and more complicated. Primarily regarding urban ecology debates, operations, projects, and facts related to cities that transcend visible representation

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[36] John Bellamy Foster, "Marx's ecology and its historical significance," in *The International Handbook of Environmental Sociology*, ed. by Michael R. Redclift and Graham Woodgate (2nd Edition, Edward Elgar Publishing, 2010), 112.
[37] Neil Smith, *Uneven Development: Nature, Capital and the Production of Space* (3rd Edition, The University of Georgia Press, Athens and London, 2008), 44-46.
[38] Desfor and Keil 2004, Gandy 2002, Heynen 2006, Heynen et al. 2006, Kaika 2005, Keil 2005, Swyngedouw 1996.

have been studied in order to probe the underlying meanings translated into architectural terms and to debunk inequality in terms of social and ecological conflict. David Harvey's work is a quite explicit example of "*trying to rebuild Marxian meta-theory in such a way as to incorporate an understanding of spatio-temporality (and socio-natural issues) within its frame*" (Harvey 1996, 9). Harvey thus puts geography into the historical-materialist tradition and geography matters. In the context of İstanbul, its distinct geography is essential for this study. Moving forward, this section will focus on the ideology of nature and the context of urban political ecology in detail.

The word "nature" carries historically loaded and complex questions. Debates on nature and city surrounding *the essentialist/constructivist divide* have a significant influence on our experiences and positions (Escobar 2010, 92).[39] Harvey (1996, 435) identified ten myths in a rapidly and radically urbanizing world. Perhaps the most important of them is the first, which sees *cities as anti-ecological*, more or less outside nature, or expects a more ecologically sensitive form of civilization via technology. At this point, architecture has been seeking grounding and trying to find foundations to legitimize its existence "rationally" from the 18th century until today. The ideology of nature has been an essential catalyst in architecture. The term "rationality" is confusing today; it has complex and contradictory meanings. Current architectural theory struggles to find *imaginary*[40] concepts for guiding the complicated relationship of architectural practice and urbanization in an age of ecological rift, and design professionals, perceived as *specialized citizens*,[41] try to push "*ecological imaginaries*" for understanding human embeddedness in space, time, nature, and place.[42] Before the Enlightenment period, *the absolute and divine*

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[39] Arturo Escobar, "Postconstructivist Political Ecologies," in *The International Handbook of Environmental Sociology*, 2nd Edition (2010), 92.

[40] "The term 'imaginary' is similar to common words such as imagination, image, and imagery, but is specifically focused on connecting vision with perception and meaning making." Andrew Karvonen, *Toward the Relational City: Imaginaries, Expertise, Experiments* (MIT Press, 2011), 188.

[41] Ibid., 190.

[42] For a detailed exploration of human embeddedness, see David Harvey, *Justice, Nature and the Geography of Difference*. (Blackwell Publishers, 1996). For a critical point of view about the

rules and principles in architecture (Perez-Gomez 1993, 36) had been accepted as an order alongside the inspiration of Greco-Roman civilization in architectural treatises. Besides, architecture, city, and civilization had been understood in continuity, with humans as a connected part with the non-human surroundings before the 18th century (Aureli 2011, 85-140). During the 18th century, as enlightenment and scientific revolutions began to flourish, the division between architecture and urbanism also began to appear.[43] Françoise Choay (1997, 213) explains this division by the development of technical applications and the installment of "*disciplinarity*."[44] Throughout the 19th century, we can see both a scientific, autonomous understanding of urbanism (Ildefons Cerdá - 1867) and a holistic understanding of urbanism (Camillo Sitte's urban theory - 1889) as outcomes of the progress with the ideology of nature. At the beginning of the 20th century, the Congrès Internationaux d'Architecture Moderne (CIAM - 1928) reconnected architecture and urbanism, seeking to design an industrial city with Howard's garden city inspiration. Furthermore, the CIAM architects reached a discourse that sounds like ecological modernism, in which nature is together with technology for the sake of capitalism. In this dissertation, the transformation of waterfronts is analyzed within the perspective of urban political ecology in the capitalist urbanization process of İstanbul through the historical-geographical materialist theoretical methodology. Having briefly explained the relation between the ideology of nature and architecture in history, some detailed information about the literature of urban political ecology will next be provided.

The context of political ecology developed in the 1970s and early 1980s. This context searches for political-economic critiques of cultural ecology and systems ecology (Basset and Primmer 2015). The blend of political economy and cultural

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ecological imaginary, see Matthew Gandy, Urban Nature and Ecological Imaginary, (Routledge, 2006), 63-71.

[43] Concerning the architectural representation, according to Aureli (2011, 85-140), the idea of separation and difference between urban space and architectural space can be seen first in the map of Rome made by Giovanni Battista Nolli (1748) via the figuring of the edifice and ground of the city.

[44] See Françoise Choay, *The Rule and the Model: On the Theory of Architecture and Urbanism* (MIT Press, 1997), 213.

ecology became known as “political ecology” (Blaikie and Brookfield 1987, Basset and Primmer 2015). In the discipline of geography, Swyngedouw, who added “urban” to “political ecology” in 1996, comes to the fore.[45] Urban political ecology was reviewed in 2003 and 2005 in a progress report by Roger Keil[46] for a type of restoration of urban theory, based on considering the city as an ecological system. The urban political ecology perspective primarily sees urban space as a foundational landscape within which to examine human-nature relations and transformations. This perspective problematizes considerations of the city in opposition to nature as a problematic phenomenon.[47] In addition, architects who have looked beyond the supposed edges of their discipline have gradually influenced urban political ecology in terms of its dialectical, historical, and geographical aspects.

Luckily, architecture provides fertile ground for transcending those dichotomies and helps constitute visions for the cities of the future. Heynen, Kaika, and Swyngedouw have shown in their book, *In the Nature of Cities*,[48] how environment and society should be seen through relational dialectics. The urban political ecology context reveals that we cannot address urban problems without understanding and addressing environmental problems. As Harvey (1996) has identified, the complex network comprises “relation to nature,” “processes of production,” “technology,” “daily life,” and “social relations.” This means that grasping the city from the perspective of urban political ecology, which is based upon a more dialectical and critical understanding, rather than existing urban theory, is an essential undertaking. White and Wilbert (2009, 7) state that capturing the constant material alterations within the political and economic context is of vital interest for reimagining political ecology via many voices. The concept of urban political ecology targets not the role of nature in the city, but rather how the nature

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[45] Roger Keil, “Progress Report: Urban Political Ecology," *Urban Geography* 24, (2003):723-738. Roger Keil, “Progress Report: Urban Political Ecology," *Urban Geography* 26, no.7. (October 2005):640-651.
[46] Roger Keil, 2003, 2005.
[47] Maria Kaika, *City of Flows: Modernity, Nature, and the City* (Routledge, New York, 2005), 5.
[48] Nik Heynen, Maria Kaika, and Eric Swyngedouw, *In the Nature of Cities*, (Routledge, 2006)

of urbanization is reshaping socio-natural relations and vice versa. As for Swyngedouw et al. (2006), in their works on urban political ecology, it is possible to see urbanization as a continuous deterritorialization and repositioning process organized through social and physical channels or metabolic networks.

Another study, entitled *Nature as Space: (re)Understanding Nature and Natural Environments*[49] and edited by Güven Arif Sargın, attempts to find new ways to reevaluate design theory and practices, without separating the social environment from the natural environment. Over a historical period ranging from ancient Greece to the present, ground has been sought upon which to understand the main problems and questions concerning nature as a space with different references. These efforts have underlined that the limits of nature are, to a certain extent, a decisive factor in design practice. In a nutshell, these are historically ownerless issues despite all efforts to re-understand nature, city, and the natural environment. The political-ideological positioning that must be overcome from a broader perspective is also becoming significant in design disciplines. Investigating socio-natural change in urban spaces, an issue claimed to be ownerless, overlaps with studies seeking to understand nature as space. The relationality of nature and culture (society) has existed from ancient Greece to present times. The relationship between nature and human beings opens the door to socio-natural and political transformation. We have been facing an ecological rift in the historical period that we are currently living in. Cities are landscapes in which the effects of this crisis can be seen on a daily basis. Nevertheless, the history of the material conditions that provide input for today's scholarly research on the urban scale is as old as the history of capitalism. The transformation of the waterfront of İstanbul is a complex socio-natural issue for urban theory to tackle because of the complex and relational processes behind metabolic interactions.

Karl Marx's critique of political economy and subsequent Marxian analyses took the labor process and struggles as the foundational force of metabolic

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[49] Güven Arif Sargın, ed., *Nature As Space: (re)Understanding Nature and Natural Environment,* (METU Faculty of Architecture Press, 2000).

interactions. According to Swyngedouw (2009, 63) quoting from Jameson (2002, 215) metabolism and circulation have been grasped by historical materialism as the first step for initiating "*ontologies of the present [that] demand archeologies of the future.*" At this point, the 21st century reveals the specific spatial organization through metabolic flows of waterfronts with the inner city in a given metabolized socio-natural environment such as İstanbul. This dissertation claims that the remaking of the waterfronts of İstanbul and the understanding of it beyond a physical transformation of the waterfront line reveal a critical dimension of the spatial organization concerning current metabolic interactions in the context of Turkey.

In summary, the transformation of waterfronts is a complicated socio-natural issue for urban theory to tackle. This dissertation pursues the shifting meaning of nature within the current urbanization process, how the aquatic edge became urbanized, and the potential consequences of this process. Efforts are made to suggest new ways of reevaluating urban design theory and practices without separating the social environment from the natural environment. In this sense, filling the need for an approach for criticizing socio-natural change of the urban landscape in the current restructuring process of capitalism within the context of urban political ecology is essential for current urban theory on the world scale, as well as in practice and for professionals who work on urban landscape within Turkey and are attempting to enhance the conditions of the city.

This study asks whether urban political ecology perspectives can enhance architectural theory in terms of understanding current urbanization processes, and also whether an architectural contribution could further and deepen the knowledge of urban political ecology studies. Instead of using binary arguments such as the domination of nature, this study attempts to suggest the much more complex process of the production of nature as space. Furthermore, efforts are made to answer how we produce nature and who controls it in order to understand the urban metabolism of İstanbul in the context of waterfronts. An approach for criticizing the socio-natural transformations of urban space in terms of urban metabolism will be suggested in light of dialectical historical-geographical materialist considerations. On the other

hand, it is also important to reveal how architectural practice operates through the metabolic flows as a political instrument in the context of İstanbul, which has had an essential role in the management of socio-natural relations throughout history.

1.2.2 Data Collection

Original data from each period concerning waterfront areas and transformations collected through media surveys, report archives, plan archives, map archives, text archives, journals, dissertations, novels, paintings, and books on İstanbul are the primary input of this study. The data used in this dissertation were mainly obtained from the Near East Collection of Boğaziçi University Library, the İstanbul Research Institute, the METU Library, the Archive of the Ottoman Period and Republican Period of the Prime Ministry of Turkey (*Devlet Arşivleri Başkanlığı*), the Archive of the Chamber of Architects, and the İstanbul Studies Center at Kadir Has University, where I am currently a fellow as a doctoral resident (2019-2020). A combination of an in-depth literature review and a media survey on the past, present, and future visions and projection attempts across the Bosporus, North Marmara Sea, and Golden Horn (Haliç) and between land and water has been utilized.

The primary constraint of the research concerning 19th century İstanbul is the Ottoman language in terms of the archival sources. However, over the years, scholars and researchers of the Prime Ministry's State Archives General Directorate have been working on transcriptions of the sources of the *Mühimme* books obtained from the "Divân-ı Hümayun Sicilleri," and the Turkish abstracts of these archives were useful. While the most valuable opportunity was to access most original data in the Turkish language, on the other hand, the endless resources on İstanbul that transcend the boundaries of this dissertation were hard to tackle. Chapters 3, 4, and 5 mainly depend on original Turkish resources. Having lived in İstanbul since 2003, except for two years of PhD courses in Ankara (2014-2016), and both witnessing and being a part of the massive transformations in the 2000s, is another valuable opportunity pertaining to scholarly work on İstanbul. It is essential to underline that extensive

and detailed scholarly works and archives are relatively rich considering the 19th century of İstanbul. On the other hand, coming to the 20th and 21st centuries of İstanbul, and particularly after 1980 and through the 2000s, resources and studies grow insufficient and unfruitful compared to the 19th century and before. Considering the last forty years, there are still many scholarly efforts to be made in critical urban and architectural theory, and this period offers fertile grounds for research.

The main intellectual resources for this dissertation were **Neil Smith**'s excellent book *Uneven Development: Nature, Capital and the Production of Space*, **David Harvey**'s *Justice, Nature and the Geography of Difference*, **Erik Swyngedouw'**s *The City as Hybrid: On Nature, Society and Cyborg Urbanization*, **Maria Kaika**'s *City of Flows*, and **William Cronon**'s *Nature's Metropolis: Chicago and the Great West.* This introductory chapter has been structured according to historical-geographical materialist arguments and qualitative methodological considerations through dialectical understandings of nature, the ideology of nature, and the urban metabolism context.

In Chapter 2, the original historical data have primarily been obtained from the Prime Ministry's Ottoman Archive (Turkish: *Başbakanlık Osmanlı Arşivi* (BOA)), as well as the *Mühimme* books and their current abstracts and transcriptions. The Prime Ministry's Ottoman Archive *Hariciye*, Prime Ministry's Ottoman Archive *Dahiliye*, Prime Ministry's Ottoman Archive *Cevdet Kataloğu-Belediye Kısmı*, Prime Ministry's Ottoman Archive of *Mühimme* books (MD, No:3, No:5, No:6, No:12, No:19), contemporary urban historians and a PhD thesis on İstanbul in the 19th century, an encyclopedia focused on İstanbul entitled *Dünden Bugüne İstanbul Ansiklopedisi*, and the report from Boğaziçi University on the İstanbul and Marmara Ports Master Plan were used as the primary sources for the historical data collected for content analysis and spatial analysis in Chapter 2. Secondary sources included articles by Turkish scholars, architects, historians, and writers.

In Chapter 3 the original historical data are mainly derived from the archive of the Turkish Republic Official Gazette; Particular Law on Sanitary and Public Health of Turkey called *Umumi Hıfzısıhha Kanunu,* No:1593; the archive of the journal *Arkitekt* (1931-1980) from the online database of the Chamber of Architects; a book on the chronological history of operations of municipal governors and political parties by Rakım Ziyaoğlu (1971); the special encyclopedia on the history of İstanbul mentioned above; and the database of a daily newspaper named *Cumhuriyet.* Books, articles, and dissertations of various scholars, writers, and politicians are also essential for the content analysis and critical reading of the socio-natural reconstruction of İstanbul for this period. Interpreting the iconic Turkish novel by Ahmet Hamdi Tanpınar, *A Mind at Peace* (1949), is useful for exploring and imagining the conflicts in terms of the uneven landscapes and socio-natural conditions in the daily life of İstanbul in the 1930s through content analysis. The changes concerning urban patterns and daily life in the 20th century in Turkey are grasped within dualities like "west and east" or "ethnic-religious differentiation," and this study additionally argues that the Westernized context seems to be used on behalf of the capitalist production of nature as space as a source of fragmented urban landscapes and uneven development. *A Mind at Peace* (*Huzur*) gives us fertile grounds for a critical discussion about grasping the period in the context of the above arguments.

In Chapter 4, original historical data are derived from the archives of the *Mimarlık* journal (1963-2020) and *Arkitekt* journal (1931-1980), the *Marmara ve Boğazlar Belediyeler Birliği, İller ve Belediyeler Dergisi*, the 1950-1957 *Nafia Vekaleti Çalışmaları*, research reports on the Bosporus Bridge by the Chamber of Architects of Turkey, Turkey Asphalt Industry Reports, the Coal Report of Turkey Concerning Climate Change from the İstanbul Policy Center (IPC) of Sabancı University, Research Report of TEK Silahtarağa Power Plant (1978) from the Information and Documentation Center of the Silahtarağa Power Plant Archive, the archive of the Turkish Republic Official Gazette, and national symposium papers. The novel entitled *Tales from the Garbage Hills* by Latife Tekin is exemplary for

understanding the transformations and socio-natural problems in this chapter. It emphasizes the critical story of the transformation of garbage hills to *gecekondu*s as seen through the health conditions of the dwellers concerning their environments in 1960s İstanbul. Another famous novel entitled *Yenişehir'de Bir Öğle Vakti* (*Noontime in Yenişehir*) by Sevgi Soysal emphasizes the increasing consumerism, influence of American culture in language, shopping malls, and high-carbon societies of 1960s Turkey and will be explored through content analysis.

In Chapter 5, the original data are based on content analysis of the TBMM archives and the archive of the Chamber of Architects; the archives of the *Mimarlık* journal (1963-2020); the Cement Industry Report; the OAIB (Central Anatolian Exporters' Union) Research Reports Series; Report of the Building Materials Sector, Republic of Turkey Ministry of Commerce; Ministry of Industry and Trade, Iron and Steel Industry Report; Global Cement Report between 1990 and 2004; Fourth Five-Year Development Plan (1979-1983), DPT-State Planning Organization; Fifth Five-Year Development Plan (1985-1989), DPT-State Planning Organization; Sixth Five-Year Development Plan (1990-1994), DPT-State Planning Organization; Seventh Five-Year Development Plan (1996-2000), DPT-State Planning Organization; the archive of the Turkish Republic Official Gazette; Particular Law on the Bosporus, Law No: 2960; daily newspapers *Cumhuriyet*, *Hürriyet*, and *Radikal*; the Second Economic Congress of Turkey (1981); Politics of Development Study Group Report Vol. VI, Turkish Republic Prime Ministry, State Planning Organization; and T.C. Ministry of Interior, General Directorate of Local Administration, Number: 14399437-010.09-23139, Subject: Written Question No. 7/18755 Main, 15.08.2013. The secondary sources were the websites of megaprojeleristanbul.com, İstanbul BİA News Center, and yapı.com.tr.

In brief, the context of urban political ecology is explored under dialectical historical-geographical materialist considerations. Document analysis and **critical qualitative research methods** through **content analyses and spatial analysis** have been used in this dissertation. Not only is urban growth used as an operative tool for waterfront transformation and urbanization processes in history, but climate change,

earthquakes, rising sea levels, water ecosystems, transportation, fires, epidemics, the changing division of labor, environmental impacts, heritage concerns, and urban and architectural discourse all influence both urbanization and transformation of the waterfront.

1.3 From Urban Form to Urban Metabolism

Urban form has been embraced by urban metabolism, and there is no urban form today. Claiming that there is no urban form in the age of mega forms has a conflicting meaning and is loaded with historical background. Moreover, this dissertation is not interested in being prescriptive, and it excludes systematic empirical approaches to describe the built landscape for urban design in the face of typomorphological context (Moudon 2004, 17-32)[50] like Saverio Muratori and Gianfranco Caniggia did previously for examining urban form. On the contrary, this study seeks critical socio-natural insights on how urban landscapes have been formed through space and time.

Furthermore, it asks for who these landscapes are produced and who uses them. Attention is drawn to the possible effects on the functioning of urban ecosystems, public health, and public interest in conjunction with daily life, livable urban landscapes for human and non-human species, and urban resilience. This emphasizes that the urban landscape is not only a physical context but also a coexistence of socio-natural relation within the capitalist urbanization process. In other words, we will see the ever-changing socio-natural relations through different periods, offering a particular uneven agenda and simultaneously managing the evolution of living (including non-human species), the urban ecosystem, and public life. It is precisely these relations of coexistence that bring about the question of what urban form has

[50] The typomorphological context is uncommon for urban form debates in the 21st century and this context must consider all scales of built landscape, like large urbanized areas, while seeking a widening scale for an "operational history of urban form" for elucidating Muratori in Italian and French works. Anne Vernez Moudon (2004), "Getting to Know the Built Landscape: Typomorphology," in *Urban Analysis Guidebook: Typomorphology*, 17-32, ed. by L. van de Burg, Delft University of Technology, Department of Urbanism, 2004.

meant in the socio-natural understanding of the city. Moreover, how has it been shaped? What has been excluded and included, and who are the winners and losers? These are the contributions of the urban political ecology context to morphological studies worldwide by this study.

The mainstream tendency is to grasp the urban form as a description of concrete settlements of lots, blocks, and streets. The separation of property (Scheer 2010, 47)[51] or particular consideration of the process-based understanding, which mostly serves a dubious and self-evident historical identity, cannot transcend to offer a physical appearance or cartographic representation as an image in architectural and urban studies. In this study, the context of urban metabolism is preferred. Marxist interpretations and particularly urban political ecology give us a chance to describe the urban landscape as a collective metabolic material interwoven with our socio-natural multi-practice through time and space as well as the land, or the geography itself. Moreover, these considerations emphasize that it is not an entity that we find suddenly and given, only in a physical manner and out of control. First, architectural type was seen as a scientific object, and then as a kind of process calling the city as a whole via replacing it with urban form discussions, but now, especially in an age of ecological rift, thinking about urban form without historical, geographical, socio-natural, and dialectical approaches, according to eco-system issues and simultaneous flux, is impossible like never before. The widespread argument that the permanency of streets, lots, and land through the centuries (see street patterns as property boundaries, thus defining private-public relations) and buildings themselves are changeful[52] is poor for understanding urban form today.

For instance, Kevin Lynch, who explains in his book that the final objective for an urban form is not a physical shape, but rather the quality of an image in the

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[51] Brenda Case Scheer, *Evolution of Urban Form: Typology for Planners and Architects*, American Planning Association, 2010, 47. For an exemplary work, please see the explanation in M.R.G. Conzen's study in the Urban Analysis Guidebook, ed. L. van den Burg, Delft University of Technology, Faculty of Architecture, 2003, 27-28.

[52] Brenda Case Scheer, *Evolution of Urban Form: Typology for Planners and Architects*, American Planning Association, 2010, 47-49.

mind, interprets the underlying topography in an urban landscape as still being a significant and permanent aspect of urban form in the 1960s.[53]

The Report of the International Seminar on Urban Form (ISUF)[54] in 2010, which is the first one in the ISUF archives, describes a shift from small-scale investigations of the urban fabric to large-scale analysis of metropolitan form, which will be examined here. The former works of this conference may be described as weak and rarely concerned with environmental issues such as climate change compared to the studies linked with the context of "identity"[55] in the report of 2010. Furthermore, the ISUF 2010 report claims that searching for new paths, stretching disciplinary boundaries, and finding better linkages for interdisciplinary attempts are all important for international urban morphology studies. At this point, the aim here is to take urban form discussions through the typomorphological context one step further via the use of urban political ecology with the contribution of the historical-geographical materialist perspective and to corrode the disciplinary tendency of urban morphology scholars by means of trying to understand the urban metabolism of İstanbul. Another contribution with respect to the urban form debate is the search for the continuity of socio-natural relations for future generations instead of historical typological images, silhouettes, physical lines, and architectural types.

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[53] About the persistence of topography, Lynch stated the following in his book, *The Image of the City*: "*…The basic climate, the general flora and surface of a region, the mountains and major river systems, take precedence over local features. Nevertheless, topography is still an important element in reinforcing the strength of urban elements; sharp hills can define regions, rivers and strands make strong edges, nodes can be confirmed by location at key points of terrain. The modern high- speed path is an excellent viewpoint from which to grasp topographic structure at an extensive scale*." Kevin Lynch, *The Image of the City*, (MIT Press, Cambridge, USA, and London, UK, 1960) 110.

[54] ISUF was created to rectify the lack of a common forum for researchers and practitioners concerned with urban form. In the early decades after the Second World War, urban research expanded greatly. It did so within a wide range of disciplines and specialisms, including architecture, archaeology, geography, history, planning, urban design, spatial analysis, space syntax, and heritage studies, to name a few. However, research and interest groups tended to function in isolation from one another. That problem was made worse by language barriers. ISUF's aim is the international and interdisciplinary sharing of ideas, methods, and findings concerned with urban form. Beginning in 1994 with the coming together of some 20 architects, geographers, planners, and historians, representing four different language areas, it now has some 600 individual and institutional members from about 50 countries (http://www.urbanform.org/about.html).

[55] In the Reports of the Seventeenth International Seminar on Urban Form (ISUF), Hamburg, Germany, 20-23 August 2010, Urban Morphology (2011) 15(1).

Concerning urban form studies in Turkey, Zeynep Çelik focuses on the transformation of urban form in İstanbul in the field of architectural history. In Çelik's study, written thirty-six years ago (1984), she focuses on İstanbul's urban form between 1838 and 1908, before the Republican Period.[56] Çelik's main argument is that, in that period in İstanbul, new implementations inspired by Western capitalism resulted in the conscious break of its Turkish-Islamic heritage and patchy regularization attempts.[57] Çelik tries to understand how those transformations influenced and changed urban form. It can be said that her study is more or less the closest work to this study compared to the other studies on İstanbul and the urban form debate addressed in this section.

Ayşe Sema Kubat (2010)[58] explained her studies as having been inspired by a research project on İstanbul designed by Suher et al. (1977); however, she developed a new methodology for the period of industrialization of Turkey. The works about İzmit and İstanbul by Suher et al. (1982, 1983) and those by Kubat (1985, 1987) are explained by Kubat as studies that explore "street, parcel (lot) and the building unit" and "building fabric, land and building utilization" at local scale.[59] They have parallels with M.R.G. Conzen's[60] studies, which concentrate on a group of buildings and related parcels. Kubat's important contribution is her effort to explain that with the expansion of settlements towards northern areas, the "natural" zones of İstanbul will be decreased and the urban form of the city will also be affected. Furthermore, another scholar, Yener Baş (2010), offers a relational conception of space with the

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[56] Zeynep Çelik, "*The Impact of Westernization on Istanbul's Urban Form, 1838-1908,*" PhD diss., University of California, Berkeley, 1984.
[57] Zeynep Çelik, "*The Impact of Westernization on Istanbul's Urban Form, 1838-1908,*" PhD diss., University of California, Berkeley, 1984.
[58] Kubat has also used mathematical modeling for understanding urban form in Turkey by use of GIS, space syntax, and application of the Garin-Lowry model to İstanbul. Her works with her colleagues have been conducted in different contexts, such as earthquakes and their effects on urban form, as well as the bridges of the Bosporus and their impacts on urban macroform.
[59] Ayşe Sema Kubat, "The Study of Urban Form in Turkey," *Urban Morphology* 14, no.1, (2010): 36-37.
[60]Michael Robert Günter Conzen (1907-2000) was a geographer and founder of the Anglo-German school of urban morphology. Conzen's works have also been called morphogenetic rather than morphological. This is explained by his looking at both the elemental structure of the city and its temporal dimension by Anne Vernez Moudon, 2004, 32.

integration of morphogenetics from a Marxian perspective in his PhD dissertation by looking at property relations and urban form in the context of Yenişehir, Ankara.[61] Erol Tümertekin focuses on only business districts of İstanbul regarding morphological structure.[62] Aliye A. Gülümser and Tüzin Baycan (2005) focus on gated communities and their effects on "natural" resources relevant to the morphological structure of İstanbul in their studies.[63] In short, concerning local studies in Turkey about the urban form debate and İstanbul, there are preliminary works as well as opportunities for supporting the present study. However, the studies on urban form and İstanbul are mostly seen in the field of regional planning and mainly focus on physical objects such as buildings, building units, bridges, maps or identities, and their effects on urban form.[64] Those studies do not approach urban form as the coexistence, memory, and sustainability of socio-natural relations[65] or in terms of how production and reproduction of urban form influence public health and public interest dialectically, like this study.

Concerning the urban form debate in the architectural discipline worldwide, the "idea of type" in architectural theory has an influential role. In the 18th century, the epistemologist turn to subjectivity and the accompanying scientific developments gave birth to change in many areas, including architectural thought and practice. The idea of type represents an effort for rescuing architecture from divine rules and religious ideas of value, and it is mainly concerned about scientifically building

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[61]Yener Baş, "Production of Urban Form as the Reproduction of Property Relations Morphogenesis of Yenişehir- Ankara," PhD diss., Department of City and Regional Planning, METU, 2010, 36.
[62] Erol Tümertekin, The central business districts of Istanbul, *Review of the Geographical Institute of the University of Istanbul* 11, 1968, 21-36.
[63] Aliye A. Gülümser and Tüzin L. Baycan, "Through the sky: vertical gated developments in Istanbul," Proceedings of the XXII World Congress of Architecture: Cities (International Union of Architects Grand Bazaar of Architectures, Istanbul) (CD-ROM) (2005).
[64] We believe that the works of Zuhal Ulusoy in urban studies should also be addressed here. Ulusoy (1991, 1994) uses a hybrid methodology that includes quantitative and qualitative methods, generally accepted as separated disciplines as natural and social sciences, respectively, in her studies for understanding the urban image and transformation within both physical and social extents.
[65] For an article about socio-ecological relations and memory, see: Esra Sert, "Rethinking Socio-Ecological Memory of Cities During the Coronavirus Days," *XXI Architecture and Design Magazine*. March, 26, 2020. http://xximagazine.com/c/socio-ecological-memory-during-corona.

architecture in the age of enlightenment (Rowe and Koetter 1978, 8-58)[66] Considering the 18th and the 19th centuries, these periods created the "sanitized city" concept, while the 20th century followed with the "rational city" concept, and the contemporary period is creating "sustainable city" approaches, with the quest of living in nature only after establishing processed, purified, controlled, and co-modified nature (Kaika 2005).[67] Moreover, today we are again confronted with a reemerging cultural sensibility towards nature, which is seen as a source of leisure and the "image of a design"[68] rather than as a constitutive part of the city. The rise of the modern city as the search for improvement was mainly about attempting to enhance the conditions of the city, which was to be instituted through the development of financial strategies.

Within this context, urbanism and architecture are a way to improve the conditions of the physical structure for public interest. In architectural history, a very early example can be seen in *Ten Books on Architecture*,[69] written by Marcus Vitruvius Pollio (80s BC-15 AD). According to Aureli (2011), contrary to the popular belief that the book pays attention to architecture, Vitruvius primarily addressed the city and its spatial organization rather than architecture. Furthermore, Vitruvius emancipated architecture from the mere practice of building to the idea of organization. The idea of the organization of the city is significant in terms of the socio-natural transformation of cities. Another example of the organization of the city for managing and directing society can be seen in street design in history. Donato Bramente (1444-1514) is an early example of an architect who designed a rectilinear street, named *Via Giulia* in Rome, for transcending the conflicts between inhabitants and the redistribution of properties. Moreover, it was a strategy regulated by the authorities and related to the socio-economy concerning the rise of public space.

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[66] Colin Rowe and Fred Koetter, *Collage City*, (The MIT Press, Cambridge, 1978), 8-58.
[67] Maria Kaika, *City Of Flows: Modernity, Nature and the City*, (Routledge Taylor & Francis Group, 2005).
[68] Beatriz Ramo, "O'Mighty Green," editor Thomas Weaver, *AA files* #64, April, 2012. http://st-ar.nl/o-mighty-green-summary/.
[69] This book has had a significant impact in architectural history. Marcus Vitruvius Pollio (1st century B.C.), *Ten Books on Architecture*, trans. by Morris Hicky Morgan, Harvard University Press.

While in the 18th century and beginning of the 19th century Durand's (1760-1834) idea of typology was free from the context of place and had a historical and monumental position in architecture, the 19th century's art and architecture were explained with harmony from a wider perspective by Viollet-le-Duc (1814-1879). John Ruskin (1819-1900), furthermore, was considered as "a pioneer in exploring interrelationships of art and society" as Baljon (1997, 412) explained. Moreover, we can see the very first socio-natural insights of the city in the work of Ruskin (1884), who was interested in environmental pollution in Manchester and explained it as an expression of a moral pollution in his lectures entitled *Storm-Cloud of the Nineteenth Century*[70] forty years after Engels,[71] who showed the destruction wrought by capitalist production on urban land in 1845 in the context of Manchester. Ruskin was a significant figure for pointing out the connection between society and architectural form and was considered as the first ecologist[72] in the 19th century.

In the 20th century, the idea of type in Italian tradition was quite different from the debate of previous centuries and showed a deep concern about city, seeking both continuity with its historical fabric (Muratori, Caniggia) and a radical break from the past and focusing on the functionalism that was promised by modernism (Aymonino and Rossi) at the same time in different geographies and scales. Aldo Rossi and Gianfranco Caniggia are important figures concerning two distinct ideas here. Aldo Rossi was influential with his book *Architecture of the City*, not only taking the idea of type in architectural theory to the urban scale but also widening the boundaries of the urban form debate from an object-based understanding to a process-based

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[70] John Ruskin, *The Storm-Cloud of the Nineteenth Century*, Two Lectures Delivered at the London İnstitution, 4 and 11 February, 1884.

[71] Friedrich Engels, *İngiltere'de Emekçi Sınıfın Durumu*. Editor Y. Fincancı. Sol Yayınları, 2010 [1845].

[72] "The First Ecologist: John Ruskin and the Futures of Landscape," 24 September 2012, Cornell University: " His five-volume series Modern Painters (1842-1860), with its famous word paintings, was as much a primer of the system of nature as a history of art; his succeeding books on architecture saw in the decoration of Gothic cathedrals--the twisted vines, flowers, columns, and sculptured saints and angels--an emblem in stone of the unity of God, nature, and social life. But when he became obsessed by the damage wrought by rampant industrialism on both landscape and human welfare, he became a radical social critic, becoming in effect Europe's first great environmentalist." http://www.cornell.edu/video/the-first-ecologist-john-ruskin-and-the-futures-of-landscape.

consideration for the 20th century by following Italian urbanist Saverio Muratori, like Caniggia had done before (1910-1973). Caniggia, who was an assistant of Muratori, explained the city as being constituted of "built objects" as process and he saw built objects as an "organism."[73] That is to say, Caniggia's perspective emphasized "process" rather than concrete building image and used the language of ecology, such as "organism," offering a small glimpse of the idea of production of nature as space through socio-natural relations in urban political ecology. On the other hand, Italian tradition and surely Caniggia were restrained in architectural scale and the definition of building types for urban analysis, as well as the missed connection between buildings and cities in the wider typomorphological context.

Furthermore, we can ask whether is it helpful or appropriate to question the quiet mainstream tendency of claiming that the relationship between buildings and the city has been broken in the modern city and that historical backgrounds of cities cannot help the architecture of new buildings, as Rossi and Aymonino defend. In other words, this study argues that this cannot be the fundamental question in searching for continuity via apparent physical types of buildings as reduced to images, as asked by Moudon.[74] The fundamental question should be reconsidered in the 21st century. The relationship among all buildings, broader urban landscapes, and cities through a typomorphological context must be sought for the continuity of the socio-natural relations embedded in the urban metabolism of a city. Right to the city, water access, public health, livable urban landscapes, healthy urban ecosystems, and public interest are the most important of these relations. Otherwise, with recognition of only the historical periods and processes shaping urban form as an image or form-specific, not socio-natural, process, the result is arbitrariness and confusion of the historical periods being taken as foundations. Particularly in cities like İstanbul, where many historical periods have collapsed in the deep structure of

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[73] Anne Vernez Moudon, "Getting to Know the Built Landscape: Typomorphology," in the *Urban Analysis Guidebook: Typomorphology*, 17-32. Edited by L. van de Burg, Department of Urbanism, 2004.
[74] Ibid., 23.

the urban land and water, that arbitrariness and confusion can be used for the sake of legitimatization of the current capitalist mode of production and power relations.

The debate around type and form has now been accepted as a result of specific conditions of place, history, and culture (Lavin 1992, 42-61). Nevertheless, in this section, it is aimed to take the urban form discussion through the typomorphological context one step further and review it via using urban political ecology in the context of İstanbul's waterfront transformations. The existing socio-natural relations produce space, and regarding this, rather than focus on the urban form of İstanbul, it needs to be captured as the particular socio-natural relations through metabolic flows embedded in urban metabolism through political forces (visions, projections, and struggles). Therefore, these relations give and shape the specific urban landscape character as an urban form. While producing the urban landscape as the coexistence of socio-natural relations of the city, it gives evidence of specific ways of thinking and acting of a society. Also, regarding the urban form debate in architectural theory, this dissertation claims that mainstream works and arguments are superficial and insufficient in terms of setting Rossi against Muratori directly.

Rossi more or less followed in Muratori's steps within the Italian heritage. On the other hand, unlike Rossi, he used the term *material artifact-collective artifact* for explaining the urban form, but in a linear way, and used common historical dichotomies such as "natural versus artificial," "man versus environment," and "nature versus city" in his works. However, this dissertation takes inspiration from Marxist interpretations that see a dialectical connection between socio-natural relations and the city regarding urban fabric and form, like William Cronon, David Harvey, Eric Swyngedouw, and Maria Kaika, and, to a lesser extent, Gianfranco Caniggia.

Other important scholars in the urban form debate are Colin Rowe and Fred Koetter. Their book, entitled *Collage City*, addresses the more or less dichotomous language—science versus people—in the debate between figure-ground relations pertaining to the physical form of the city. For transcending this language of duality through form, they suggest *collage* as an urban form. They believe that there is no

reference as ideal or historical concerning this atomized society,[75] and thus none of the tendencies can be offered alone, all of them adjoining the formation of the urban fabric. From the point of view of this study, this idea is basically wishful thinking in which every attempt is allowed as done in neoliberal urbanism for the sake of capital accumulation without asking questions like "what for" or "how." They do not problematize the socio-natural dimension. Regarding nature, they solely criticize the modernist architectural projects that claim that "they are behind the screen of trees."[76] Rowe and Koetter (1978, 8) imply that trees were used as an element of a screen, an image in modernist projects in the 20th century. They refer to the "concept of nature" only as a reinvented tradition for conscience.[77]

At this point, we can speculate that in the 20th century, the experience of modern architecture and urban design's main concern about nature is trying to put nature into the urban, in terms of urban form, not as a metabolic interweaving. Architecture of the city could not go beyond a discourse that sounds like ecological modernism, in which nature is together with technology for the sake of capitalism. For significant examples, Frank Lloyd Wright's Broadacre City (1924-1930s) and Le Corbusier's Villa apartment (1922) can be inspiring. On the other hand, Aldo Rossi (1984, 6) uses the term "catalytic" for the primary elements that can heavily influence the process of urbanization.[78] In that manner, the 21st century symbolizes the "socio-natural dimension" that can be used as a catalytic element, significant for the process of urbanization in the age of ecological rift with both positive and negative sides. Perhaps this time, unlike in the previous century, the socio-natural dimension gives us a chance to face the reality of our collective future and reach for collective imaginary urban landscapes. The urban political ecology perspective suggests the questions of how nature became urbanized. If we continue on to

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[75] Colin Rowe and Fred Koetter, *Collage City*, (The MIT Press, Cambridge, 1978), 65.
[76] Ibid., 58.
[77] "…And, of course, given the anxiety to induce such illusion, the appropriate mechanism will never be lacking, for there is, after all, always 'nature' and some concept of nature will always be invented–discovered is the operative word–in order to appease the pangs of conscience.*"* Colin Rowe and Fred Koetter, *Collage City*, (The MIT Press, Cambridge, 1978), 8.
[78] Aldo Rossi, *Architecture of the City*, (MIT Press, 1984), 6.

questions of how nature became urbanized, we may also ask how the coasts and seas and inner parts of the city of İstanbul became urbanized, and who is using those coasts. Moreover, how did the coastal land reclamation areas reach such an extent that İstanbul could generate a new district? Furthermore, how has the displacement of some species in the water ecosystem and green spaces known as the "*Kuzey Ormanları*" in İstanbul occured? This socio-natural coexistence embedded in urban metabolism is what we understand as an urban form today.

In conclusion, this section grasps urban form as the coexistence, memory, and continuity of socio-natural relations, not as the physical images. Moreover, the production and reproduction of this coexistence constituted urban metabolism, public health, and public interest dialectically through the centuries. This concerns the coexistence of socio-natural relations embedded in urban metabolism within the mode of production and reproduction in which not only historical fabrics of the modern city proliferated, but also the urban debris, land, ecosystem, and the geography itself under continuous transformation. Regarding the urban form debate from the urban political ecology perspective for future generations, urban landscapes and cities must seek the continuity of historical socio-natural relations such as urban metabolism, which are decisive concerning public health and public interest.

1.4 Epilogue | A Cloud Over 21st Century İstanbul

The "networked disease"[79] environments of the 21st century and crisis-prone characteristics of mega cities with their complicated metabolisms, as compared with the period before the 19th century, require an urban mining that reveals the metabolic flows and that will allow the creation of an urban agenda for livable cities with human (labor) and non-human constituents for disadvantaged groups. Coastal mega cities are an essential part of this theory. On the one hand, Bangkok, Miami,

[79]The term "networked disease" is borrowed from the title of the book *Networked Disease: Emerging Infections in the Global City*, edited by S. Harris Ali and Roger Keil (Wiley-Blackwell, 2008).

Honolulu, Perth, Sydney, Dubai, New York City, San Francisco, and İstanbul with its Bosporus Strait were included among "the 25 best waterfront cities to visit in your lifetime"[80] in the online newspaper *Business Insider* (2016); on the other hand, it is estimated that several of those same cities, together with Houston, Boston, Malibu, Alexandria, Basra, Vietnam, and Shanghai, could be mostly underwater by 2050 because of the rising sea levels of climate change. Furthermore, waterfront cities have been addressed by scholars like Sengupta et al. (2018) as essential in terms of climate change and hazardous geographies in the context of their relational positions in between coastal, terrestrial, and aquatic habitats.

İstanbul is a key example, with its accelerating mega-scale visions and projections between land and water throughout the waterfronts from the 19th century, when the first grand-scale coastal land reclamation was proposed by Eugene Henri Gavand along the waterfronts of Yenikapı, through the Port of İstanbul's materialization as reclaimed land, to today. The very first environmental concerns and awareness began to arise in a modern manner in this period, too. Thus, for understanding the urban metabolism of İstanbul through circulatory networks and metabolic flows in the 21st century, we have to grasp the waterfronts' transformations in the 19th century, when mega projections and visions emerged for the first time in the context of Turkey in the modern sense.

According to the EU Climate Services, January 2020 was the warmest January on record,[81] 2019 was the second warmest year on earth since record-keeping began in 1880[82] while 2016 was the hottest, and the European heatwave broke records in the summer of 2019. While bush fires in Australia caused the deaths of 34 people and nearly one billion animals while pushing countless species closer to extinction in

[80] https://www.businessinsider.com/the-best-waterfront-cities-in-the-world-2016-6.

[81] Marlowe Hood, "January 2020 warmest on record: EU climate service," *phys.org*, February, 4, 2020.

[82] The Press Releases of NASA and NOAA and the European Union's Copernicus Climate Change Service. https://climate.copernicus.eu/copernicus-2019-was-second-warmest-year-and-last-five-years-were-warmest-record

2019-2020, also known as the Black Summer,[83] many people died in heavy rains and floods in Indonesia and Rwanda. Storms like Hurricane Katrina in 2005 and Hurricane Maria in 2017 flooded New Orleans and Puerto Rico, with families still recovering today. Turkey and its mega city of İstanbul are no different. As a result of 1,209 floods experienced in Turkey between 1975 and 2015, 720 citizens lost their lives and approximately 900,000 hectares of land were damaged (Bodur 2018, 58).

A local climate activist group called 350Ankara[84] from Turkey published the latest data in 2020 about the tight interplay between increasing consumption levels of concrete, asphalt, and coal and floods/flash flood disasters with the target of reducing floods in urban areas.[85] The heavy rains and flooding of İstanbul most recently hit the Esenyurt district, where many working-class areas and homes were under water and one person lost his life on 23 June 2020.[86] The aforementioned report explains that Turkey is currently pouring half a ton of asphalt and a ton of cement as well as consuming one and a half tons of coal per person in a year. It asserts that the current number of annual floods is 19 times higher than in the 1990s due to those rates of consumption.[87] According to various studies (Turoğlu 2011, Nigussie and Altunkaynak 2019), building constructions and highway constructions have essential roles in increasing the frequency and hazardous characters of floods in cities such as İstanbul. Instead of taking precautions to prevent flash floods in the urban landscape, the administrative management simply offers economic aid after the loss of lives and disasters (Balamir 2017, 19). High-carbon society and mobile lifestyles display forerunner aspects considering the cloud over cities like İstanbul

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[83] Wikipedia, May 2020. https://en.wikipedia.org/wiki/2019–20_Australian_bushfire_season. Accessed May 2, 2020.

[84] 350Ankara, Beton, Asfalt ve Sel Felaketi 2020 Raporu, June, 24 2020, https://350ankara.org/beton-asfalt-ve-sel-felaketi-2020-raporu/.

[85] For details about the relations between impervious surfaces of urban lands and floods, see Esra Sert, "Rain Water in the Energy Efficient Urban Landscape Design," Master Thesis, İTU, Faculty of Architecture, Department of Landscape Architecture, İstanbul, 2013, 40-42.

[86] Haber Türk, Esenyurtta'ki Sel Faciasında Can Kaybı!. June, 23, 2020 https://www.haberturk.com/son-dakika-haberler-esenyurt-taki-sel-faciasinda-bir-can-kaybi-2722174

[87] 350Ankara, Beton, Asfalt ve Sel Felaketi 2020 Raporu, June, 24 2020, https://350ankara.org/beton-asfalt-ve-sel-felaketi-2020-raporu/.

up to the 20th century in the context of increasing hazards and crisis-prone environments.

This dissertation highlights the metabolic flows of oil through bridge constructions, coastal roads, ring roads, and extensive road constructions as foundational for understanding the urban metabolism of İstanbul in the period between 1950 and 1980 (Chapter 4), when a radical break from the waterfronts would emerge and then fully materialize after the 1980s. Massive constructions along waterfronts of İstanbul have prevented surface runoff from the catchment area into the sea (Turoğlu 2011). The metabolic flows of iron and cement (together, concrete) and their secondary circulation also offers illustrative examples for the period between 1980 and 2019, as shown in Chapter 5. Road constructions have held great importance in terms of excessive urbanization in 20th century İstanbul. On the other hand, the projection of a mega-scale artificial "waterway"[88] construction (45 km), namely the "İstanbul Canal" project, and the concomitant massive urbanization attempts towards the north of İstanbul are unique to 21st century İstanbul. The 1999 Gölcük earthquake defined a threshold for the environmental history of İstanbul at the turn of a new century. After that earthquake, all attempts at urbanization, urban transformation, and renewal as well as capital-intensive urban metabolism were legitimatized by the need for safe settlements in terms of earthquake risks. The Yenişehir Reserve Areas Project with the İstanbul Canal Project were legitimatized by the discourse of finding a safe settlement projection and merging the city with nature again.[89]

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[88] The projection of the Canal Project was first introduced to the public in 2011. On 14 April 2016 the Omnibus Bill (*Torba Yasa*) No. 6704 legislated the definition of a "waterway" (*su yolu*), and attempts for urbanization of the northern part of İstanbul were legalized. A waterway is defined as an artificially created water passage by the zoning plan decision and as providing transportation for sea vehicles. The definition added to various articles of Construction Law No. 3194. Proposals of waterway implementations defined a certain debate with the strong objections of 125 representatives of the Grand National Assembly of Turkey. Those 125 representatives filed a lawsuit for cancellation of the law article on waterway implementations. On 15 November 2017, the case was rejected by the court.

[89] Kanal İstanbul ve Yenişehir Rezerv Alanı Teknik İnceleme Raporu, TMMMOB Çevre Mühendisleri Odası İstanbul Şubesi [Technical Exploration Report for Yenişehir Reserve Areas

The İstanbul Canal Project includes the construction of a canal, highways, a third airport, a marina, coastal land reclamations, concrete plants, excavations, and luxury residences, as the result of extensive legislative regularizations,[90] and it has caused struggles over the project. The non-governmental organization *Ya Kanal Ya İstanbul Platformu* ("Either Canal or İstanbul Platform") was established in 2019 with the support of 96 institutions including the Chamber of Engineers, Chamber of Urban Planners, Chamber of Architects, WWF, TEMA, neighborhood solidarity groups, scientists, environmental NGOs, and various political parties. The Technical Exploration Report for Yenişehir Reserve Areas Project and Project Canal İstanbul (*Kanal İstanbul ve Yenişehir Rezerv Alanları Teknik İnceleme Raporu*) was produced by the Chamber of Environmental Engineers of Turkey on May 2018. If the İstanbul Canal materialized, it would define a new waterfront with giant excavations and landfills, which would alter the aquatic and terrestrial ecosystem of İstanbul. According to the notes of the Either Canal or İstanbul Platform, İstanbul receives 70% of its drinking water from other cities, and after this project some part of the Sazlıdere Dam, which meets the tap water needs of İstanbul dwellers, will be dysfunctional. Furthermore, the ecosystem of Lake Durusu (Terkos) Protection Area and Şamlar Natural Park will be deteriorated. The activities of earthmoving trucks and constructional works (impacting air quality, heavy metals), vanishing forests, and the presence of brush woods all create risks of allergic and respiratory diseases. For example, asbestos exposure caused hazardous effects on public health during massive urban renewals (Kale et al. 2017) in Turkey through the 2000s. This mega vision and projection are historically intertwined every step of the way since the 19th century İstanbul. Various projects and attempts of coastal land reclamations at Yenikapı, Maltepe, Kadıköy, Üsküdar, and Kabataş Martı as well as the Galataport Project, Haliçport Project, Marmaray Project, and massive urban renewals have been

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Project and the Project Canal İstanbul] by the Chamber of Environmental Engineers of Turkey, May 2018.

[90] The Omnibus Bill, No. 6704, established, Articles 16-19 of the Water Pollution Control Regulation dated 31.12.2004, later abolished. Declaration of the Reserve Building Area with the Decision of the Council of Ministers Numbered 2012/3573.

center-stage through the massive metabolic flows of iron and cement in the 21st century.

As mega-scale projects continue at full speed through particular massive flows, we see that the countries that lead the way in carbon emissions and resource consumption coincide with the countries that were first affected by viruses and then caused them to spread. Both capitalism and human beings are now in a battle with the "networked disease" environments of the 21st century, which carry both potentials and constraints for an entirely radically reshaping process of urban areas and the social production of nature. According to the World Health Organization, the coronavirus outbreak in China first hit the news in the first days of February in 2020 with 20,630 confirmed cases at the global level.[91] Then, on 11 March 2020, the Turkish Minister of Health announced the first case of the coronavirus in Turkey, and İstanbul now carries essential risk with its nearly 17 million dwellers and continuous urbanization process and mega projects. In the 21st century, disinfection processes and quarantine environments for disease conditions threaten urban life and the economy globally, but they are most devastating for developing countries. Meanwhile, coastal land reclamations extended the scale of urban land in Dubai, the Hong Kong airport, Lagos-Nigeria (Eko Atlantik) (see Chapter 6), Rio de Janeiro-Brazil, Buenos Aires (international airport runaway), reclaimed islands in South China, Baia de Luanda in Angola, Mumbai (formerly Bombay), and Shanghai. Hazardous consequences such as soil erosion, sediments, altered hydrology, and land subsidence (Chen et al. 2016, Sengupta et al. 2018) were materialized by seaward land reclamations that gave way to property ownership and dramatic interventions on the earth's surface. East Asian cities alone constructed more than one million square kilometers of reclaimed coastal land between the mid-1980s and 2017 (Sengupta et al. 2018).[92]

The urban landscape of İstanbul, particularly where land meets water as a critical waterfront city, is under strong pressure. This particular landscape, part of

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[91] WHO International. February, 2020.
[92] Shanghai, Tianjin, Shenzhen, Tokyo, and Osaka.

the urban fabric, has a strong relationship with the mode of production through history. In light of classic studies of, for example, the clouds over Manchester (Engels and Ruskin, 19th century) and Chicago (Cronon, 20th century), which address the socio-natural relations and problems in urbanized landscapes, this study attempts to contribute to an understanding of the "cloud" over 21st century İstanbul by exploring waterfront transformations between 1839 and 2019. This inquiry tries to problematize the socio-natural transformations of the urban space from the Ottoman Empire through the Republican Period up to the 21st century, which implies a stage of deterioration of the Republican regime, looking at a waterfront that is the critical location and scale of urban transformation.

Within the context of this general problematization, this research first aims to develop an approach for criticizing the socio-natural transformation of urban space concerning the actions of political events and forces in the contxt of waterfronts through urban metabolism embedded in particular metabolic flows. Secondly, it tries to prove the transition and struggle from the "labor-intensive metabolism" to "capital-intensive metabolism" of İstanbul between the 19th and 21st centuries. Thirdly, it is essential to reveal how architectural practice operates through metabolic flows as a political instrument in İstanbul's context, which has an essential role in the urban metabolism of İstanbul. This dissertation embraces Smith's viewpoint and attempts to contribute to the socio-natural history of cities as the production of nature. This study hence conforms to Smith's statement about capturing the transformation of the urban landscape as the explanation of "production of nature." In future studies, it would be valuable to compare particular socio-natural relations in particular centuries within different geographical contexts. Additionally, this study asks whether urban political ecology perspectives can enhance critical urban theory in terms of understanding current urbanization processes, and also if an architectural contribution can further and deepen the knowledge of urban political ecology studies.

Considering its coast through the 2000s, İstanbul has never been filled through history to today's irreversible and radical scale, and we have not yet experienced the

potential problems of it (social, climatic, environmental, etc.). Using the urban debris derived from the metabolic flows of iron and cement for filling the coast is a fast solution for trying to reduce the cost of transporting and storing the materials left over after a massive urban transformation initiative. While listening to the arguments about green spaces, it is also necessary to look at which habitats are destroyed behind this "production" and those that have their health endangered (e.g., by asbestos), and to keep a record of both winners and losers. Additionally, we must recognize visions and projections that have ignored the phenomena of the public square and the public sphere in a large realm and try to cover up the planning and social organization mistakes that reduced green spaces and earthquake gathering areas in the context of coastal land reclamations.

In the 19th century, İstanbul was still dependent on labor-intensive and small-scale characteristics of urban metabolism on a practical and daily level, blended with the mega-scale vision and projection of the modern era. At the same time, the first mega-scale visions and projections, as well as the service revolution and industrial discipline, environmental degradation, and awareness, were active topics, relying on the instruments of modernization in such a way as to transform socio-natural relations. The labor-intensive character of urban metabolism and its resistance to survival is explained in detail in Chapter 2. It is exercised through the metabolic flows of land and water as space gives essential insights for understanding the emergence of a new urban metabolism at the turn of the century.

Chapter 3 follows the implementations of the bourgeois ideology of nature, which separates human and nature according to the agenda of the scientific production of nature. This ideology is embedded in the countless efforts to combine humans and nature by the new political visions and projections of the young republic, as explained by Prost's plans and reports on İstanbul. Chapter 3 examines the metabolic flows of urban voids projected through the waterfronts, which resulted in the uneven production of nature via spatial fix as well as the deepening division between human and nature, which determined the typical characteristics of this new political project between 1923 and 1950.

The year 1950 is a turning point from the modern spirit of the early Republican Period, carrying social goals to Menderes's modernized and mobile urban environment, symbolizing the uneven socio-natural relations for a motorized urban metabolism. The uneven production of nature through the metabolic flows of oil and coal resulted in remaking waterfronts as the new periphery with the working class. The creation of more complex relations then took İstanbul and its future agenda towards a motorized urban metabolism between 1950 and 1980, as reflected in Chapter 4.

Traces of the metabolic flows embedded in the industrial city would vanish along the waterfronts of İstanbul throughout the 1980s. In Chapter 5, the disappearing industrial city and the unique working-class habitations legalized with the postmodern understanding of nature under the cover of "environmental" concerns support the idea of the melting away of the human content of nature and mutually labor throughout the waterfronts of İstanbul. The "scientific production" of nature as space had been specific for the first three-quarters of the 20th century through the waterfronts of İstanbul, but between 1980 and 2019, the neoliberal vision and projection attacked and directed that "scientific production" of nature as space. This also imposes upon the "financial production" of nature as space for capitalist accumulation through metabolic flows of iron and cement. While the bourgeois ideology of nature separates humans and nature, embedded in the countless efforts by nation-states to combine them, the neoliberal ideology of nature deepens this duality with its declaration of freeing nature from human and labor contents in the 21st century. Various examples can be considered, like the Haliç Yacht Port and Complex Project, first announced in December 2010, which emphasized a shift from industrial production to commerce and tourism in İstanbul. Moreover, the Haydarpaşa Port and Train Station's transformation project indicated a turn from transportation hub into a culture, tourism, and commerce center in 2011. Considering that mega cities with populations over 10 million are the most complicated works of human labor, the waterfronts of İstanbul, a city with almost 17 million inhabitants, are the essential metabolized socio-natures for not only Turkey but also on the global

scale. Shortly, all of these metabolic interactions were easy to pursue in the 19th century; therefore, it was much easier to intervene in the urban agenda as well as to emphasize the concerns. In the 21st century, the production and control of nature as urban space, human labor, technology, and capital materialize into much more complex material processes. Moreover, capital accumulation plays an essential part here.

In summary, for understanding the analogy of "A Cloud Over 21st Century İstanbul," we should understand that it is not possible to separate the production of space from the production of nature. The future of waterfronts and, therefore, the city is much more than an arithmetical logistical excavation under the influence of mega projects. These projects that focus on "saving the day," produced in a hurry and seeking mega-scale results, yield the accelerating damage of water ecosystems and the deaths of citizens, increasing respiratory diseases, allergic diseases, the number of people lost under earthmoving trucks, and a feeling of insecurity about open green spaces and recreational areas. We must keep trying to ask who wins and who loses, and we must try to change the situation. Maybe it is possible to say that urban studies and struggles must focus on more resilient urban landscapes without hesitating to transcend duality, trying to find the link between the social and the natural.

CHAPTER 2

1839-1923 | EMERGENCE OF A NEW URBAN METABOLISM THROUGH METABOLIC FLOWS OF LAND AND WATER IN İSTANBUL

2.1 Introduction: Emergence of a New Urban Metabolism

> *"During the transition from the nomadic to sedentary way of life the concept of nature in Turkish culture is divine; following the Tanzimat however it loses its human content and becomes an exclusively bureaucratic problem. As long as the bureaucracy, which has now imposed itself between man and nature, adjusts environmental awareness to the policies of the current regime, the quest for paradise on earth will never be more than a pipe dream."*[93]

> *"The creation of embankments will open large arteries in Galata and in İstanbul, along the two banks [of the Golden Horn] to the grand profit of public health. Communication will be facilitated, commerce will be expedited, smuggling will be prevented… property values will increase."*[94]

Explaining this chapter briefly, the most critical characteristics examined here may be listed as environmental degradation and awareness, the resistance of labor-intensive metabolism, service revolution, industrial discipline, ad hoc organization, and modernization attempts. In this chapter, following the urban metabolism of İstanbul via particular metabolic flows mainly shows us its **labor-intensive character**, which gives essential insights for understanding the shifting urban

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[93] Ekrem Işın, *Everyday Life in İstanbul*, (YKY, 2001), 210.
[94] La Turquie, 13 November 1890 quoted from Zeynep Çelik "*The Impact of Westernization on Istanbul's Urban Form, 1838-190,*" PhD diss., University of California, Berkeley, 1984.

metabolism. These are the **metabolic flows of land and water**, which define how land and water have come to critically engage and politically transform the said metabolism into the emergence of a new urban metabolism heavily relying on instruments of capitalism in such a way as to transform socio-natural relations. Concerning the 19th century's Ottoman reforms in İstanbul, the discourse that focuses on legislative developments for the urban landscape and the reforms undertaken mainly by the elites with their desire for "Westernization" will offer us only a partial and historically inadequate explanation. This study tries to offer new insights into the urbanization process and regularizations of waterfronts in İstanbul between 1839 and 2019 in terms of the metabolic flows of land and water through emergence of a new urban metabolism. These metabolic flows offer a reciprocal and intricate relation with the social production of nature via the new space-making agenda for waterfronts. This agenda depends on human labor and efforts to resist throughout the period considering the emergence of the new urban metabolism. The reform era known as *Tanzimat* (1839), apart from being a key turning point in Turkey's history, displays symbolic meaning for the urban metabolism of İstanbul. The duality between nature and humans began to emerge in the second half of the 19th century as an industrial discipline, as Işın (2001, 210) reminds us in the quotation above, with its space-making agenda particularly focused on the waterfronts of İstanbul together with the inner city.

This chapter tries to understand the transformation of İstanbul's waterfronts by seeking the urban metabolism embedded in the metabolic flows of land and water in the geography of İstanbul within the world-historical context of the late 19th and early 20th centuries. As was defined in the previous chapter, the labor force and its organization through production regimes, administrative management, and constant struggles in daily life are significant for exploring the production of nature as space for understanding the body of metabolic interactions as flows. Capturing these metabolic flows throughout the period from the declaration of the Ottoman reforms known as *Tanzimat* (1839) to the establishment of the Republic of Turkey (1923) will help create insights into the capitalist geography of future İstanbul, and it will

also help us to grasp the socio-natural production of waterfronts through the lenses of urban political ecology. In each flow, we will follow the inextricable paths of production regimes, administrative bodies (such as the municipality and the state), and the daily struggles embedded in the organization of labor within the insights of the emergence of a new urban metabolism in İstanbul. The aim here is to identify the relations, contradictions, and uneven landscapes of social classes as the underlying cause and result of all.

The chapter shows that, on the one hand, the labor-intensive metabolism of the city and the daily struggles to preserve its character longer were still the main characteristics of this moment in time. On the other hand, the metabolic flows and relations explored here will also give us preliminary insights into the emergence of a new urban metabolism of İstanbul. According to this study, this emergent moment was loaded with struggles between two modes of urban metabolism, while Tekeli (2013) use the expression "Shy Modernity" for this period. This new urban metabolism is emphatically industrially disciplined and capital-intensive. While expansion of an urbanized nature could be possible in the context of the 19th century, uneven conditions were present for the inhabitants of İstanbul. The land started to be controlled, excavated, transported, filled, and transformed for commodification by industrial discipline in the context of the very capitalist production of nature. The water had also just started to be controlled, channeled, directed, and sanitized for commodification by industrial discipline in the context of a very capitalist production of nature that allowed for the expansion of urbanized nature throughout the waterfronts.

This study asserts that this new urban metabolism of İstanbul in the 19th century (Figure 2.1) resembles very early insights into the 21st century's metabolism. The 21st century's metabolism has an urban agenda that creates and supports uneven geographical, societal, and socio-natural conditions. These conditions hurt some ecosystems within the city and may result in accelerating conditions of disease for some parts of the city. Moreover, the urban metabolism works for the sake of capitalist production and reproduction. Urban environmental

conditions had a role in developing the idea of increasing sanitary conditions for the laboring population, which was significant throughout the 19th century. The metabolic flows of the land and water had a significant influence on changing the metabolism of the future city. The shifting understanding of nature towards a more scientific one and the existing metabolic flows of land and water are why this era is significant and is taken as a starting point for this dissertation.

In the first part of this chapter, the metabolic flows of land within the 19th century landscape of İstanbul (Figure 2.2) will be examined in the case of property rights through *yalı*s and summer palaces, quays and ports, sea baths, great fires, steamships-boats-trams, and *çayır*s, respectively. The second part focuses on the metabolic flows of water in the case of access to tap water, cholera, and waste and sanitation, respectively. Looking at the typical characteristics of these two contextual flows, land and water, of 19th century İstanbul, we can see the first premises of the so-called service revolution[95] and industrial discipline (as a way of organization or a technique). These premises materialized in the city for the sake of increasing "sanitary conditions" and public health, which have been a "must" to articulate the capitalist market system worldwide. In spite of this, however, this era witnessed the emergence of uneven conditions within the modern urban landscapes of İstanbul.

Even though there was no industrial revolution in İstanbul in this period like in European countries, we can still see the premises of industrial discipline. The new relationship between nature and İstanbulites via the ongoing service revolution of municipal administrative bodies will be explained in detail later in this chapter. Considering all of these revolutionary efforts in the period being explored, this chapter's introductory excerpt from the newspaper *La Turquie* (13 November 1890) presents the changing conditions well. Production of nature as space with more or

[95] Melosi mentioned the context of service revolution in his book and also stated: "Several scholars have argued that, along with the rise of laissez-faire capitalism, the nineteenth century also experienced a kind of 'municipal socialism', that is, a demand for services provided by the city rather than the individual." Martin V. Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment* (University of Pittsburgh Press, 2005), 9.

less industrial discipline throughout the waterfronts increased the property values. This emphasized the creation of uneven conditions in the city.

Additionally, the first environmental problems and indispensable awareness could be seen in İstanbul in this period, too. The witnessed socio-natural relations could not create a vision or a projection beyond "*a pipe dream*," as Işın (2001, 210) states in the first introductory quotation of this chapter. Furthermore, this developmental vision has still been influencing the current production of nature as space unevenly throughout İstanbul.[96] Concerning scholarly debates and studies on İstanbul in the 19th century, the "Westernized" developments have been emphasized thus far, not the uneven geographies of this environment. Nevertheless, the critical point here is not the discourse on the increasing relationship with world markets within the economy. Rather, its reasons and its consequences for the urban landscape and daily life through metabolic interactions resulted in a historical turning point for the urban metabolism of İstanbul, and this is an essential point for this study.

The First World War between 1914 and 1918 profoundly influenced political, socio-natural, and economic life worldwide. It was the beginning of the so-called Age of Total War,[97] the name given to the 20th century by Eric Hobsbawm (1995). Famine, poverty, unhealthy environments, and epidemics were strongly related to the rhythm of the production of nature as space and the evolution of metabolized socio-natures. The classical reading of İstanbul's late 19th century and early 20th century depends on legislative and constructional developments. Moreover, the general regularization attempts defined rules of "Western-minded" legislations.[98]

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[96] David Harvey uses the same analogy of a pipedream while discussing embedded liberalism and its consequences in the 1950s and 1960s: "For much of the Third World, particularly Africa, embedded liberalism remained a pipe dream … [Meanwhile], embedded liberalism delivered high rates of economic growth in the advanced capitalist countries during the 1950s and 1960s." David Harvey, *A Brief History of Neoliberalism* (Oxford University Press, 2005), 11.

[97] Eric Hobsbawm (1995) used the term "Age of Total War" in his important book *The Age of Extremes: A History of the World, 1914-1991*. In the years between 1914 and 1991, the world witnessed two global wars that destroyed millions of individuals and entire systems of social, economic, and political life.

[98] Zeynep Çelik 1984; Zeynep Çelik 1986; Erik J. Zürcher 2002; Şükrü Hanioğlu 2008; İlber Ortaylı 1985, 117-119; Murat Gül 2015.

Many scholars have defined the ethnic-religious differentiation of urban patterns as the fundamental character of İstanbul, including Zeynep Çelik (1984, 1986), Erik J. Zürcher (2002), Şükrü Hanioğlu (2008), İlber Ortaylı (1985), and Murat Gül (2015). At this point, rather than seeing the process merely in terms of the state intervention of Western countries in the 19th century's climate, we should shift our attention to the ways of dealing with worsening sanitary conditions due to population booms and the restructuring of the waterfronts for the sake of controlling the direct labor intervention within the urban agenda of İstanbul. All of these interventions show the character of "unevenness" for the dwellers of İstanbul and an urban metabolism that could not operate properly, which, moreover, created and supported the unevenly metabolized socio-natures. After the summary of these findings, this study moves on to "war periods" and "uprisings," as well as the so-called environmental problems and climatic conditions of İstanbul, which were turning points and dialectically connected to one another, regarding urban metabolism.

The Tanzimat Era witnessed the transformation of the political environment and economic relationships as well as the particular coexistence of socio-natural relations within the urban landscape that can be particularly observed along the waterfronts of İstanbul. In 1908, an attempt to establish a parliamentary system and radical social reforms was called "The Young Turk Revolution," foreshadowing the new era of the birth of the Republic of Turkey in 1923. First, however, a brief look at the historical conditions leading up to that moment from the 16th century onward will be helpful.

Before the 16th century, the relation of production and political power was based on the *timar* system, agriculture, and a centralized state structure in the Ottoman Empire. Throughout the late 16th century, significant changes in social and political life are argued to have occurred. The *timar* system was beginning to be replaced with tax farming (*iltizam*), and tax farmers achieved increasing political and military power within the geographical and economic context of Ottoman imperial power through the 17th and 18th centuries. Agrarian modes of production and their relations to European trade markets did not begin with Tanzimat in 1839 (Kırlı 2002,

44-45). Rather, they were a hallmark for international market relations concerning Ottoman markets in the 19th century. The global capitalist system is also strongly related to the conditions of agricultural production and habitation along the coastal areas with the help of the changing climate from the Little Ice Age period. The waterfronts of İstanbul in the 19th century served as areas for the production of fruits, vegetables, and daily foodstuffs and a marketplace where goods like seafood and supplies were sold directly from the sea or boats along the embankments and quays (Figure 2.3). Foreign relationships led to the acceleration of the trade in marine products from the Sea of Marmara and the Bosporus, such as fish imports.[99]

An industrial park designed on the outskirts of İstanbul, the *Grande Fabrique* in Zeytinburnu, and factories in some Bosporus villages as explained in detail by Hanioğlu (2008) and Çelik (1984)[100] were parts of the period's industrialization attempts. All of these improvements in production facilities along the waterfronts were part of the modern socio-natural development of the city. Concerning economic activity in terms of developing industry in İstanbul in the 19th century, some scholars argue that the scale (more significant than before), location[101] (with economic activity prohibited in residential neighborhoods), need for foreign labor[102] (like engineers), and improving education were the main characteristics. For instance, for the production of cotton to improve the textile industry in İstanbul, the

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[99] 1892, Ottoman Archive - BOA (Başbakanlık Osmanlı Arşivi) Hariciye, HR. SFR. 04. 341, 116, M-15-11-1892.

[100] The *Grande Fabrique* in Zeytinburnu was home to new factories that produced garments, ammunition, paper, shoes, and silk. For detailed information, see Şükrü Hanioğlu 2008, 93. As described by Zeynep Çelik, the developing industrial zone in Zeytinburnu, Bakırköy, and Küçükçekmece saw particular action "in the early 1840s. The shoreline immediately to the west of Istanbul, outside the Theodosian Halls, became an industrial zone. In Zeytinburnu, a foundry was built where iron pipes, steel rails, plows, cannons, swords, knives, and similar metal objects were produced. Close by, textiles and cotton stockings were manufactured. Workers' housing in the form of two-story barracks 200-meters long constituted part of this industrial park. Another set of factories, including a textile plant, a foundry, and a steam-driven machine shop were built in Bakirkoy. A boatyard for the construction of small steamships was also established here. Further to the west, in Kucuk Cekmece, the gunpowder works. Several other industrial sites were scattered in the suburbs of the capital and in some Bosphorus villages." Zeynep Çelik 1984, 59-60.

[101] Zeynep Çelik 1984, 90.

[102] Şükrü Hanioğlu 2008, 93.

Agricultural Training School (*Ziraat Talimhanesi*) near İstanbul and the Ayamama Farm in Yeşilköy were established in 1847 (İhsanoğlu 2002, 482). However, all of these efforts made minimal contributions to manufacturing (Pamuk 2009, 25) within the Ottoman economy when compared to Britain and other European markets in the 19th century.[103] After the end of the Napoleonic Wars,[104] which signaled ease for British manufacturing exports and an accompanying cycle of cheaper manufactured goods from British markets, "de-industrialization" was the main result for many countries and particularly for the Ottoman Empire in the 19th century.[105] In addition to this, Köksal (2005, 14-15) asserts that bringing technology, technical experts, and even some structural parts from European countries caused weakness in the Ottoman Empire concerning industrial developments. This trend could be seen in all attempts in the context of an "initiative."[106] The *Tersane-i Âmire*, *Feshane-i Âmire*, and *Tophane-i Âmire* of the Golden Horn (Haliç) and an iron foundry, as well as some cotton and wool factories located from the Yedikule to Küçükçekmece waterfronts (Köksal 2005, 21-25), are examples.[107]

Işın (2001, 209) argues that the first signs of environmental degradation were seen on the waterfronts of the Golden Horn, probably related to its being an increasingly preferred location for factories and production facilities in this era. Işın (2001) further states that environmental awareness became an issue via the Tanzimat reforms and was represented by new organizations such as municipalities in the 19th century. According to Işın (2001), dwellers of İstanbul were observers of, not

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[103] Economic historian Şevket Pamuk measured the loss of domestic textile manufacturing markets to foreign imports for four Third World regions: Mexico, the Ottoman lands, India, and Indonesia. For detailed information, see Şevket Pamuk and Jeffery G. Williamson, "Ottoman De-Industrialization 1800-1913: Assessing the Shock, Its Impact and the Response." Working Paper, Draft, 2009.

[104] The Napoleonic Wars (1803-1815) stemmed from the unresolved disputes associated with the French Revolution and its resulting conflicts.

[105] Şevket Pamuk, 2009, 9-10.

[106] For a detailed explanation of the industrial heritage and developments in İstanbul, see Gül Köksal, "Some Proposals for the Conservation and Reuse of Industrial Heritage in İstanbul," PhD diss., İstanbul Technical University, Faculty of Architecture, 2005, 14-15.

[107] Ibid., 21-25.

participants in, these socio-natural transformations, and the idea of problem-solving depended on the very new central organization of that period,[108] which put distance between humans and nature. Concerning the socio-economic landscape of the Ottoman period, it did not have characteristics such as *large-scale*, *urban*, *factory production*, or *mechanized factory output*. Quite the contrary, it was *labor-intensive*, *small-scale*, *household-based*, and *rural* (Pamuk 2009, 9; Köksal 2005, 14), aspects that could still be widely observed in the 19th century and the beginning of the 20th century. Furthermore, as Murat Güvenç (2017, 184) crucially argues, this labor-intensive characteristic was a significant fact that hindered modernization projects for the harbor, considering the waterfront of İstanbul and its formations:

> …This led corporatist premodern business organizations, which had a trade monopoly in lines of work such as porterage and bargemanship, to gain power to a sufficient degree that they could hinder the harbor modernization project… The İstanbul Quays Company was forced to relent to resistance from the porterage and the bargemanship, and accept the continuation of labor-intensive port administration.[109]

As support for the above argument, we can consider the conditions of the Port of İstanbul at the beginning of the 20th century. In 1929, Ahmet Hamdi was still complaining about the labor-intensive conditions of the Port of İstanbul and economic difficulties. Hamdi (1929) claimed that the Port of İstanbul had not been modernized yet.[110] In his work *Port of İstanbul*, Ahmet Hamdi showed that land transportation from the coastline to the warehouse by bargemanship was much more expensive than steamship to the coastline (Figure 2.4), and bargemanship was still valid in that period. The Western Anatolian cities, the Balkans, and İstanbul were all located near European trade borders (Western European markets) and their characteristics as harbor cities were remarkable for 18th and 19th century economic

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[108] Ekrem Işın, *İstanbul'da Gündelik Hayat*, Yapı Kredi Yayınları, 2001, 208.
[109] Murat Güvenç, *Harbor*, the catalogue of the exhibition of İstanbul Modern. Maş Matbaacılık, 2017, 178-187.
[110] Ahmet Hamdi, *İstanbul Limanı*. Akşam Matbaası, 1929.

restructuring processes. The reforms not only tried to ensure the incorporation of the Ottoman markets into the global economy but also to prevent Western European nationalist ideas and tendencies that flourished with the growth of capitalism from entering the Ottoman geographical context (Mansel 1995, 265; Kırlı 2002, 45-46, 55).[111] While criticizing the arguments about the Ottoman government's fear of increasing nationalism and concomitant reforms, Makdisi (2000) and Aytekin (2012) try to draw attention to the economic conditions of revolts between landowners and peasants.[112] We can say that climatic conditions, decreasing agriculture,[113] and concomitant economic recession, coupled with the context of "initiative" in terms of industrialization while other parts of the world industrialized, were crucial in the 19th century. Widespread epidemic diseases that resulted in the loss of lives and growing dissatisfaction at the grassroots level had a strong relationship with the weakening of the Sultan's authority. All of these developments worked to increase the growth of social movements and the influence of bureaucrats on governmental relations and social uprisings in Anatolian cities and the Balkans (Aytekin 2015).[114]

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[111] The *Islahat Fermani* (1856; Reform Decree) specified the new status of non-Muslims in areas such as public employment and acceptance to the civil service and military school or entrance to the army, and Sultan Abdülmecid declared that they "are all equal, and … are united to each other by the cordial ties of patriotism." Moreover, non-Muslim merchant communities particularly had a role in supporting the Ottoman state's restructuring in the 19th century. See Biray Kırlı 2002, 45-46, 55. See also Philip Mansel, *Constantinople: City of the World's Desire, 1453-1924* (Cambridge University Press, 1995), 265.

[112] E. Attila Aytekin, "Peasant Protest in the Late Ottoman Empire: Moral Economy, Revolt and the Tanzimat Reforms," *International Review of Social History* 57 (2012): 191-227 and Usama Makdisi, "Corrupting the Sublime Sultanate: The Revolt of Tanyus Shahin in Nineteenth-Century Ottoman Lebanon," *Comparative Studies in Society and History* 42 (2000): 180-208.

[113] "...At the turn of the nineteenth century, the Ottoman economy was still premercantilist and agrarian… Another tool used by the state to control spending was the practice of 'public purchases,' which allowed the state to buy goods at a special price set by the government; this price was always lower than the market price, and sometimes even below the cost of production. But this practice naturally led producers to cut supplies, lower quality, or even abandon the production of goods needed by the state." Şükrü Hanioğlu 2008, 19-23.

[114] For further details about social movements and uprisings in the 18th and 19th centuries, see E. Attila, "Son Dönem Osmanlı İmparatorluğu: Kapitalistleşme ve Merkezileşme Kavşağında," in *Osmanlı'dan Günümüze Türkiye'de Siyasal Hayat*, ed. by Gökhan Atılgan, Cenk Saraçoğlu, and Ateş Uslu (Yordam Kitap, 2015).

Considering this preliminary information and the relational climate with the climax of the Tanzimat reforms in the Ottoman historical-geographical and socio-natural contexts, this dissertation tries to focus on and explore the emergence of a new urban metabolism and the evolution of (uneven) urban landscapes in the capital city of İstanbul by examining the flows of land and water. It is claimed here that the second half of the 19th century and the early 20th century witnessed the particular coexistence of metabolic networks and resulted in the first production of uneven landscapes exercised through the transformations of the waterfronts of İstanbul. The following two subchapters will examine the effects of the socio-natural transformations of industrial discipline and the emergence of a new metabolism in Ottoman İstanbul with concomitant integration into the broader market systems and their relations with the socio-natural landscape of human health, the daily needs of İstanbulites, and ecosystems through the exercising of metabolic flows. This exploration begins with a study of the flows of land in İstanbul according to property rights throughout the waterfronts in the second half of the 19th century.

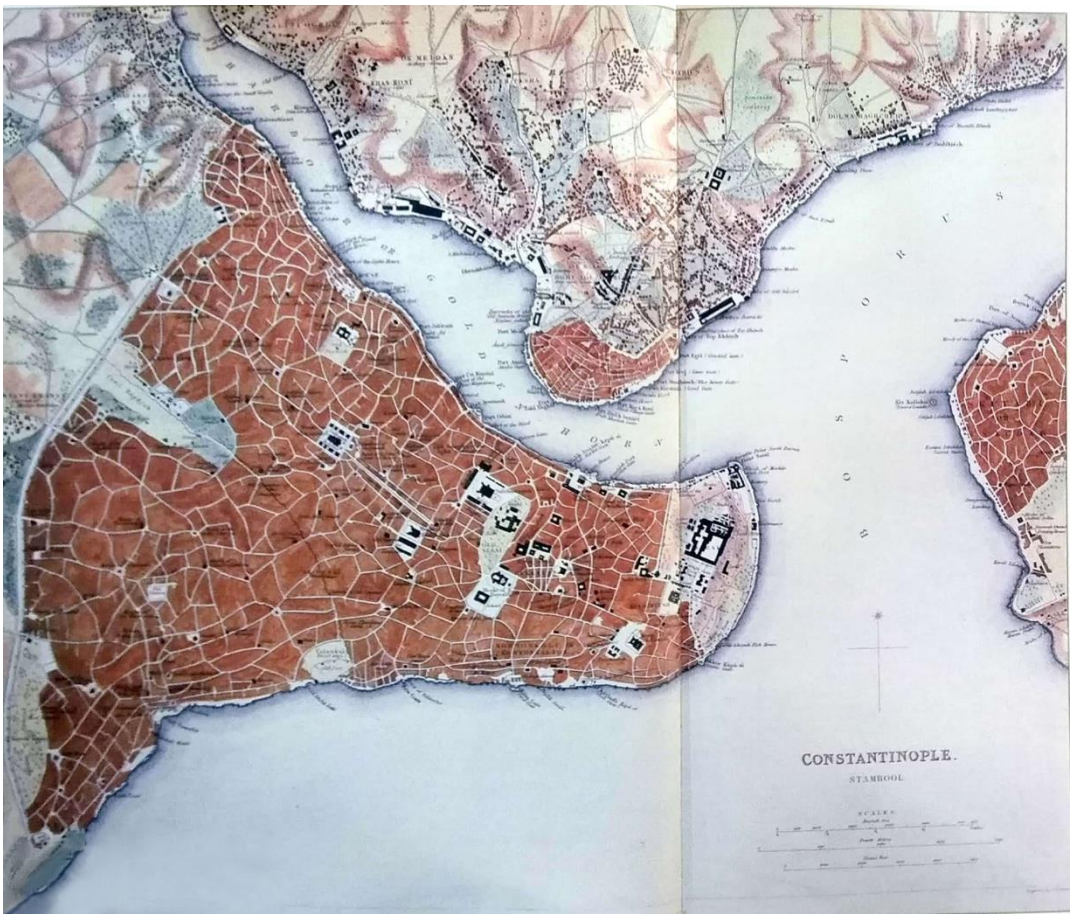

Figure 2.1. 19th century İstanbul, 1840-Hellert Map

Figure 2.2 Map of İstanbul, STOLPE, C. 1882. *Plan de Constantinople avec ses faubourgs, le porte et une partie du Bosphore.*

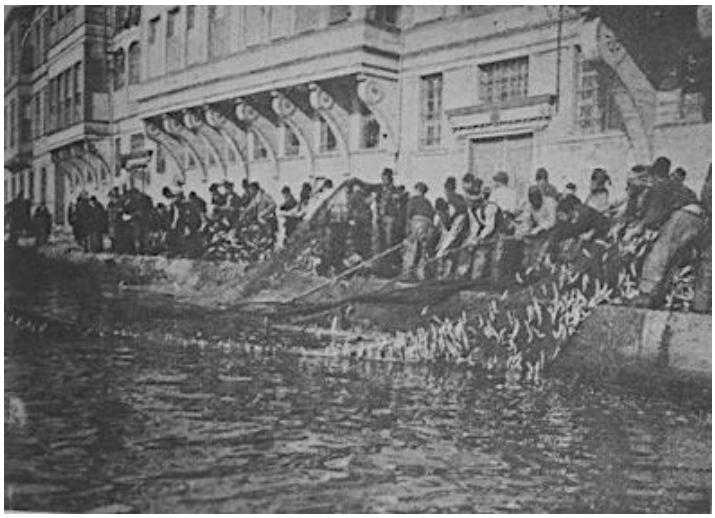

Figure 2.3 Waterfront line of the Mümtaz Efendi Yalısı, Bebek. *M. Sinan Genim, Constantiniye'den İstanbul'a XIX. Yüzyıl Ortalarından XX. Yüzyıla Boğaziçin'nin Anadolu Yakası Fotoğrafları III, Suna ve İnan Kıraç Vakfı, 2012.*

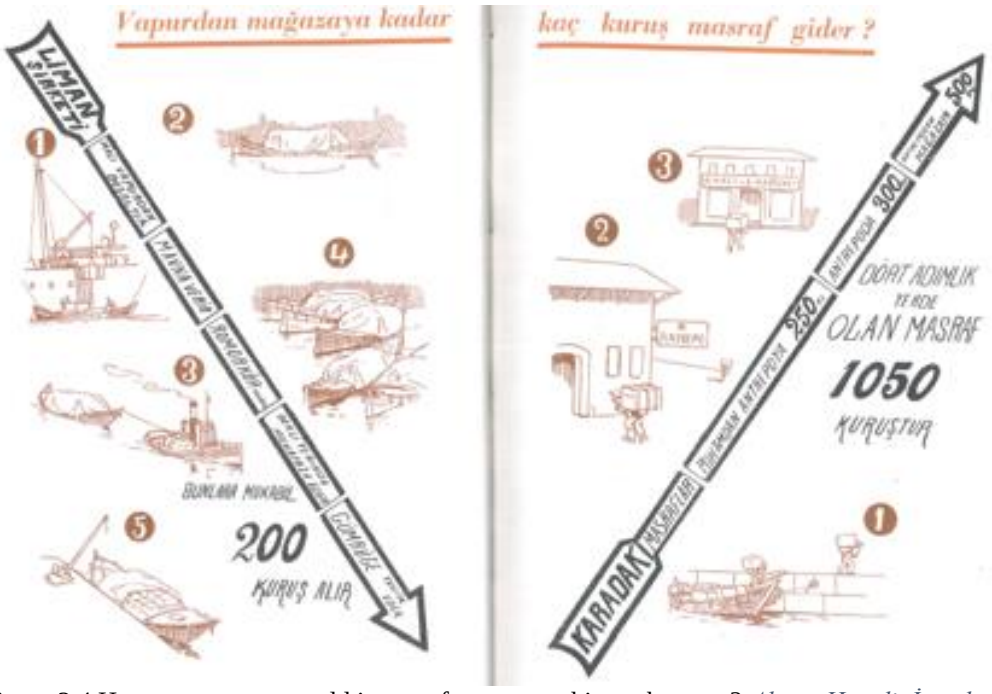

Figure 2.4 How many cents would it coast from steamship to the store? *Ahmet Hamdi, İstanbul Limanı, 12-13, 1929.*

2.2 Metabolic Flows of Land

In Ottoman times, before the Tanzimat reforms, land and water resources could not be bought or sold and were secured as inalienable properties. This rule was the most crucial aspect of the prevention of the division and alienation of humans from nature. The Tanzimat Era and its accompanying reforms included administrative rules (especially for urban administration), guarantees of property rights and public welfare, the security of non-Muslims, and military reforms as a follow-up to the 18th century's developments. This chapter argues that the land had been started to be controlled, excavated, transported, filled, and transformed through commodification by industrial discipline in the context of the production of nature as modern urban waterfront landscapes and via the expansion of urbanized nature in the context of the 19th century. Efforts are made here to explore metabolic flows of land via waterfront residences, the Port of İstanbul, sea baths, great fires, transportation, and recreation

in the case of property rights. Due to growing environmental concerns, dissatisfaction, and the overall conditions, only some parts of the planned agenda for waterfronts could be accomplished. It was an unavoidable fact that the projections and visions for "fixing" some parts of the city—even in the very early stage of capitalist relations—created uneven environments and socio-natural problems via the production of nature as space.

The present section examines the situation in 19th century İstanbul in terms of coastal land reclamation laws, projections, implementations, and struggles concerning property rights and economic activity. For instance, the edict and ongoing legislation of the Land Code of 1858 (*Arazi Kanunname-I Hümayunu*) provided the guarantee of property rights, such as land property, in favor of individuals for the first time within the state, without the separation of Muslim and non-Muslim subjects by law. İstanbul was the central and most vital city for showing the transformations occurring at every level. Administrative transformations, the increasing population of İstanbul, the shifting regime of production, and the concomitant extension of the geography of newly urbanized areas, such as along Pera, Şişli, Ortaköy, the Bosporus, and the northern part of the Golden Horn, all changed the patterns of waterways, infrastructure, and transportation routes, as well as daily life. It is evident that most developments in the 19th century had some common points with the European context, such as "ruling" attempts for "regularization." All of these attempts at regularization, mainly seen on the urban waterfronts of İstanbul, had a strong relationship with the shifting socio-natural and economic context of the world and the Ottoman Empire, as explained in the introductory part of this chapter.

European markets and merchants gravitated towards İstanbul due to increasing monetization. European merchants, a new class of bureaucrats, and members of the Ottoman dynasty could own or rent property in İstanbul, and this started a new flow of lands, especially along the waterfronts of the Bosporus after the Tanzimat period. Concerning the spatial relationship of these reforms in the historical records, many summer palaces and *yalı*s became property via filling of the sea, changing the fabric

of the waterfronts, mainly as housing for the families of a new class of bureaucrats and the families of the Sultans. At the turn of the century, İstanbul had regularized waterfronts with a "modern" port, and private dwellings, but it was about to lose many of its lush and green landscapes and streams. The metabolic flows of land in the case of property rights will be explored in terms of *yalı*s and summer residences, regularization of quays and the Port of İstanbul, sea baths, great fires, steamships-boats-trams, and *çayır*s, respectively. The first subsection focuses on *yalı*s and summer palaces as emblematic structures of the new metabolic flows of land in 19th century İstanbul.

2.2.1 *Yalı*s and Summer Palaces

This section explores the waterfronts of the Bosporus as they were being chosen for the first time as the location of summer residences. The relationship between prestigious districts of the city and ordinary neighborhoods has been studied, and this section particularly aims to address the production of nature as space from bay areas and gardens to waterfront palaces and residences in the 19th century. In doing so, this section follows the actions of bureaucrats and ambassadors, i.e., the new expanding ruling elite in the 19th century in İstanbul. They began to settle permanently along the Bosporus in the context of socio-natural forces such as diseases, economic structuring, and climatic conditions through the metabolic flows of land.

Before the 19th century, in the Little Ice Age period of the Black Sea Region in the 16th and 17th centuries, the decline in agricultural products had become a widespread phenomenon in the geographical context of Anatolia. The vivid connection between metabolic relations (such as habitation, landscape patterns, daily life, diseases, food, water supply, and climatic conditions) and socio-political

conditions can be seen here.[115] Since the 16th century, in fact, the coast of the Bosporus had been used as a location for summer residences by the Ottoman dynasty. However, from the 19th century, the building pattern was extended and the density of urbanized nature throughout the waterfronts of the Bosporus increased.

In 19th century İstanbul, building processes usually materialized in Galata and Pera[116] across the waterfronts of the Golden Horn (Kasımpaşa was the densest neighborhood). Eyüp, outside the walls along the Golden Horn as the largest settlement, and Yedikule, Bakırköy (Macrikeuy), and Yeşilköy (Ayastefanos) along the Sea of Marmara as well as Tophane and Fındıklı along the Bosporus were the densest neighborhoods in the 19th century. However, it can be argued that Dolmabahçe Palace (1856) was the critical trigger point for socio-natural restructuring through property rights. The Ottoman dynasty had abandoned Topkapı Palace, and Dolmabahçe Palace became their new location with the expansion of the urbanized landscape by coastal land reclamation. The new quarters on the Bosporus and Dolmabahçe Palace would be new addresses for the flowing metabolic networks. The Tanzimat reforms played a vital role in the extensive city-building program, including the drainage system, seen in the field of municipal organizations in İstanbul (Çelik 1984, 56). The significant point here is not the ordinary neighborhoods but rather prestigious parts, such as the commercial and harbor districts of the city,[117] which were especially under the influence of strict rules. These

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[115] Historians William J. Griswold (1981) and Sam White (2011) argue that the Celali Revolt and the following political crises stemmed from the ecological problems of the Little Ice Age in Anatolia. Moreover, after the decline of the effects of the Little Ice Age period in the 18th and 19th century in Anatolia, wide segments of the public in the Ottoman Empire could move to lower lands and coastal areas again, which affected the integration with the capitalist world via increasing commercial agriculture. See Onur İnal, "Environmental History as an Emerging Field in Ottoman Studies: An Historiographical Overview," *The Journal of Ottoman Studies ISAM* 38 (2011): 6-8 and Kayhan Orbay, "Osmanlı Topraklarında Küçük Buzul Çağının Etkileri Hakkında Bazı Notlar," *Kebikeç Tarım Tarihi Dosyası* 23 (2007): 85-95.

[116] Regarding the physical form of Galata and Pera in this period, we are told: "… From the walled city of Galata, an artery led to the north, to Pera (literally meaning 'beyond'). This artery, known as the Grande Rue de Pera, was flanked on two sides by buildings, but its hinterland remained still quite pastoral..." Zeynep Çelik 1984, 44.

[117] "Dersaadet Belediye Kanunu," 1877, Dustur, IV, 530. In Zeynep Çelik 1984, 91.

rules addressed construction methods and materials, infrastructural rules (plumbing, centralized gas lighting, road repairs, etc.), sanitary services to maintain public health and wealth, and fire prevention. For example, the streets of Pera were prestigious at that time, and streets in İstanbul were grouped by their "importance" and "betterment," accordingly cleaned at different frequencies. Pera and the area of the Sixth District,[118] or the İstanbul peninsula, were also the first places where gas lighting was developed. The first gas house (*gazhane*) for the service of Dolmabahçe Palace was established to serve the Pera district after 1856. The first usage of electricity in İstanbul was facilitated with the establishing of a power plant in Silahtarağa along the northern part of the Golden Horn in 1913 (see Chapter 4.2.2). At first, electricity could be used only for transportation in tramways, and some private initiatives using electricity were established. The Tarabya Summer Palace Hotel, established in 1894, was one of those private initiatives. After this period, the privileged parts for electricity usage were both sides of the Golden Horn's waterfront and the villages of the Bosporus (Wolfgang 1992, 53-120; Köksal 2005, 27).

In summer times in this period, the northern winds were cooling the waterfronts of the Bosporus. The difference in temperatures between "İstanbul" (old İstanbul, or today's historical peninsula) and the waterfronts of the Bosporus caused the summer habitation preferences. The conditions of climatic change and the freezing period of the Black Sea Region were explained in detail by Tchihatchef (2000, 167-211) in his book. The waterfronts of the Bosporus, with its healthy environment and fresh air, served as an essential location for Europeans and ambassadors' families. The Bosporus protected them from plague, which spread widely in the city mainly in hot summer periods in the 17th century (İrez and Aksu

[118] The Sixth District (*6. Daire*) in İstanbul was set up as an administrative unit for an area including Pera in 1857 and was ended with the Municipal Law in 1870. The Sixth District was mentioned as one of the liveliest periods of city-building in İstanbul's history (Zeynep Çelik 1984, 104). However, Çelik (ibid.) notes a shortcoming of the Sixth District regarding the issue of public health: "A major shortcoming of the Sixth District was its continuation of the old practice of dumping the garbage into the sea; in this case, into the Golden Horn. The Golden Horn does not have currents, thus the growing amount of garbage created a pollution problem and a public health hazard."

1992, 19-24). Similar information is given in voyagers' diaries. Many *yalı*s (waterfront residences) and summer palaces, used by the growing administrative body and wealthy inhabitants, were seen along the Bosporus from the 18th to the 20th century. Notably, the 19th century had a unique role in structuring the urban landscape through the waterfronts of İstanbul. The wealthy inhabitants of Fener and Balat moved towards the waterfronts of the Bosporus, such as Ortaköy, Arnavutköy, Tarabya, and Kuruçeşme, in the 19th century (Narlı 2006, 119; Stoquart and Çağlar 1998, 25). For instance, in 1848, the first stone construction palace to be erected was the Beykoz Summer Palace. It was in a new style in terms of its structure, façade, landscaping, and position (the palace was not located near the water, but rather above the terraced gardens), and was built for Kavalalı Mehmet Ali Paşa. Most of the Ottoman embassies and people of the palace had their own summer palaces or *yalı*s along the Bosporus, like the British Summer Embassy in Tarabya (Figure 2.5). Moreover, ambassadors' and bureaucrats' *yalı*s on the Bosporus received special permission for recreational privileges at night throughout the Bosporus.[119]

In the same period, the coastal land reclamation practices for housing along the Bosporus were of great importance. Dolmabahçe, the land for which was reclaimed from the Bosporus for recreational activities, was first ordered by Ahmet I in the late 16th century. Tall trees and lush vegetation encircled it. It had an impressive waterfront landscape for the aristocracy and bourgeoisie and provided official grounds for a traditional Turkish game (cirit) in the 17th century (Deleon 1999, 30-31). Cerasi (1985, 37) also mentioned in his study that the Italian traveler Pietro Della Valle took notes about the gardens and kiosks on the waterfronts of the Bosporus as open-air public places, and the land for Dolmabahçe was filled to make a huge garden as a place for games.[120] Before it was reclaimed from the sea via

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[119] 1877, Ottoman Archive - BOA (*Başbakanlık Osmanlı Arşivi*) Hariciye, HR. SYS. 1233, 19, M-31-05-1877.

[120] Maurice M, Cerasi, "Open Space, Water and Trees in Ottoman Urban Culture in the XVIIIth - XIXth Centuries," in *Environmental Design Water and Architecture*. Journal of the Islamic Environmental Design Research Centre 2, ed. by Attilo Petruccioli (Carucci Editions, Rome, 1985), 37.

twenty thousand barges of stones on the order of Genç Osman (1604-1622) and turned into a garden, the area had been home to a harbor surrounded by cypress trees and a small vineyard (Evyapan 1972, 24). Two centuries later, the Dolmabahçe Palace was constructed there, and in 1854, Sultan Abdülmecid moved in. It thus became one of the official residences of the Ottoman dynasty after Topkapı, Çırağan, Beşiktaş, and Beylerbeyi waterfront palaces. Esin Atıl offers a brief but detailed explanation about the palace, located in the area of gardens originally filled in from the sea (2002, 639):[121]

> The palace, called the Dolmabahçe (1856), or the Filled-gardens as the shore had been filled in to create adequate land for grandiose edifice and its gardens, is conceived as a single cohesive structure… Gardens engulf it on three sides while the fourth rises above the water, its marble façade with engaged columns, garlands, and moldings changing the appearance of the Ottoman capital. The Dolmabahçe Palace, a massive unit surrounded by formal gardens, is totally different from the Topkapı whose fortified walls enclose a series of courtyards and intimate pavilions.

Clerks and merchants could build their homes near the water, too. Young clerks' mansions around the palaces of the pashas could be seen along the Bosporus in the 19th century in the socio-economic climate that followed the Crimean War. As another example, the region that had been the bay area of streams called Kanlıkavak and Baltalimanı until the reign of Selim III was also filled through the years (Eldem 1976, 9; Eldem 1979, XI). Under the reign of Abdülmecid, the Palace of Baltalimanı was built and produced as space on this location by Damat Ferid Paşa, an essential figure for the Tanzimat reforms. This palace building is now home to a public hospital (*Baltalimanı Kemik Hastalıkları Eğitim ve Araştıma Hastanesi*) as of 2020. The production of nature as space—from a bay area to a waterfront palace—and the transformation of usage—from more collective to individual—can be seen here via

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[121] Esin Atıl, "Art and Architecture," Chapter X, in *History of the Ottoman State, Society & Civilisation, Vol. 2,* ed. Ekmeleddin İhsanoğlu (Research Center for Islamic History, Art, and Culture, 2002), 639.

the increasing examples of *yalı*s and summer palaces in the late Ottoman period located along the waterfront of the Bosporus.

All of these examples, available in the archives, show that vivid alterations to the waterfronts of the Bosporus were realized and exercised by the newly emerging capitalist class that was coming into existence, and primarily by foreign companies and bureaucrats after Tanzimat, through the metabolic flows of land via coastal land reclamations. Furthermore, these developments had an intricate relationship with the new locations for members of the Ottoman dynasty and the palace environment. Dolmabahçe Palace accelerated the transformation of the urban fabric of İstanbul and the Bosporus unevenly to meet the needs (tap water, healthy air, gas lighting, transportation, etc.) of the court. As explored in the next subsection, the extensive attempts to regularize the quays, the first grand-scale land reclamation proposal, and the Port of İstanbul were also of great significance in this period.

Figure 2.5 The British Summer Embassy in Tarabya before it was destroyed by fire, 19th Century. *Nurhan Atasoy (2007). Photographs From The Yıldız Palace Albums, Souvenir of İstanbul. Akkök Publications.*

2.2.2 Quays and Ports

This part of the chapter shows that the new metabolic flows of land started with particular contracts and licenses parallel to the urban visions and projections after Tanzimat, adding to the relations between flows of land and private property in terms of *yalı*s and summer palaces as waterfront residences. This subsection particularly focuses on quays and ports in terms of coastal land reclamations and regularization efforts for the quays. Alongside growing environmental concerns and dissatisfaction, some parts of the agenda for waterfronts were accomplished. Notably, due to earthquakes, the structure of the Port of İstanbul collapsed many times while it was being constructed. The Tanzimat Era represents a historical turning point for environmental awareness in İstanbul. Environmental awareness affected the regulations of the municipality, especially the Sixth Municipal District Office.

The attempts and regulations of the municipality are explored here from the perspective of both the results and the reasons for the very first insights of capitalist relations based on the production of waterfronts for the sake of laissez-faire capitalism in favor of a new, regularized, healthy "image" for capitalists. The healthy image itself was more important than its production, and who used and benefited from it. Looking at the history of the regularizations of the quays and produced waterfronts, the stimulating work of Namık Erkal (2011) on the archeology of landfills in İstanbul gives insights and examples about the multi-layered character of the waterfronts of İstanbul from the Neolithic period until the 2010s in light of the excavations in the Yenikapı area.[122] After fires and earthquakes, debris was thrown

[122] We can observe that Erkal (2011) makes a "distinction" about coastal landfills with his study, which applies the dichotomous language of the widespread duality of "natural" and "cultural" that sees nature as being the opposite of human or culture. This phenomenon was explained from a different perspective in detail in Chapter 1, but for a short reminder, it can be added here that this tendency resembles the similar treatment of nature (ideology of nature) at the hands of the capitalist mode of production. Namık Erkal, "Dolgu Zeminin Arkeolojisi: İstanbul Kıyısının Katmanlılığı Üzerine," *Arredamento Mimarlık*, no. 09 (2011): 81-86. This dissertation further offers an urban political ecology context in which this distinction is being problematized for transcending the ongoing duality. Moreover, the way of seeing the materiality of any fill area or regularization attempt in the city may illustrate that the materiality of life is being collectively produced by human beings.

into the seashore and then used for embankments and landfills. The waterfronts of Yenikapı had been a preeminent location for the last three centuries and even the last ten thousand years. Regularization is a modern effort for disciplining and commodifying nature. Moreover, regularization shows itself in the preparation of maps and special contracts for coastal land reclamations under the control of municipal order. In these environments, concerning waterfronts, Çelik (1986, 73) argues that "*the idea of coordinating operations to regularize the waterfront*" in a physical manner and not individually, but as a whole, was first proposed in 1879. Before 1879, the embankments and quays had only been fixed under certain conditions and with urgency regarding the harbor. Ferries anchored in the sea, and passengers and goods were carried to land by small boats and barges via porterage. For instance, after the building of Dolmabahçe Palace, embankments such as the Beşiktaş quay and Dolmabahçe quay were reconstructed in 1857 and 1864, respectively (Çelik 1986, 74). In the 19th century, the narrow, old wooden quays (Figure 2.6) could not meet the needs of population booms, public health, and diplomatic and commercial requirements (i.e., the needs and wants of foreign shipping companies via the embassies). Other desires included accelerating the transportation of commercial goods, regional time management, and daily regular commuter services for the residents of İstanbul at the end of the 19th century.

In the Ottoman Government Archives, one can find explanations about law cases on coastal land reclamation. According to the foreign affairs (*Hariciye*) records of 1908, any land reclamation without a license along the Golden Horn, Dersaadet, or Bosporus would be punished according to the relevant laws.[123] According to another record from 1920, near Serviburnu and Sütlüce, a foreign company, American Standard Oil,[124] received a permission paper for using the landfill as a coal

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[123] 1908, Ottoman Archive - BOA (*Başbakanlık Osmanlı Arşivi*) Dahiliye, DH. MKT. 2694, 39, H-4-12-1326.

[124] The American Standard Oil Company, which settled along the waterfronts, is a very early example of what will be explored in detail as characteristic of metabolic flows between 1950 and 1980 through the waterfronts of İstanbul. See Chapter 4.2.1, "The Metabolic Flows of Oil through Waterfronts of İstanbul."

yard area[125] via an application for land reclamation.[126] These privileges and usages had their roots in the 1890 Contract and according to Article 26. Coastal land reclamation of the Port of İstanbul is considered in this study as the most significant mobility of land actualized on the waterfronts of that time. The reclaimed area would be given free of charge to be used as private property as docks, storehouses, and office buildings by M. Marius Michel, who took the privilege of construction and again operated on behalf of a private company (Bilge 1949, 2). In this period, many attempts can be seen by both the municipality and foreign entrepreneurs like the engineer Eugene Henri Gavand, whose company in İstanbul projected, designed, and implemented the tram line with the Tunnel Project (Figure 2.7). Furthermore, Gavand was also the first to propose another grand-scale land reclamation project on the Sea of Marmara (Figure 2.8) related to an extensive plan in 1874 (Çelik 1986, 74; Erinç 1968, 50). However, it was found to be utopic, and the project was canceled. Çelik (1986, 74) describes the coastal land reclamation proposal of this French engineer in relation to a more grandiose plan for the transportation of İstanbul:

> … Eugene Henri Gavand, the French engineer…proposed the widening of the embankments along the Sea of Marmara… Furthermore, he suggested building an embankment 2,760 meters long from Yedikule in the west to the Topkapı Palace Gardens in the east. His ambitious, but unrealized scheme was part of an even more grandiose plan, which included extensive subway system for İstanbul and Galata.

Aron Angel, the first urban planner in Turkey, who worked with Henri Prost on İstanbul's development, also wrote about the proposal for the reclamation of coastal land at Yenikapı (2013, 72):

> …Eugene Gavand recommended a construction of a 2,760-meters-long port between Yedikule and Topkapı of an area of

[125] A coal yard area at the waterfront is another early example of what is argued in detail as a characteristic of metabolic flows between 1950 and 1980 through the waterfronts of İstanbul. See Chapter 4.2.2, "The Metabolic Flows of Coal through Waterfronts of İstanbul."
[126] 1920, Ottoman Archive - BOA (*Başbakanlık Osmanlı Arşivi*) Dahiliye, DH. UMVM. 102, 5, H-25-01-1339.

> 2,200,000 square meters of land reclaimed from the sea. This suggestion, however, was found to be utopic and turned down. In 1879, Frenchman Marius Michel proposed the construction along the coastline. The government had him a company and a commission it for the construction of Sirkeci-Unkapanı and Tophane-Galata waterfronts.[127]

The first and most crucial improvement for the harbor was the contract with Marius Michel in 1879, but for various reasons, it could not be materialized (Bilge 1949, 1-2). It is not difficult to guess that if the project had been accepted, new filling materials would have been found, and the new metabolic flow of land would have started earlier. However, this vision had to wait for a more or less similar intervention. This intervention was the construction of the Port of İstanbul between Sirkeci and Sarayburnu and Tophane and Galata waterfronts in 1890.

Now we will focus in detail on what was possibly the most critical landfill or coastal land reclamation application of the 19th century for understanding the metabolic flows of land considering the urban metabolism of İstanbul: the Port of İstanbul in the 1890s.

Opening the Galata Bridge (*Cisr-i Cedid*) (Figure 2.9), which had been fixed and transformed over many years (1845, 1863, 1875, 1912), had been a significant issue in the restructuring process of the Port of İstanbul at the end of the 19th century and beginning of the 20th century because the inner harbor and its coasts (north and south) were a problematic place for ships regarding the constraints of the bridge (passage time) after its opening. Due to these conditions, production and trade landscapes like fish markets, timber markets, fruit markets, oil, toolmaking, machinery, metal works, and tobacco were at the north and south of the Haliç waterfronts. Eleven years after the 1879 proposal (Figure 2.10), a company named İstanbul Rıhtım, Dok ve Antrepo Şirketi was established in 1890. In the same year, a contract for construction of the harbor was again approved with Marius Michel,

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[127] Oktan Erdikmen, "Türkiye'nin Ilk Sehir Plancisi Aron Angel - Istanbul'un Imar ve Sehircilik Politikalari / Turkey's First Town Planner Aron Angel - Istanbul's Development and Urban Policies." Edited by Oktan Erdikmen, (Boyut Yayın Grubu, 2013), 72.

and it was carried out this time. Michel received the privilege for construction. The private company would operate it again for 85 years (Bilge 1949, 2), and the land gained from the sea by coastal land reclamation would be given free of charge (1890 Contract: Article 26) and could be used as private property (for docks, storehouses, and office building) by the private company.[128] The Report of Boğaziçi University in 1976 noted that three locations were planned for coastal land reclamation areas for construction of the Port at the beginning.[129] The mentioned areas were Galata (Figure 2.11), Sarayburnu-Sirkeci, and the Golden Horn (today between the Galata and Atatürk bridges). Nevertheless, among these locations, only two of them were actualized. Between Sarayburnu and Sirkeci, and from Galata to Tophane, waterfronts emerged as the locations for an intervention of coastal land reclamation by the 1890 Contract. Zihni Bilge (1949, 10-13) supports the above arguments, noting that the 1890 Contract excluded the waterfronts between Unkapanı and the Galata Bridge on both sides of the Golden Horn due to complex property relations and the problematic course of ground for a landfill.

Furthermore, cholera, steamship journeys, and collapse decelerated the construction of the waterfront of Galata, which was being built between 1892 and 1895 (Bilge 1949). The big earthquake of İstanbul (1894) had particularly critical effects during the construction period, resulting in the loss of many lives at the construction site. Moreover, a large part of the site collapsed (Bilge 1949, 8). On the Galata side, 758 meters of the Port were completed in 1895. According to the Report of Boğaziçi University in 1976, the reclaimed land at the Galata Port was 500 × 285 meters long in 1895.[130] The Port of İstanbul side (1894-1900) was said to be 370

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[128] For conditions of the privatization of land and privileges of the company, see Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu Cilt 1, Bölüm 1, T.C. Bayındırlık ve İskan Bakanlığı Demiryollar, Limanlar ve Hava Meydanları İnşaatı Genel Müdürlüğü, Proje Direktörü Semih Tezcan, Nisan 1976, Bebek, İstanbul, 1976, 1-4.
[129] Ibid., 1-3.
[130] Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu Cilt 1, Bölüm 1, T.C. Bayındırlık ve İskan Bakanlığı Demiryollar, Limanlar ve Hava Meydanları İnşaatı Genel Müdürlüğü, Proje Direktörü Semih Tezcan, Nisan 1976, Bebek, İstanbul, 1976, 1-3.

meters long in the same report.[131] Zihni Bilge stated that the Sarayburnu-Sirkeci line had also collapsed many times. In 1896, all construction materials were lost in the water and structures were reconstructed again and again (Bilge 1949, 9). After developing the economic relations, storehouses, warehouses, and hangars were constructed along the waterfronts of Galata, Kuruçeşme, Camialtı, and Eminönü with a total area of 44,349 square meters in 1928.[132]

The new metabolic flows of land in the city began with addressing the rockfill for the coastal land reclamation of the Port of İstanbul. Bilge (1949, 10, 32) states that the waterfronts of the Sea of Marmara, the Bosporus and Haliç, the Princes Islands, the Black Sea, and Kavaklar were used for new stone quarries. Ali Fuat Örenç (2016, 218) further mentions that the hills of Bahariye, Kemiklidere (Pendik), Silahtarağa, Kınalı Island, and Burgaz Island were opened for stone quarries (Figure 2.12). On the one hand, concerns and dissatisfaction about the conditions of the socio-natural environment were rising,[133] while, on the other hand, the issue of rights of excavation in terms of economic conflict was significant (Bilge 1949, 32-33). The Harbor Master of İstanbul objected to the Port of İstanbul on the grounds that the natural structure of İstanbul would deteriorate.[134]

As another example, Jak Deleon (1999) notes that in the mid-19th century, the wooden landing stage at the waterfronts of Beşiktaş was the most extensive quay in İstanbul, and it was transformed into the first stone jetty of the Ottoman capital by the Şirket-i Hayriye Steamship Company during World War I (Deleon 1999, 36). The military conditions[135] affected the formation and usage of waterfronts, too. For example, the abolishment of the Janissaries (Mahmut II - 1826) and reforms like the *Nizam-ı Cedid* (Selim III), particularly for shipyards, influenced the waterfronts. At

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[131] Ibid., 1.3.
[132] Ibid.,1.4.
[133] Ottoman Government Archive, BOA, BEO, 1133- 77415; Ottoman Government Archive, BEO, 1131- 77279.
[134] Ottoman Government Archive, *Rıhtımların deniz dolgusu ile inşasına doğal yapının bozulacağı gerekçesiyle İstanbul Liman Reisi itiraz etmiştir*: BOA, Y. MTV, 45/87 (1308); İ. DUİT, 32/8, Lef 3.
[135] The shipyard of the Haliç (Camialtı, Haliç, and Taşkızak) was built in the 15th century along the waterfronts of the Golden Horn for military purposes.

the beginning of the 20th century, only a few ships and their repair works were present there, and all of the shipyard complexes were not being fully used (Dümer 1972, 376; Köksal 2005,75-79). For instance, on the European shore of the Bosporus near the foundry at Tophane, a mosque called Nusretiye Camii (1826) was built by order of Mahmut II for celebrating the triumph over the Janissaries (Freely 1998, 266). Before Tanzimat, the administrational organization of the urban landscape, such as "municipal" organization in modern terms in İstanbul, depended on Islamic policies implemented by the control of *kadı*s by imperial order. Furthermore, waterfronts were mainly under the control of the *Bostancıbaşı.* We may understand the changes from Islamic rule to civic via many examples from this period, such as the preparing of maps as a regularization attempt for preventing random construction along the Bosporus by defining its borders, as well as cases of law that were to be drafted by the Supreme Council of Judicial Ordinances and the Military Council, not by ecclesiastic law after Tanzimat.[136]

In summary, the visions and projections for coastal land reclamations are functional for understanding the metabolic flows of land in the city through materials, labor, contracts, and socio-natural consequences and reasons on a broader scale, similar to the *yalı*s and summer palaces presented in the previous subsection. This helps to strengthen the claim that the very first capitalist relations and urbanization practices were embedded in waterfront transformations through metabolic flows of land. They can be reviewed apart from the creation of Westernized environments by the elites or Europeans in İstanbul. They can be grasped as metabolic flows of land that materialized in efforts to produce modern urban waterfronts through socio-natural relations. Through these efforts, the land started to be controlled, excavated, transported, filled, and transformed for commodification by industrial discipline in the context of the emergence of a new urban metabolism through the modern urban waterfronts of İstanbul.

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[136] 1850, Ottoman Archive - BOA (*Başbakanlık Osmanlı Arşivi*) Sadaret A} AMD. 33, 21, H-08-01-1268.

Uneven environments were created in 19th century İstanbul by coastal land reclamation laws, projections, implementations, and struggles concerning property rights and economic activity. On the other hand, if waterfront areas were not home to any economic activity, such as the waterfronts of Ayvansaray, which had a vegetable garden adjacent to the sea and acted as an ecologically protected buffer zone, they could maintain their former shape and usage (Çelik 1984, 137). Even though the construction of a port would seem to benefit the public good, it is actually questionable whether it was a matter of public good or a path to private property for private companies. Furthermore, in this context, awareness of the socio-natural environment was increased. In the future (1929, 1950s, 2000s), the port and its re-production, function, and usage would be subjects of dissatisfaction for various reasons, continuing to the present day (Güvenç 2016, 2017).[137] The next subsection will move on from the quays and the Port of İstanbul to the "sea baths" along the waterfronts for a better understanding of the socio-natural and economic relations in İstanbul by seeking the metabolic flows of land in the case of property rights.

[137] See also: http://www.arkitera.com/haber/28471/ortayli-karakoy-yolcu-salonu-nun-yikimina-kopurdu--ne-olursa-olsun-korunmaliydi; http://www.yapi.com.tr/haberler/-mimarlar-odasi-galaport-icin-suc-duyurusunda-bulundu_156650.html.

Figure 2.6 Old wooden quays on the waterfronts of Rumeli Hisarı 19th Century. *Nurhan Atasoy (2007). Photographs From The Yıldız Palace Albums, Souvenir of İstanbul. Akkök Publications.*

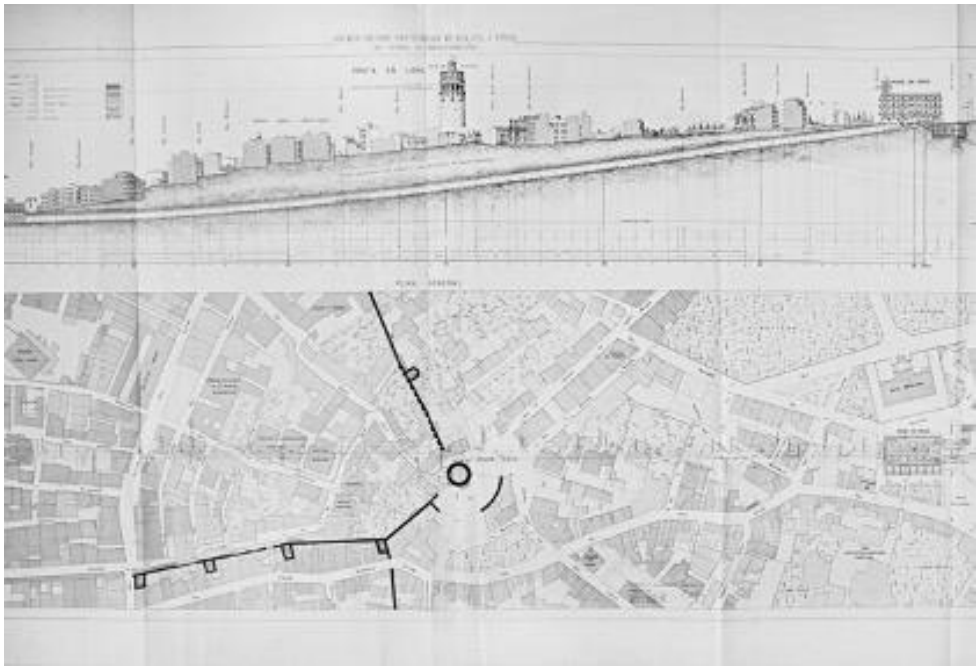

Figure 2.7 Eugene Henri Gavand's Tunnel Project (1872-1875).

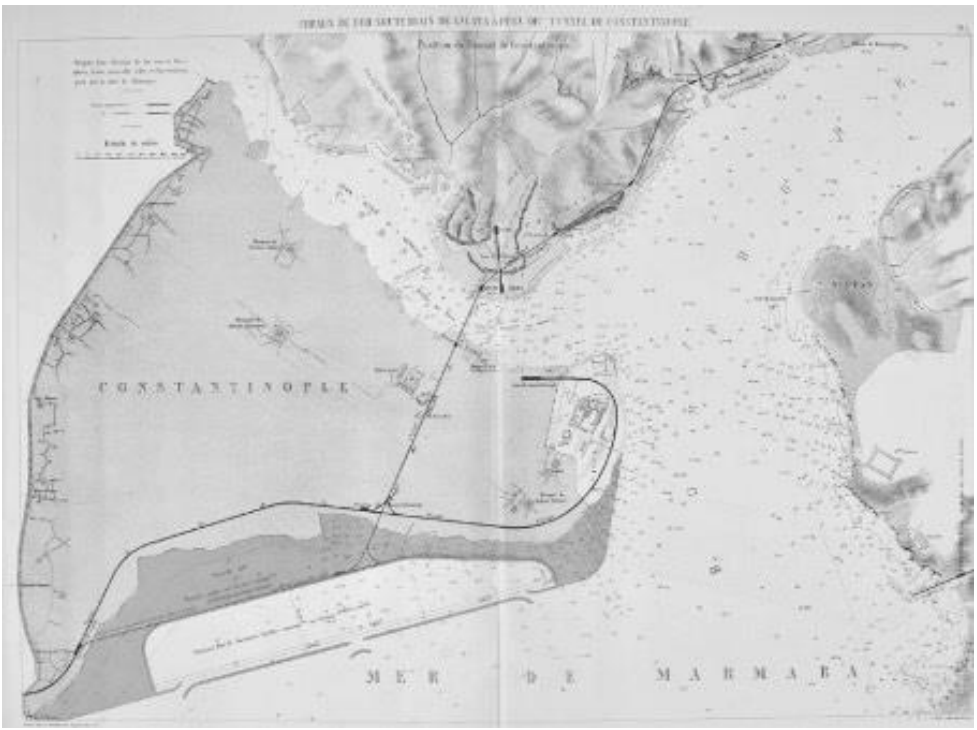

Figure 2.8 Eugene Henri Gavand's Proposed Grand Scale Coastal Land Reclamation Project (1874) Between Yedikule and Topkapı. Proposal for the reclaimed area.


Figure 2.9 "Third Galata Bridge, 1878, which had iron construction and wooden pavements hard to walk on for strangers." *Hagop Mintzuri. İstanbul Anıları 1897- 1940, Tarih Vakfı Yurt Yayınları, 152. 3. Baskı, 1998.*

Figure 2.10 Frenchman Marius Michel's Proposal Area (1879) for the Construction along the Coastline. Between two Bridges, Tophane-Galata and Sirkeci-Sarayburnu. *Prepared by the author using the «1853 City Map» of İstanbul from http://www.istanbulurbandatabase.com/*

Figure 2.11 Waterfronts of Galata to Tophane at the end of the 19th Century. *Abdullay Freres in Soman Öndeş. Vapur Donatanları ve Acentaları Tarihi, İMEAK Deniz Ticaret Odası Yayınları, 2013.*

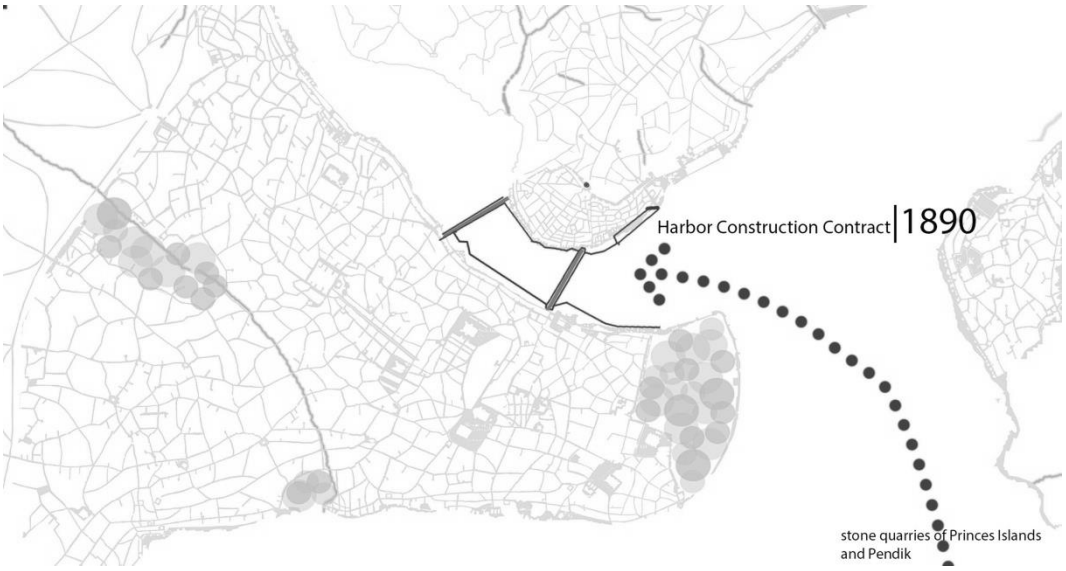

Figure 2.12 New stone quarries of Princes' Islands and Pendik used as new Sources of the Flows of land. Through construction of the Port of İstanbul by the 1890 contract.

2.2.3 Sea Baths

Based on the historical records of Ottoman history, people began to connect their bodies directly with the sea for the first time along the waterfronts of İstanbul in the 17th century (Evren 2000, 13-14). Evliya Çelebi (1611-1682) wrote that special sea baths[138] for captains were present along the waterfronts of İstanbul (Çelebi 1996, 137), but they began to appear more widely at the beginning of the 18th century. Especially in the late 19th century, European physicians advised sea baths and sun as therapeutic for the health (Abdülhamit II). Throughout their history, the sea baths brought revenue to the naval ministry (*Bahriye Nezareti*) and the municipality (*Şehremaneti*), respectively, and public sea baths were subject to taxation in 1907 by the *Temettü Vergisi Nizamnamesi* (Evren 2000, 52). In 1910, an anonymous

[138] "Sea Baths (see Hamam). (The idea of the so-called 'Sea Baths' was also borrowed from the French 'Bains de Mer.') …These were wooden constructions in the water, relatively close to the shore, attached to a wooden pier and built around a rectangle framing the sea like a pool, preventing bathers from being seen from outside. People would undress in the cabins in the barracks and relax on platforms around the pool of the sea." In *Becoming İstanbul*, ed. Pelin Derviş, Bülent Tanju, Uğur Tanyeli, SALT/Garanti Kültür AŞ (İstanbul), 2015. Source: http://saltonline.org/media/files/becomingistanbul_scrd-3.pdf.

private company, Yeşilköy Deniz Banyoları Emlak Şirketi (*Societe Immobiliere des Bains de Mer de San Stefano - Societe Anonyme Susie*), was established in Geneva, Switzerland, for the real estate along the waterfronts of Yeşilköy, İstanbul (Evren 2000, 94). The sea baths and the fancy environment of the first *plaj* could raise the land prices and launch a flow of land depending on the location. Related architectural programs included coffee-houses, restrooms, bridges, promenades, and *gazino*s (leisure places).

Abdülhamit II (1842-1918) was the first Ottoman Sultan to take sea baths for curative effects under the supervision of a European physician in the Summer Palace of Beylerbeyi along the Bosporus. Due to the existence of sea baths throughout the waterfronts of İstanbul before the 20th century, the sea ecosystem was healthy and had rich biodiversity, and dangerous environmental and bacteriological problems were not generally seen throughout the Bosporus. Even just standing in the sea regularly had curative and therapeutic value in İstanbul for a lucky minority, while sea bathing was a contentious issue for the majority, and its usage displayed irregularity and temporality depending on the environmental conditions of the area, particularly throughout the Golden Horn and the Sea of Marmara.

This subsection claims that the sea baths and their accompanying architectural programs appeared along the waterfronts of İstanbul in coexistence with a particular socio-natural and economic agenda considering the flows of land in the case of property rights. Simultaneously, they were the locations where the *plaj*s of the young republic emerged (for details, see Chapter 3.2.4). Public sea baths were temporal structures due to climatic and socio-natural conditions like sea baths along the waterfronts of Salacak (Figure 2.13). In contrast, the private sea baths of *yalı*s were permanent structures related to the healthy conditions they already had. The economic agenda relied on real estate market rules such as high land prices on waterfronts and the unequal development of sea baths, as well as improvements in medical science and foreign relations. This dissertation asserts that sea baths, their locations, and their usages could not offer equal socio-natural environments and they influenced the metabolic flows of land in the case of property relations. Fresh air and

sea baths were considered beneficial for health, but İstanbulites achieved these activities unevenly. All of the sea baths might have had the same spatial agenda, but uneven conditions still existed. These existing uneven conditions of sea bathing are significant as both a cause and a result of the unhealthiness of society for working people. On the other hand, they were considered necessary for the health of the people of the palace.

The sea baths were located along the Bosporus, Golden Horn, and Sea of Marmara, such as at Galata Bridge, Büyükdere, Bakırköy, Tarabya, Yeşilköy, Kumkapı, Salıpazarı, Çatladıkapı, Yenikapı, Samatya, Kadıköy, Heybeliada, Paşabahçe, Beykoz, Bebek, Ortaköy, Beşiktaş, Kabataş, Bostancı, Ayasofya, Kuleli, İstinye, Salacak, Tersane-I Amire, and Moda, at the end of the 19th century and beginning of the 20th century (Figure 2.14). The disciplining of public life through the waterfronts implies a vision of regulating who would use these places and locational preferences from private to public ones. Moreover, decisions were made regarding which practices were strictly forbidden through these emergent landscapes of waterfronts. For instance, while the waterfronts of Salıpazarı, Kumkapı, and the Galata Bridge (Figure 2.15) were used by the working class and showed temporal settlement, the waterfronts of Florya and Moda were used by the bourgeoisie and provided permanent settlements for the sea baths. The sea baths of İstanbul were also the subject of painting (Figure 2.16) and photography as a part of the daily life of İstanbulites (Figure 2.17). In the Ottoman Archives, an internal record shows that a *gazino* as a recreational place for leisure time was attached to the sea baths in Kumkapı, which was a place for the working class, in 1911.[139] Evren states that in the same period, along the waterfronts of Florya, the first place used as a swimming beach in İstanbul, the *gazino* of the beach was expensive and train tickets were high-priced (Figure 2.18). Furthermore, Evren (2000, 60) argues that the 1894 earthquake

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[139] 1911, from the Ottoman Archive (*Başbakanlık Osmanlı Arşivi*) Dahiliye (DH. EUM.THR. 67 45): "*Kumkapı Deniz Hamamı Gazinosu'nda Karagöz oynatan Dersaadet Bidayet Mahkemesi birinci ceza dairesi katiblerinden İzzet Efendi'nin dikkatinin çekilerek bu işden men edilmesi.*"

and presence of cholera strongly affected the sea baths, as well. For example, this period witnessed the worst days of the famous sea baths of Salıpazarı.

The locations of the sea baths of Kumkapı and Samatya were at the same time particular locations for waste disposal and *tanzifat* quays for İstanbul in the 19th century (for a detailed explanation, see Chapter 2.4.1). They served as public sea baths, and that may have caused the exceptional conditions seen in the summertime, as described by Sermet Muhtar Alus (1997): [140]

> … all the garbage, watermelon peels, dog and cat carcasses that flowed from Selimpaşa Ramp piled up in front of the sea baths of Kumkapı and Samatya; seagulls and crows crowded from the sky as well as geese and ducks from all around.

At this point, we can speculate that the conditions described above would not seem to promise equally socio-naturally healthy environments to İstanbulites. Permitting permanent, well-designed, and private sea baths along the waterfronts in front of the *yalı*s and summer palaces meant property rights in favor of individuals, not for the public interest or an ecologically healthy environment. Meanwhile, the free sea baths were temporal, uncomfortable, and demountable concerning property rights and uneven socio-natural conditions. This evidence supports the argument of this section, which claims a metabolic relation with private property and sea baths embedded in socio-naturally uneven conditions. The free sea baths were operated by private enterprises. For example, the Salıpazarı sea bath on the waterfronts of the Bosporus belonged to Hüseyin Avni Efendi, and Hacı Emin Efendi as the owner of the Beşiktaş public bath in the 1880s can also be noted.[141] Furthermore, entrance fees were a must for public sea baths.[142] Women also began to swim along the waterfronts of İstanbul, particularly in the sea baths, with the advice and permission of a

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[140] Sermet Muhtar Alus, *Masal Olanlar*, İletişim Yayınları, 1997, Translated into English by the author.
[141] Burçak Evren, *İstanbul'un Hamamları ve Plajları* (Seçkin İstanbul Kitaplığı, İnkılap Kitabevi, 2000), 58.
[142] We know from stories in an anthology of humor compiled by Osman Cemal Kaygılı that conflicts could be seen about the entrance fees: Ibid., 30-31, 51-52.

physician and they only got to use the baths for limited hours each day in the late 19th century.[143]

In short, this subsection emphasizes the regularization rules of the establishment and usage of the sea baths in terms of uneven socio-natural relations. These organizational rules were loaded with traces of privatization, unevenness, and commercialization of the waterfronts of İstanbul in the future in the case of property rights. Sea baths were widely promoted by and with the metabolic flows of land in the 19th and 20th centuries along the waterfronts in the case of property rights by their construction, organization, shape, usage, and benefits regarding uneven socio-natural results. Moreover, the people of İstanbul could use waterfronts only after establishment of "controlled" and "regularized" precise rules for a particular socio-natural and economic agenda. These relations can be explained as having ecologically healthy waters and environments that made sea bathing both possible and uneven for the residents of the city. Flourishing scientific knowledge stated the curative effects of the sea, but conservative norms and foreign relations influenced the urban design parameters of the sea baths, like in other parts of the world. The construction of sea baths along the waterfronts of İstanbul in this period depended on human labor. They did not need complicated techniques or technology in terms of production; rather, the production of sea baths showed a particular metabolism that was labor-intensive. In contrast, the conditions they created throughout the waterfronts by increasing land prices in terms of property relations were definitive of the capital-intensive urban metabolism. Some of the sea baths are still waiting in silent neglect along the Bosporus (Büyükdere). Next, however, this chapter will focus on the great fires of İstanbul concerning flows of land in light of property rights. The great fires of İstanbul were a crucial socio-natural catalyst that needed to be taken into consideration in the attempts to re-construct the urban landscape and were an effective means of the emerging new urban metabolism of İstanbul.

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[143] Ibid., 14.

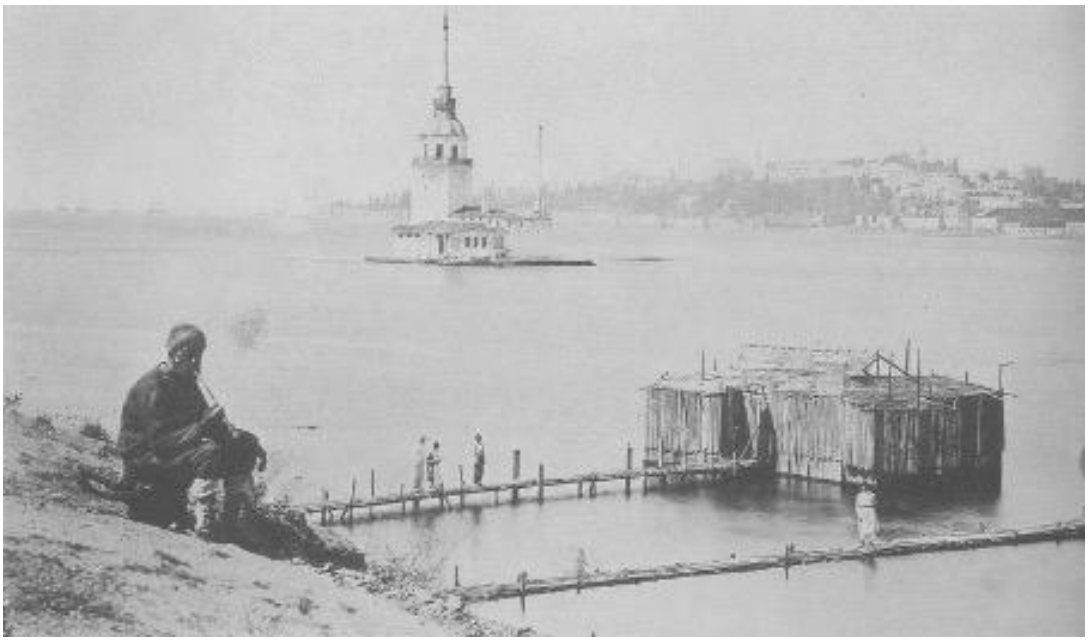

Figure 2.13 Salacak Public Sea Baths, 1875, by Kargopulo. *Burçak Evren, 16, 2000.*

Figure 2.14 Image from İstanbul's Seaside Leisure Exhibition.
Pera Museum, İstanbul, August 2018, by the author.

Figure 2.15 Sea Baths at the Galata Bridge, 1870's.
Suna ve İnan Kıraç Vakfı Fotoğraf Koleksiyonu.

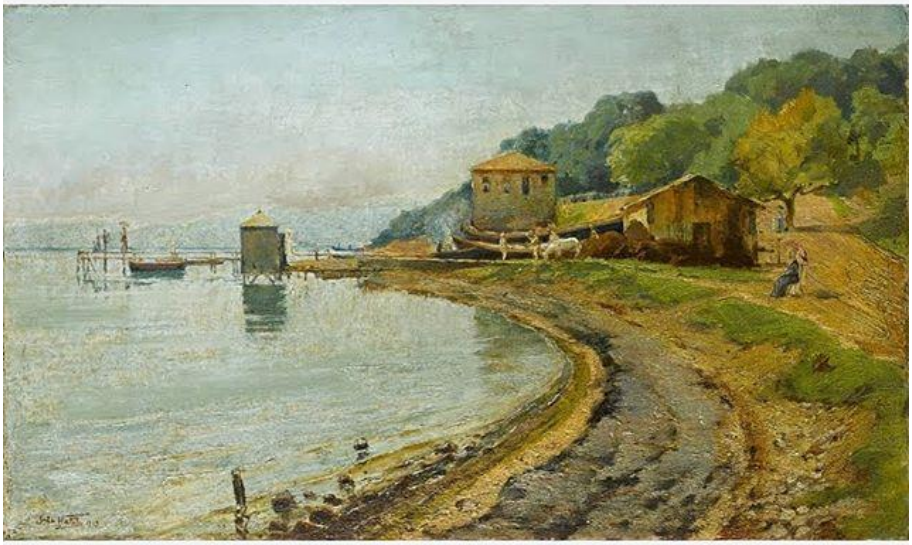

Figure 2.16 Bostancı Sea Bath, 1913, Painted by Halil Paşa. *Sakıp Sabancı Museum*

Figure 2.17 Private sea baths of Büyükdere. *Sakıp Sabancı Museum.*

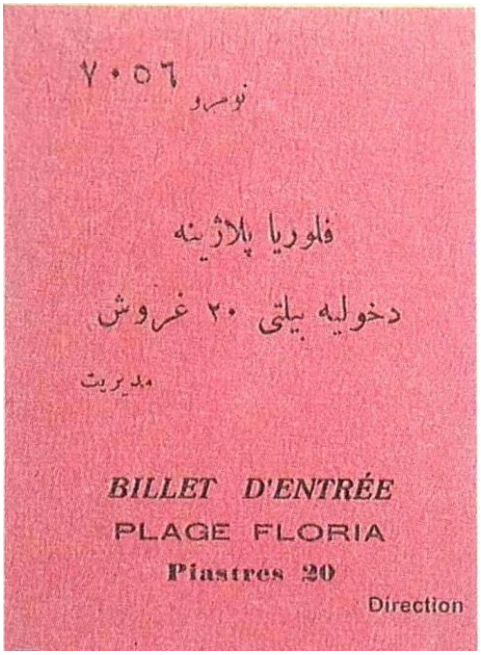

Figure 2.18 A Ticket for Florya Beach. *Burçak Evren, 100, 2000*.

2.2.4 Great Fires

İstanbul has faced many great fires throughout its history. In 1782 (Figure 2.19), for example, in Cibali, a great fire destroyed nearly 20,000 houses and caused the loss of many lives (Sakaoğlu 1993).[144] This subsection argues that the great fires of İstanbul produced and defined a particular metabolism, which tells us that in each case their extinguishing still depended on the massive human labor at the turn of the industrial age worldwide, and they had a role in the start of new flows of land as well as commodity flows, intervening in the urban agenda and fostering economic interests, too. In some cases, a fire also functioned as a disinfection process in terms of diseases like cholera (see Chapter 2.3.2 for details) like in the Hocapaşa case (Figure 2.20). We can follow the traces and reasons for these claims in this section by examining the great fires of İstanbul.

Regarding the better parts of the city and the poorer neighborhoods, the great fires of İstanbul both resulted from and caused unevenness. We can observe that the great fires of İstanbul caused metabolic flows of land and commodities concerning property relations and started to transform the socio-natures of İstanbul. For instance, after fires and earthquakes, debris was thrown into the waterfronts and then used as embankments or landfills for the production of space, and the water infrastructure was accordingly redesigned. The houses that were lost and the waterways and fountains that were destroyed, as well as property relations and street networks, were all aspects of transformation via the new metabolic flows of land. For instance, according to Kuban (2010, 422), after the great fires, if we consider the number of new fountains and their locations, a tendency to move towards the Bosporus can be seen easily. First of all, after the fires and concomitant regularizations,[145] the very material structure of the urban fabric was radically changed. A total of 229 fires

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[144] Necdet Sakaoğlu, *Yangınlar Dünden Bugune İstanbul Ansiklopedisi*, Vol. VII, (Tarih Vakfı Yurt Yayınları, 1993) 427-438.
[145] According to Çelik 1984, 41-41, the concern for fire prevention was very important for "building codes and regulations."

transformed the face of the city between 1853 and 1906 (Erdikmen 2013, 70). The 1854 Aksaray Fire and 1865 Hocapaşa Fire were two crucial fires. After the Hocapaşa Fire (Fig. 2.21), the new, widened legislation called *"Turuk ve Ebniye Nizamnamesi"* was established. Changing methods of construction and the materials of any buildings, from timber to *kargir*,[146] were connected to the great fires. Concomitant new urban forms and infrastructural changes shaped the face of İstanbul, from its cul-de-sacs to the broader linear streets. Moreover, the great fires of İstanbul impacted the lives and health of İstanbulites unevenly. As vital evidence of the uneven geographies of the great fires and the importance of labor-intensive characteristics, Zeynep Çelik explored the difference and tensions between *tulumbaci*s and modernized brigades as follows (1984, 105):

> The tulumbacis continued functioning next to this westernized brigade. As Szehnyl Pasa's battalions were prominently located during the early years, their services were oriented toward the "better" parts of the city, mainly toward Pera. In contrast, the tulumbacis served the poorer neighborhoods of Istanbul.

If we take the great fires of İstanbul in this period into consideration as "natural" disasters, as still befits the mental maps of people in the 21st century, it would be misleading in terms of the relational backgrounds of these very metabolic events. Likewise, Short and Short (2008) have stated that the term "natural disaster" obscures the ecological and socio-economic relationships of not only events and outcomes but also their solutions. Concerning great fires as disasters for the inhabitants of İstanbul, the organic structure of the streets, the wooden urban fabric, winds, firefighter organizations, and accidents were not "natural" elements of disasters in that period. The interrelated mechanisms of arson, fire brigades, plunder, and insurance companies displayed significant relations. For instance, after the abolishment of the Janissaries, many young men sustained their lives by working for

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[146] Like Mustafa Resit Pasa, Von Moltke promoted *kargir* construction, which, being fire-resistant, would serve the "public good" (*menfaat-i umumiye*). See Zeynep Çelik 1984, 118; Murat Gül 2011, 44-45.

firefighter organizations of İstanbul, which meant that fires were vital for them. Furthermore, in the 19th century, "firefighter" organizations as brigades produced and implied uneven socio-natural relations throughout the waterfronts. Ordinary fire brigades and the one responsible for the palace environment and the waterfronts of the Bosporus and Golden Horn were certainly different. Waterfront landscapes defined a certain threshold for the privileged position of the fire brigades of the sea (*Bostancılar Tulumbacı Ocağı*), whose members lived and socialized in particular places as the fire department of the seas.[147] The fire brigade was established in 1720, subject to the guild of the Janissaries, and continued as such until the abolishment of the Janissaries in 1826. Groups of neighborhood firefighters were then organized randomly in İstanbul's streets two months after the abolishing of the Janissaries. While *Bostancılar Tulumbacı Ocağı* responded to the fires of Topkapı Palace and waterfront residences, the *Tulumbacı Acemioğlanları* responded to the rest of the fires.

Reşad Ekrem Koçu (1981, 30-31, 66-72) argues that both during the period of the Janissaries and afterwards, neighborhood fire brigades (Figure 2.22) stopped fires for whoever was giving them money, even if it was their job. They benefitted from shelter (*Bekar Hanları*) along the waterfronts and from a salary.[148] On the other hand, Edmondo De Amics (1938) argues that the Janissaries who worked in fire brigades started fires on purpose to gain more money. The attention to personal economic interest among the firefighters was consolidated and deepened throughout the war years. Moreover, Yıldıztaş (2010, 41) mentions that residents of İstanbul in 1919 believed that the great fires had been started on purpose during the war years, particularly the great fire of June 1919.[149] It was also argued that foreign insurance companies started fires purposefully for their own economic interests, as we can see

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[147] Koçu also mentioned that *Bostancı Tulumbacılar Ocağı* was referred to as Fire Boats (Fire Service of the Sea), and they had a particular mosque, cafes, etc. Reşad Ekrem Koçu, *İstanbul Tulumbacıları,* (Ana Yayınevi, 1981), 28-30.
[148] For detailed information, see Işıl Çokuğraş, *Bekar Odaları ve Meyhaneler-Osmanlı İstanbul'unda Marjinalite ve Mekan (1789-1839),* (İstanbul Araştırmaları Enstitüsü, 2016)
[149] BOA. DH. EUM, SSM, 37/54.

in the official records and archives. The newspaper *Journal de Constantinople* ran the Royal Insurance Company's advertisement on 6 December 1864 as the most prominent company worldwide. The advertisements in the news for The Sun Fire Office, a foreign insurance company, were also growing in number. We can see that in the late 19th century and early 20th century, the great fires of İstanbul dialectically had a metabolic relation with the capital accumulation and capitalist relations of the worldwide market.

To summarize, the economic interests of insurance companies or fire brigades can be seen at the same time as reasons for and results of the great fires. On the other hand, great fires were also used as tools for showing dissatisfaction and more or less as attempts to intervene in the urban agenda, which could be a powerful tool for Janissaries, *tulumbaci*s, and boatmen. Furthermore, the great fires of İstanbul acted as catalysts for transferring the existing urban metabolism into the future. The great fires of İstanbul produced and defined a particular metabolism, revealing that the extinguishing of a fire was still dependent on the massive human labor existing at the turn of the industrial age worldwide, and fires had a role in starting the new flows of land, as well as commodity flows, interventions in the urban agenda, and the creation of new urban landscapes like embankments, landfills, *bekar hanları*, and water infrastructure. Furthermore, fires were intertwined in an economic relationship that prompted the acceleration of new building constructions and foreign insurance companies, thus producing unequal results concerning the loss of life, property, and creation of new urban landscapes. The next subsection will move on to the transportation of İstanbul and its metabolic relations through waterfronts.

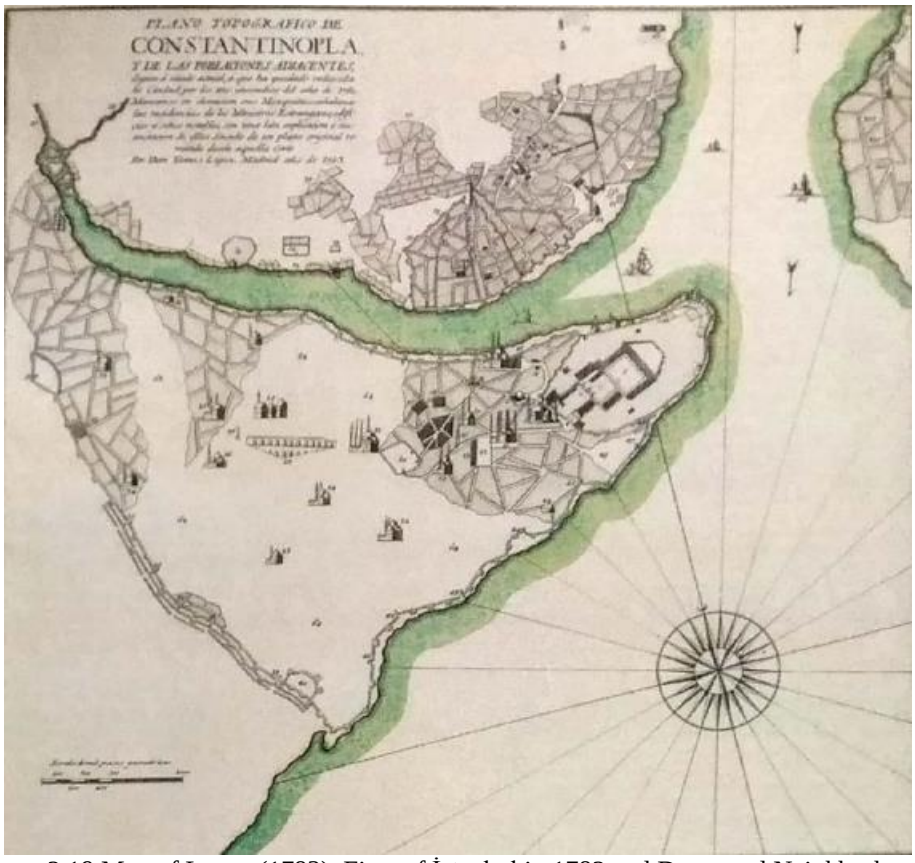

Figure 2.19 Map of Lopez (1783), Fires of İstanbul in 1782 and Destroyed Neighborhoods.
Ayşe Yetişkin Kubilay. Maps of İstanbul, 1422-1922, p.108.

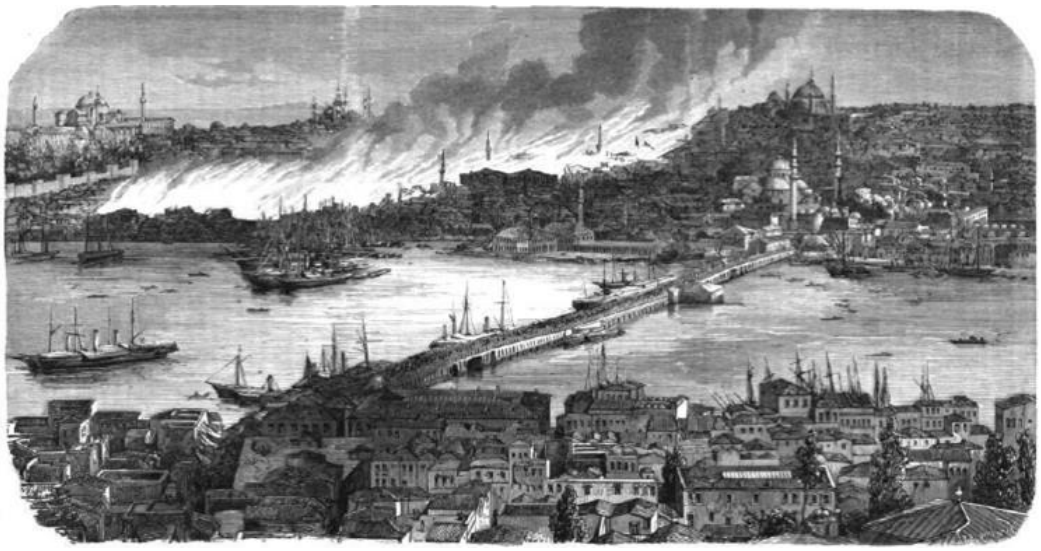

Figure 2.20 Hocapaşa Fire (1865) Engraving, L'Illustration, 28 October 1865.

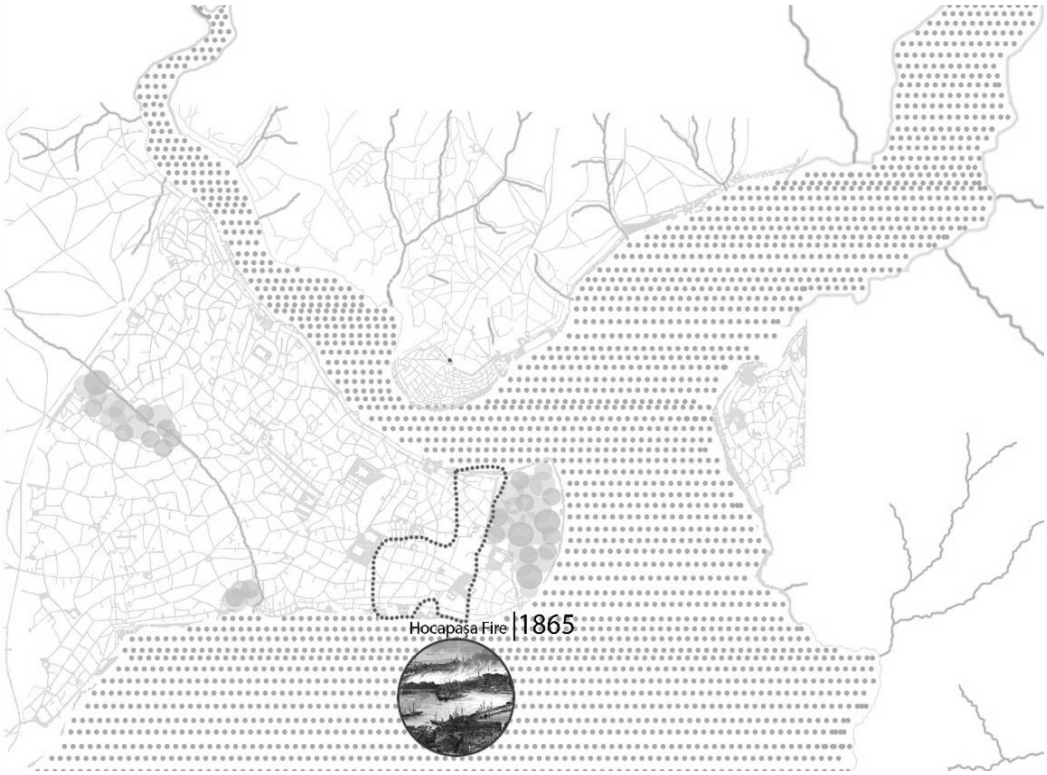

Figure 2.21 The dotted area shows the area of the Hocapaşa Fire, 1865. *Developed from the map in 1853 by the author 2019.*

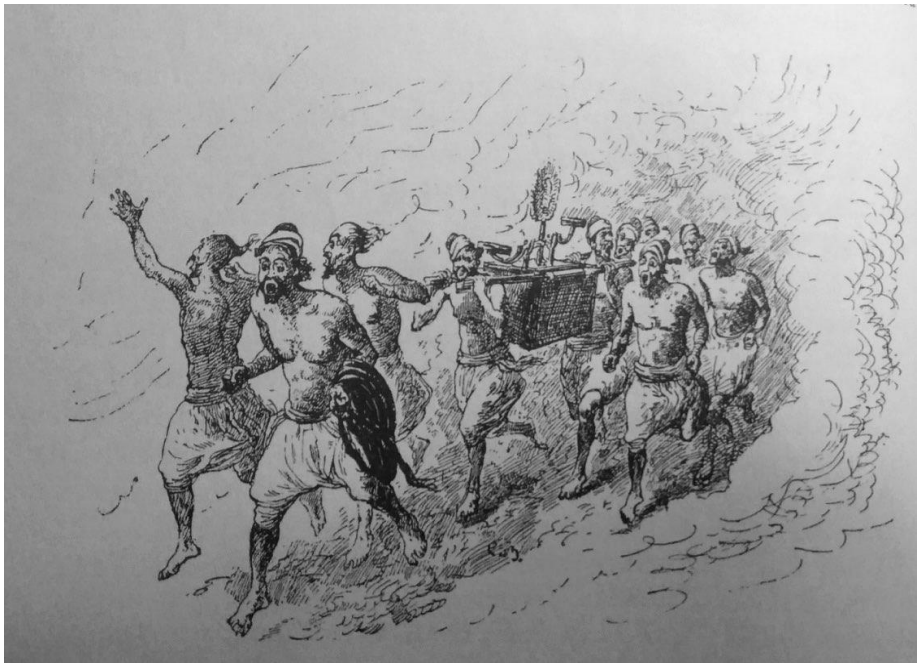

Figure 2.22 "Tulumbacılar – Fire Brigades." *Edmondo De Amics, İstanbul, Ed. Filiz Özdem, Etching by Cesare Biseo, Yapı Kredi Yayınları, 2010.*

2.2.5 Steamships, Boats, and Trams

Mobility and speed are accepted as indispensable in all areas of modern life. British painter J. M. W. Turner (1775-1851) interpreted and immortalized the very first moments of mobile life and speed on land in London with his painting (Figure 2.23) entitled "Rain, Steam, Speed." On the one hand, the labor-intensive character of the urban metabolism of İstanbul was still dominant, while, on the other hand, the first railway emerged. The railway facilitated the flow of land, bodies, and goods along the route between Yedikule and Küçükçekmece in 1870 and the route between Haydarpaşa and İzmit in 1873. Moreover, the Tramway Company of İstanbul was established in 1869 as "*Dersaadet Tramvay Şirketi*," and horsecars were other key actors for mobility in the urban landscape after 1871. Summer horsecars belonging to the private tramway company could be seen in the everyday landscape of İstanbul at the very beginning of the 20th century (Figure 2.24).

Today cities demand accessibility to any point, as well as efficient mobility, pursuing dizzying speeds both for construction phases and consumption. Considering mobility and speed in the environmental history of İstanbul, essential moments include the opening and usage of the railway, tunnel, and steamship services (Figure 2.25) for the first time in the second half of the 19th century; the construction of the first (1973), second (1988), and third (2016) bridges of the Bosporus and related asphalt/railroad systems;[150] the first phase of a rail tunnel under the Bosporus (the Marmaray - 2013) and the finishing of the full line in 2019 via modernization of the existing railway (Rumeli and Asian) along the waterfronts of

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[150] Between 1989 and 2019, various metro (rail) lines were developed, as well as the Metrobüs (asphalt) line, projected and constructed between 2007 and 2009.
M1A : Yenikapı- Atatürk Airport | 1989
M2: Yenikapı-Hacıosman Metro Line | 2000-2014
M3: Kirazlı-Olimpiyat-Başakşehir Metro Line | 2013
M4: Kadıköy-Tavşantepe Metro Line | 2012-2016
M1B: Yenikapı-Kirazlı Metro Line | 2013
M6: Levent- Boğaziçi University Metro Line | 2015
T1: Bağcılar-Kabataş Tram Line | 1992-2006
T4: Topkapı-Mescid-i Selam Tramvay Line | 2007-2009

the Sea of Marmara; and the Third Airport of İstanbul (2019). All of these moments represent milestones for İstanbul, both in the history of transportation and for the waterfronts and urban metabolism. In the last months of 2019, İstanbulites enjoyed the services of Night Metro Lines and discounts on student transportation tickets.[151] Moreover, the head of the General Directorate of Istanbul City Lines Inc. announced in the very first days of 2020 that the Bosporus ferry would begin running twenty-four hours.[152] A shift towards fossil fuel-powered transportation[153] allowed the production of nature free from the former constraints of transport systems and space-making agendas. William Cronon (1991) describes the socio-natural aspects of the shift from biological sources of movement to fossil fuel-powered modern railroads in the context of Chicago and the American West in his book.[154] The flow of passengers and goods via Rumeli Railways between Europe and İstanbul as well as via Anatolian Railways in the municipal limits of İstanbul started in the late 19th century.

The Auspicious Steamship Company and Haliç Steamship Company had been essential parts of the waterfront landscapes of İstanbul and fossil fuel transportation in the late 19th century. All the developments in the modern sense (fossil fuel-powered steamships and railways) were blended with human and animal labor (boatmen, horsecars) concerning transportation on water and land, serving as both

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[151] Major changes developed particularly in transportation after the local elections of İstanbul in 2019. For the first time in 30 years, candidates from the same party (CHP) won three major cities. Ekrem İmamoğlu is the current mayor of İstanbul.

[152] Sinem Dedetaş is the current head of the General Directorate of Istanbul City Lines Inc. after the local elections in 2019. For detailed information about organization of the ferry schedule, see http://bianet.org/bianet/kent/219232-istanbul-da-vapur-seferleri-24-saat-olacak.

[153] In the context of metabolic flows of oil and coal, fossil fuel-powered transportation concerning waterfronts and its space-making agenda in İstanbul will be discussed in detail in Chapter 4.

[154] "All previous forms of land transport had relied on biological sources to power their movement, in the form of food calories consumed by people, horses, or oxen to move vehicles and goods through space... Speed of movement had well-defined biological limits, as did the total quantity of work that people or animals could perform in a day... the railroad broke this age-old restrictive relationship between biological energy and movement... The greater speed, distance, volume and power of railroads enabled them to break free from the economic and environmental constraints of earlier transport systems..." William Cronon, *Nature's Metropolis*, (W.W. Norton& Company, 1991), 79-80.

causes of and reasons for the resistance of the labor-intensive metabolism of İstanbul in this period. Despite significant improvements, the labor-intensive metabolism of transportation was to continue and heavily depended on the struggles to sustain it. Water and land can be defined as two primary metabolic mediums acting together regarding flows of land in the context of the transportation of İstanbul in the second half of the 19th century and early 20th century. Despite the emergence of the first railway lines and tunnel in İstanbul, the public usage of horsecars, porters, and animals still characterized the land traffic of that period. On the other hand, the "water body" of İstanbul was still the essential medium for transportation of human bodies, wastes, materials, and goods while exercising the metabolic flows of land concerning property relations. Water transport depended on boats, hoppers, bargeman ships, and boatmen blending with the steamships in the sea traffic of İstanbul. The wastes of İstanbul were transported by hoppers, or garbage boats (see Chapter 2.3.3).

The mobility in the narrow and crooked streets of mainland İstanbul was provided and formed by pedestrian traffic. A developed road network in the modern sense had not been created yet. Thus, primarily until the late 19th century, the Golden Horn sheltered boatmen, and they were a dominant part of the waterfronts of İstanbul (Figure 2.26). In daily life, two types of transportation traffic were possible for the city in this period: sea traffic via boats, boatmen, and bargeman ships on water and pedestrian traffic via porters and animals on land. In 1844, 8500 registered porters were responsible for the transportation of goods (Gül 2011, 46).[155] As a striking example of the labor-intensive metabolism of the city's history and the struggle to sustain it, Jak Deleon (2000, 4) describes the boatmen who burned down a wooden bridge that crossed the Golden Horn in the 15th century. Moreover, in 1863 the wooden bridge between Ayvansaray and Hasköy was also burned down by boatmen ten days after it was opened (Sezen and Apaydın 2012, 39). It is not hard to guess

[155] Murat Gül (2011, 46) narrates from Charles White 2010.

that this was because they sustained their life economically by boat transportation, especially between the northern and southern parts of the Golden Horn, and they seemed to be organized laborers. After the building of the bridges, and as steamship transportation began to spread in daily life in the late 19th century, boatmen and boat transportation gradually began to lose their dominance on the waterfront landscape. The Auspicious Steamship Company (*Şirket-i Hayriye*), which was responsible for transportation on the shores of the Bosporus, separated from a company called the Haliç Steamship Company (*Haliç Vapurları Şirketi*), supplying transportation along the waterfronts of the Golden Horn (Haliç). During the war years, the economic conditions created hardships for the labor-intensive metabolism of the city. For 1914, Ali Akyıldız (2007, 139) argues that after the steamship company of Haliç, which served low-income neighborhoods, increased its prices, the *Şirket-i Hayriye*, serving high-income residential areas (Bosporus), decreased prices. Passengers of the Haliç Steamship Company drafted a petition requesting that the government roll back those high prices (Akyıldız 2007, 76, 77, 139). Considering maritime trade and management, the historical background of *Şirket-i Hayriye* embodied all the characteristics related to the production of nature as space in the early capitalist era throughout the Bosporus in the face of modern technology, investments, settlements, commercial life, daily habits of the upper classes, attempts of privatization, and even the instituting of the solidarity of workers.

The other important actors for transportation in 19th century İstanbul were animals. Animals like horses, camels, donkeys, and oxen transported goods over long distances. According to records about transportation in the city before 1825, phaetons (Figure 2.27) were only used for the Sultans, but after that year, bureaucrats and women of the palace started to use these vehicles for mobilization, subsequently followed by other well-off people (Sezen and Apaydın 2012, 23). At this point, the patterns of transportation routes on land and their influences are also important. Salah (2013, 46) states that the construction of the Rumeli Railway route, which started from İstanbul and reached Balkan cities, was realized by two companies, *Rumeli Demiryolları Sirket-i Sahanesi* and *Rumeli Demiryolları İsletmesi*, French

enterprises founded by Baron Hirsch in 1869. The first train services started between Haydarpaşa and Feneryolu in 1871. Salah (2013, 47) notes that the stations were Haydarpaşa, Kızıltoprak, Feneryolu, Göztepe, Bostancı, Fenerbahçe, Erenköy, and Suadiye on the Anatolian side. Stream routes had begun to be used primarily for structuring the new network of roads across the İstanbul landscape. Dolmabahçe, as valuable reclaimed land, can be given as an essential example of the production of new transportation routes on land. For connecting Dolmabahçe Palace to the inner parts of the Bosporus villages, a new road line was built by draining streams and filling them, like the Ortaköy Stream (Dereboyu), building the central road axis on it (Çelik 1984, 161). In a report from 1869, the importance of an extensive road line that followed the waterfront from the Valide Mosque (Dolmabahçe Mosque) to Kabataş was stressed, due to Dolmabahçe and Çırağan. The environments of Dolmabahçe Palace, Çırağan, and Yıldız Palace[156] were essential areas for networks of road building and regularization attempts, such as the relation of Yıldız Palace with the development of the Ortaköy neighborhood (Çelik 1984, 159-161).

In summary, in spite of the labor-intensive character of the urban metabolism of İstanbul, in which boatmen, animals, and porters were still present and resisting, the first railways, steamship companies, and new routes on land overwhelmingly emerged to create uneven conditions throughout the waterfronts. The next subsection will address the *çayır*s and spatial arrangements of these waterfronts, which were changed mainly after the Tanzimat Era and the founding of a steamship company at the Bosporus (*Şirket-i Hayriye*) regarding urban metabolism and public spaces on the waterfronts of İstanbul.

[156] Yıldız Palace was the main residence of Abdülhamit II and palace members between 1870 and 1908.

Figure 2.23 “Rain, Steam and Speed”: The Great Western Railway, 1844. J. M. W. Turner

Figure. 2.24 Summer horsecar in front of the Sixth District of İstanbul (1910).
Bugünün Bilgileriyle Kemal’in Türkiye’si. La Turquie Kemaliste. Boyut Yayıncılık, 43, 2014.

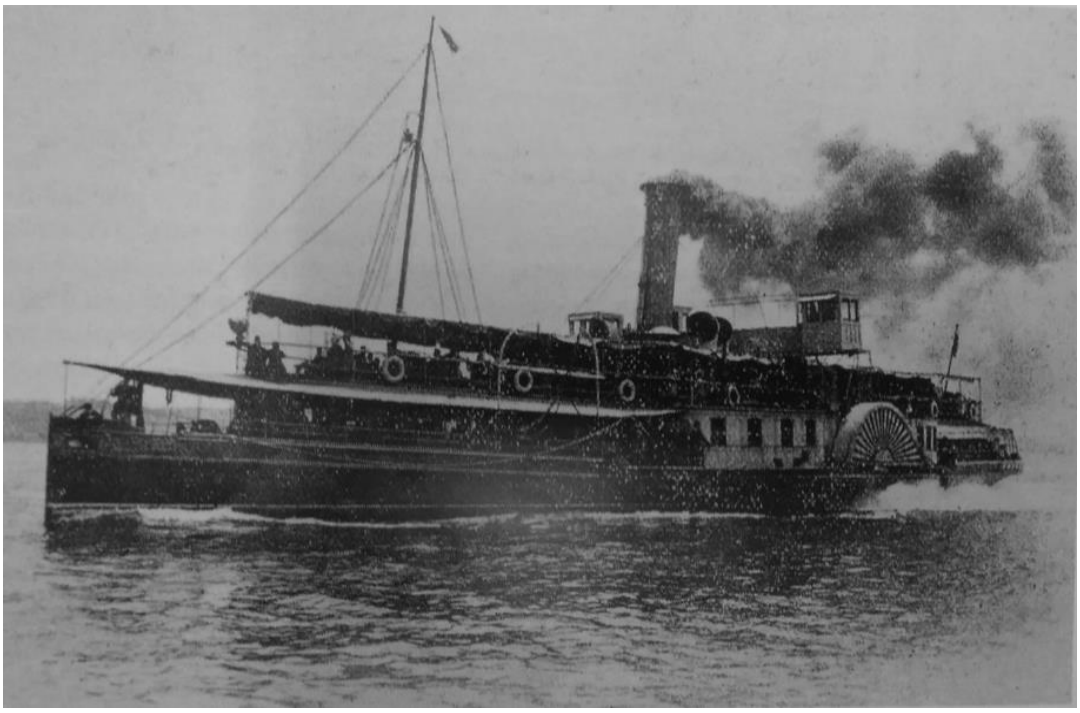

Figure. 2.25 Steamships *"With their easy maneuverability, paddle-wheel ferry boats were very successful in providing transport between neighboring lands. Every quay at which the company boats landed was now a living organism grafted onto the city together with the life forms in its environment."* *Ekrem Işın. Everyday Life in İstanbul, YKY, 235, 2001.*

Figure. 2.26 Boatmen on the Golden Horn. They were a dominant part of waterfront landscape of İstanbul. *Jak Deleon. 100 İstanbul. Remzi Kitabevi, 4, 2000.*

Figure. 2.27 "Third Galata bridge, boats, pedestrians, and phaetons, late 19th Century." *Prof. Dr. Vahdettin Engin. İstanbul'un Atlı ve Elektrikli Tramvayları, İstanbul Ticaret Odası, 33, 2011.*

2.2.6 *Çayır*s

Infrastructural developments such as railways and steamships in the 19th century, dynamically related to property relations, influenced the changing character of recreational places towards more "public" ones throughout the waterfronts of İstanbul. "Public" is in quotation marks here due to the fact that, in the 18th and 19th centuries, recreational outings were middle-class activities (Green 1990, Kaika 2006). The roots of that phenomenon will be explored more with the example of Sadaabat Park later in this subsection. Watercourses and springs within the context of *çayır*s for recreational facilities are explored here, together with the urbanization of recreational places along the waterfronts in this period. In the late 19th and early 20th century, the water body was still a significant recreational medium, and locational preferences changed through waterfronts. Furthermore, after

the Tanzimat reforms, irregular *mesire* places[157] started to be designed, maintained, controlled, and, in short, regularized by the municipal order and services embedded in the emergence of a new urban metabolism. The Municipal Parks of Büyük Çamlıca, Taksim, Tepebaşı, Bakırköy, and Tophanelioğlu were designed for recreational purposes in this period (Evyapan 1972, 53). Areas referred to as *çayır* or *mesire*, *meydan*s (squares), and *namazgah* (grounds for praying) were the main open public places in the Ottoman Empire.

In daily Ottoman life, a *çayır* (meadow) was a place for recreational activities offering spacious grounds, relaxation, leisure, and picnic areas; it was also often called *mesire*. Waterbodies, recreation, and *çayır*s had strong connections with each other. Cerasi (1985) notes that the parks and *mesire* lands[158] used by the Sultan and other members of the palace could be used by the public on some certain days before the 19th century (those days changed from place to place) (Cerasi 1985, 37). The difficulty of accessing these places in terms of transportation is one of the critical reasons for that limitation. The women of the palace also frequently visited *çayır*s, particularly at Kağıthane and Göksu, for recreation. When they visited, the public was excluded, and the areas served only those women. Throughout the centuries, Beşiktaş, Tarabya, Büyükdere, Belgrad, and Bendler were important *mesire* places as *çayır*s on the European side of the Bosporus, while Beykoz, Yuşa Hill, Göksu, and Çamlıca had importance as *mesire* places on the Asian side of the Bosporus. Kağıthane and Alibey on the waterfronts of the Haliç were particularly famous places for *çayır*s (Evyapan 1972, 52).

The Ottoman Sultans generally preferred to use Çamlıca, Kağıthane, Kavacık, Beykoz, and Fenerbahçe for recreational spots in İstanbul.[159] In the 19th century, the

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[157] The irregular characters of *mesire* places with sporadic trees on vast green areas are mentioned in the study of Sedad Hakkı Eldem 1976, 5. According to Eldem, the important *mesire* characteristics were "a lithe stream, a bare ridge, a long valley, surrounding trees and groups of buidings" p. 6

[158] A place to be used by the public as common grounds was called *mesire*. See Maurice M. Cerasi 1985.

[159] Evliya Çelebi, *Evliya Çelebi Seyahatnamesi*, ed., Orhan Şahin Gökyay, (Yapı Kredi Yayınları, 1996), 102.

usage of Bosporus waterfronts as leisure spots, as well as the connected streams and *çayır*s like Göksu (Figure 2.28) and Tokat (Figure 2.29), was remarkable. After the establishment of *Şirket-i Hayriye*, the favorite *mesire* for the general public on the Asian side of the Bosporus was located along Tokat Stream and was called the Tokat Stream Open Air Grounds,[160] together with Beykoz Meadow (*Tokat Deresi Mesiresi ve Beykoz Çayırı*) in the early 20th century. The European side of the Bosporus valley and the meadow of Büyükdere were important in terms of recreational facilities. Rules and regularizations began laying the way for strict consolidation of *mesire* places.

For instance, in 1914, a foreign company demanded a coastal land reclamation at the waterfronts of Beykoz for coal storage, but it was not granted the necessary permission because that was a *mesire* spot.[161] It was forbidden to cut down trees in a *çayır* for any purpose (e.g., shipbuilding), and the natural landscape of the *mesire* was to be protected. Forests and trees had long been used for the fuel (heating, cooking, etc.) of the city and for construction purposes, but then Ottoman naval activities boosted the needs for military, shipyards, and canon foundries; therefore, their significance was raised in terms of protection. Trees were widely used in saltpeter (*güherçile*) mines for mass-producing gun powder. Furthermore, they were used in ship-building to provide certain quantity, length, and diameter of timber (Karacakaya 2018, 48). Therefore, after Tanzimat, the forest became used for specific purposes of economic interest, as well as scientific concern, and trees began to be commodified differently from provision logic. The forestry school was established in 1858. The legal status of forests was changed for inhabitants of İstanbul and the Ottoman dynasty via the *Orman Nizamnamesi* (Forest Regulation) (Karacakaya 2018, 53). According to this regulation, forests could belong to individuals. In general, in the 19th century, as a result of the shrinking land area in

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[160] The location of the Tokat Meadow was established as a first so-called garden on the Bosporus in 1458 as a celebration of conquering the city of Tokat (Evyapan 1972, 20).
[161] Muhyiddin Bey Garden on the waterfronts of Beykoz was requested by Müller and rejected by the İstanbul Council. BOA. DH.İD.161-1/31, H-05-05-1332.

the Balkans and applications of the Land Code that permitted construction on empty and vast lands for individual interest, the forest areas of İstanbul, the close periphery of İstanbul, and the waterfronts started to be urbanized.

For understanding the conditions of recreational public spaces along the waterfronts in the Tanzimat period in another way, we can consider a preeminent example: Sadaabat Park. How did access to open public spaces shift from upper-class and middle-class communities? Moreover, its interrelatedness and interdependence with the urban metabolism concerning metabolic flows of land can provide us with preliminary insights for future landscapes. Going slightly back in time, we can find some roots for the close relationship between urban metabolism and public spaces on the waterfronts of İstanbul. Kağıthane Stream (the "fresh waters of Europe") and Sadaabat Park ("the dwelling of happiness") were aristocratic parks with kiosks for members of the palace and the wealthy men of İstanbul along the stream of Kağıthane. The Kağıthane Stream was taken into a long canal and directed with sets, and cascades into pools were significant examples in various ways in its history.

The outbreak of Patrona Halil in 1730, which was a rebellion,[162] started against the wealthy people of the city and the court, as well as the uneven conditions of the city arising from the continuation of migrations to the city, food shortages, diseases, increased tax burdens for the people, and economic pressure on guilds. Thus, discontent in the city and the luxury lifestyle of the palace emerged side by side within Sadaabat Park and the rebellion resulted in socio-natural and spatial impacts with attempts to set fire to the whole park complex, demolish the kiosk structures in the park, and open the rest of the park area to the public (Özcan 2007, 189-192; Aytekin 2015, 60-63). According to Sakaoğlu (1985) in the Tanzimat Dictionary,[163]

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[162] The Coalition for the Patrona Halil Rebellion was formed from different segments, like the Janissary, urban poor, immigrants, religious scholars, and guilds. In my opinion, it is interesting to note that Semavi Eyice did not mention anything about transformation of usage concerning Sadaabat Park; rather, he considered the park as it had been used as public space in general. For detailed information, see Semavi Eyice, *Tarih Boyunca İstanbul* (Etkileşim Yayınları, 2006), 201-203.
[163] Necdet Sakaoğlu. *Tanzimat'tan Cumhuriyet'e Tarih Sözlüğü.* İletişim Yayınları, 1985.

the remote gardens of Sultans (*Hadaik-i Hassa*) were abandoned for the construction of hospitals, barracks, and schools in the reform period. In the same dictionary, some of the main gardens of Sultans are mentioned, including Dolmabahçe, Kadıköy Bağı, Davud Paşa, Beşiktaş, Kuruçeşme, Arnavutköy, Bebek, Mirgûn (Emirgân), Kalender, Büyükdere, Tokat (Beykoz) Sultaniye gardens, Paşabahçe, Çubuklu, Kandilli, İstavroz (Üsküdar), Haydarpaşa, Fenerbahçe, Florya, Halkalı, Topçular, Vidos, Ali-Beyköyü, Kâğıthane, Karaağaç, and Hasköy.

The recreational area known as Beşiktaş-Ihlamuraltı Mesiresi (located at the end of a deep bay area) was urbanized at the beginning of the 19th century. The Dolmabahçe-Harbiye Valley was an important recreational area before the 19th century and is now named Maçka Valley; moreover, throughout the Stream of Ekmekçi, the recreational area of Yahya Efendi was another important picnic area located at Beşiktaş (Eldem 1979, XI). Watercourses and springs were referred to as recreational facilities frequently. Fresh water sources of the Bosporus like Çıçır, Hünkar, and Kestane at the valley of Sarıyer were famous areas for recreational activities. A small stream flowed from Baltalimanı previously, and there was the Baltalimanı *çayır* between Fıstıklıbağ hill and the Halim Paşa forest. The valley was divided into two lines, where the Kanlıkavak stream poured into the Baltalimanı harbor stream (Eldem 1979, 9). The mouth was filled later, and Baltalimanı Palace cut off the view of the *çayır.*

The gardeners of the *hassa* or the gardeners of the *hasbahçe* were responsible for the gardens of the palace. The vineyards of the palace gardens were self-sufficient. The *Bostancıbaşı* used the surplus, and the Sultan enjoyed the profit. Shops bought palace flowers. Palace gardens had an economic aspect (Evyapan 1972, 19). The Çinili, Yıldız, Bebek, Tarabya, Kalender, Göksu, İcadiye, Çengelköy, Çamlıca, Şemsipaşa, Çağlayan, and İmrahor pavilions had been frequent places for sightseeing and entertainment. In 1877, the palace abandoned the waterfronts of Dolmabahçe, where it was not easy to stay protected from the sea. The new location for the palace was Yıldız. Yıldız Park was opened to the public after the Constitutional Era in 1908 (Evyapan 1972, 29). Evyapan (1972, 54-55) argues that,

unlike in the West, the people and the palace always used the beauty-aesthetic element of the gardens and nature and its functional features.

In the 1840s, the Hippodrome was the most important public square. The square served for recreational activities and equestrian exercises in İstanbul. Vegetable gardens, orchards, and the Langa *bostan*s were the other open public spaces of the city on the waterfront of the Sea of Marmara, adjacent to the walls of İstanbul. More extensive gathering places existed in the courtyards of *külliye*s[164] and mosques. In the street patterns of the second half of the 19th century, the transportation and infrastructure of the city were not regular or well developed. Thus, some scholars argue that public life could not have appropriately developed in a European manner. Cerasi (1985, 36-50) writes that "more than one witness has described the rich and picturesque open-air life of Ottoman towns." Moreover, he notes that crowds around the *Meddah*[165] in the cafes and squares were often observed by travelers in 1813 in Anatolian towns (Cerasi 1985, 46).

After the establishment of Haydarpaşa Railway Station (1908) on the waterfronts of Kadıköy, reaching the periphery of the land for recreational activities at *çayır*s in summer became possible with the infrastructural development of the Anatolian Railways. In a dissertation, Salah (2013) searches for "urban transformation" of the agriculture-*sayfiye*[166]-*banlieue* "trilogy" in the context of Anatolian Railways from the late 19th century to World War II at Kadıköy, to help understand the production of nature as space by experiencing the routes of transportation infrastructures through the recreational habits of İstanbulites' space-making agenda of the *çayır*s in summer periods.

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[164] *Külliye*: Large building complex include a mosque and social buildings.
[165] *Meddah* is the name given to a traditional Turkish story teller, who performed in front of a small group of viewers, such as a coffeehouse audience. This form of performance was especially popular in the Ottoman Empire from the 16th century onwards.
[166] Ebru Salah (2013, 42) states that *sayfiye* defines a settlement or area that is used for seasonal recreational and leisure purposes, particularly in the summers, and the word *sayfiye* is derived from *sayf*, which means summer in Ottoman Turkish. Salah narrates from Sehsuvaroğlu (1969, 109) that while a *sayfiye* was used for a summer residence, *şitaye* defined a winter settlement.

In short, in İstanbul, which was surrounded by water, the streets and roads did not develop properly, notably in this period. We can say that recreational activities and public open spaces such as *çayır*s still mostly depended on waterfronts with lush vegetated green areas. Even as railway transportation developed, the locations depended on the waterfront line. On the one hand, urbanization in recreational places started to be seen and controlled after the Tanzimat reforms. On the other hand, in the modern sense, infrastructural developments materialized and expanded the locational preferences for leisure time activities. Moreover, they increased public attendance to *çayır*s. The next of this chapter's three subchapters will now shift to focus on the metabolic flows of water in the case of infrastructure.

Figure. 2.28 "Göksu Deresi," 1900, Anonim Kartpostal. *M. Sinan Genim, Constantiniye'den İstanbul'a XIX. Yüzyıl Ortalarından XX. Yüzyıla Boğaziçin'nin Anadolu Yakası Fotoğrafları III, Suna ve İnan Kıraç Vakfı, 2012.*

Figure. 2.29 "Beykoz cayırında Tokat deresi Mesiresi," 1910, Anonim Kartpostal 128mm x 78mm. *M. Sinan Genim, Constantiniye'den İstanbul'a XIX. Yüzyıl Ortalarından XX. Yüzyıla Boğaziçin'nin Anadolu Yakası Fotoğrafları III, Suna ve İnan Kıraç Vakfı, 2012.*

2.3 Metabolic Flows of Water

Towards an industrial discipline, water and human labor were acting together as a significant catalyst in the early mechanization period of the early 19th century. The first use of hydraulic presses and large dies for shaping halves of metal lifeboats is one illustrative historical example (Figure 2.30). This part of the chapter aims to show the mutual relationship between changing flows of water and the urbanized nature of İstanbul in the 19th century, both rendering and affected by uneven urban environments in the cases of accessing tap water, drainage systems, and presence of diseases due to infrastructure. In this period, water had just started to be controlled, channeled, directed, and sanitized as well as commodified by industrial discipline. The modern urban waterfronts of İstanbul and the expansion of urbanized nature possible in the 19th century through waters metabolized into an industrial discipline.

In this era, **the first steps of the** "**service revolution**" and "**industrial discipline**" throughout the city for the sake of increasing "sanitary conditions" and public health were taken in the case of metabolic flows of water, as described in this section. Flows of water also had a vivid relationship with the earthquakes of İstanbul.

The Terkos Water Company, established in 1869 and controlled by the municipality, was another essential change for disciplining nature via technology. On the one hand, we witness the loosening of the strict socio-organizational character of the metabolic flows of water in terms of protection by direct human and animal labor[167] and management by the state/Sultan. On the other hand, emerging techno-managerial aspects of the social production of nature by technology-driven private companies and in terms of management by the municipality were being applied, while still meeting the needs of the palace. All of these developments and attempts to discipline nature explain the radical change on behalf of the labor-intensive and artisan character of the metabolic flows of water in İstanbul.

The Ottoman Archives and ***Mühimme Defterleri*** provide vital information about the management and conditions of the water system works in İstanbul. Furthermore, the extensive works of Kazım Çeçen, Semavi Eyice, Olof Knut Dalman, Osman Nuri Ergin, and Forcheimer and Strzygowski provide critical sources for understanding the flows of water in İstanbul and also for imagining the past, present, and future metabolism of the city in this period of İstanbul. In short, this study tries to understand the urban metabolism of İstanbul embedded in flows of water in light of the production regime, administrative management, and struggles to protect the labor-intensive and artisan character in the context of the city's integration into the broader market system in the 19th century. This part explores that relationship in the context of three particular subsections: tap water, cholera, and waste and sanitation.

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[167] Alan Mikhail (2011) defines direct human and animal labor as "the caloric energy output of human and animal labor" in his research on the working order of the Ottoman Empire in the case of Egypt. For details, see Alan Mikhail, *Nature and Empire in Ottoman Egypt: An Environmental History* (Cambridge University Press, 2011).

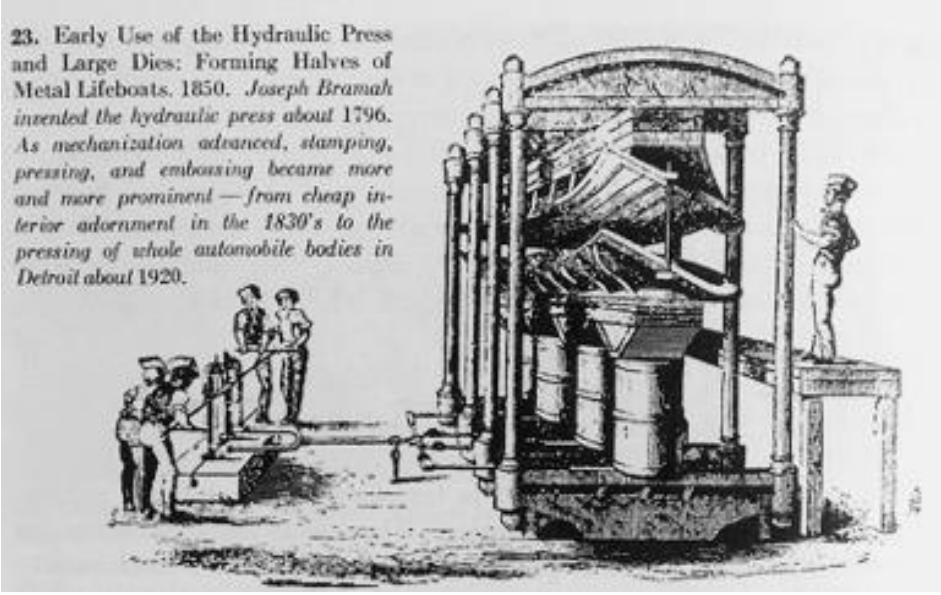

Figure 2.30 Hydraulic Press. *Giedion, 48, 2013.*

2.3.1 Tap Water

The Bosporus, Golden Horn, open cisterns, covered cisterns, fountains, reservoirs, water conduits, dikes (*bend*), water levels (*su terazisi*), aqueducts (*su kemeri*), water tanks (*maslak*), chambers (*maksem*), lakes, and springs have all been essential parts of the urban metabolism of İstanbul related to water dating from Roman and Byzantine to Ottoman times. İstanbul has enjoyed a lucky geographical context for its fresh water supply systems through the centuries compared to other parts of the world. However, increasing problems about accessing tap (potable) water in İstanbul started with the population boom. It caused new demands for watering the new quarters, increasing the repair works of existing water conduits, and pursuing economic restructuring after the Tanzimat period in the 19th century.

Murat Güvenç (2017)[168] further argues about the inappropriate location of historical İstanbul, with the absence of a river or a mountain as a source of water like

[168] Murat Güvenç 2017 http://www.hidropolitikakademi.org/istanbulun-su-sorununa-tarihsel-bir-bakis.html. Accessed December 10, 2019.

examples from the European continent. Thanks to the unique metabolic conditions of İstanbul, it creates water conduits, aqueducts, and dikes (all water supply systems) based on gravity and slopes and the tradition of preserving water sources by direct human labor. Preservation has reached advanced levels concerning the spatiality and managerial features of the water supply system of İstanbul. Furthermore, there is a tradition that spring water be consumed at its source, with its close environment used for recreational purposes. The Ottomans cared about healthy water access for the public via both administrative and sanitary organization (İlhan 2008).

In the history of İstanbul, spring waters had been sources of wealth and health. Spring waters conveyed water levels for leveling and/or pipes to break pressure tanks (*maslak*), with the water finally reaching a palace or a fountain. Transportation routes and the final destination of conveyed waters were designed to meet the needs of palaces (e.g., of the Sultan, pashas, and bureaucrats) in the case of tap water. Fountains had been built as charity works for everyday people. In the 19th century, accessing tap water was possible with its transportation and distribution by the "*saka*" (water carrier with his donkey) (Figure 2.31), who carried waters from fountains to the houses of ordinary people, controlled by the *Şehreminlik* (municipality). In some cases, the *saka* also worked to help extinguish fires in İstanbul. The hills on both sides of the Bosporus were still the important basins for springs in the 19th century. These springs, with their health, quality, and taste, were identifiable to people throughout the 19th century. A paragraph from Von Moltke's (1969, 70) letter states that İstanbul's water can be compared to wine in terms of understanding where it came from in the 19th century:

> Just as wine experts in our country can taste wine and tell the vineyard it comes from and its vintage, a Turk can, by taking a single sip, tell if a glass of water comes from this or that popular spring, whether it is from Çamlıca or Bulgurlu on the Asian side, whether it is from the Kestane spring from Büyükdere or the Sultan spring near Beykoz.

Concerning the 19th century, solutions that appeared in terms of infrastructure, commodification of nature as space, and extension of urbanized nature were intended

to change the labor-intensive character of the metabolic flows of water in İstanbul. The metabolic shift left the artisans known as *löküncü*, a person who worked with the water structure, unemployed. Iron pipes, produced in manufacturing processes, began to be used in the water infrastructure and took the place of the *löküncü.* Socio-natural problems gave a new, modern face to the solutions. On the one hand, the need for watering new quarters along the waterfronts accelerated the repair works of the water infrastructure, while, on the other hand, the earthquakes of İstanbul were also responsible. Sadi Nazım Nirven (1925) states that in 1900 an earthquake caused damage to the majority of Halkalı waters and they needed to be repaired. In the Ottoman Archive, an earthquake was mentioned in 1902 that was responsible for the damage and collapse of the water conduits of Babıali.[169] After earthquakes, the existing structure would need to be repaired, but Çeçen (1991, 33) argues that people who worked to ensure the flow of the water supply (*suyolcuları*) resisted the repair project after the earthquake of 1900 to fix the water conduits by connecting the separate lines into one line, and the water lines were sabotaged in 1905. However, it is debatable whether these laborers did sabotage the water conduits to establish operations contradictory to the *Evkaf*'s rules or got paid as should be, or whether the working conditions were getting worse.

Concerning the flows of water, it would be useful to compare the periods before and after Tanzimat within the 16th and 19th centuries as the two crucial eras. In the 16th century, many waterworks had been established by an outstanding system of administration; moreover, Sinan, the Chief Architect of the empire, was an essential figure for extending the water supply system in this era. The management and conditions of the water system between the 16th and 20th centuries can be understood from the Ottoman Archives and particularly from the records of the *Mühimme Defterleri.* In the 16th century, water sources and water conduits were carefully protected by the Department of Water (*Su Nezareti*) under the Director of

[169] BOA, Ottoman Government Archive, Dahiliye, DH.MKT. 40, 540, 6 Rabi'u'l-ahir 1320 (1902).

Waterworks (*Subaşı*) and the Sultan. After 1870, all waterworks were undertaken by the municipality of İstanbul (*Şehreminlik*). Furthermore, in the late 19th century and early 20th century, private companies became responsible for the water supply system and repair works, like the Terkos Water Company, with the municipality overseeing it.[170]

In the 16th century, according to the records of the *Mühimme Defterleri*, No: 5 (MD. No: 5), all water sources, even rainwater courses, were significant, and building any construction (walls or houses) that would block them was forbidden[171] and punished by law, including demolition (MD. No: 19).[172] According to law, about three meters on each side of a stream should be left vacant (MD. No: 12).[173] Any *bostan*s, gardens, or agricultural facilities on/near water sources were forbidden, too (MD. No: 12).[174] Concerning the tradition of preserving water resources, the significant point in the above examples is that ecological buffer zones for protection around streams were implemented and guaranteed in the Ottoman cities along with water sources like lakes or streams, which were under strict rules in the 16th century. The case in the 16th century is a fruitful example for understanding the conditions of Ottoman cities concerning metabolic flows of water. The socio-natural context in which it is essential to understand whether a water source or a water conduit passes through a village, whether the consent of people is obtained or not, and any infringement on waters would be checked (MD. No: 3) for protecting water bodies.[175] In the 19th century, on the contrary, policies of the 16th century, which

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[170] BOA, Y..PRK.HR.. 33- 85, 27 Safer 1321 (1903).
[171] BOA, Mühimme Defteri, MD5, 1219, 20 Şa'ban 973 (1566) in "5 Nolu Mühimme Defteri," in "T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, Osmanlı Arşivi Daire Başkanlığı, Yayın Nu: 21, Dîvân-ı Hümâyûn Sicilleri Dizisi: II," p. 194; MD5 1262, 27 Şa'ban 973 in "5 Nolu Mühimme Defteri," p. 200.
[172] BOA, Mühimme Defteri, MD19, 376, 21 Safer 980 (1572).
[173] BOA, Mühimme Defteri, MD12, 1019, 25 Şevval 979 (1572).
[174] BOA, Mühimme Defteri, MD12, 1086, 8 Zi'l-ka'de 979 (1572); MD12, 536, 22 Zi'l-hicce 978 (1571) in "T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, Osmanlı Arşivi Daire Başkanlığı, Yayın Nu: 33, Divan-ı Humayun Sicilleri Dizisi: IV," 12 Nolu Mühimme Defteri (978-979 / 1570-1572-Özet, Transkripsiyon ve İndeks, Ankara 1996, p. 364.
[175] BOA, Mühimme Defteri, MD3, 871, 26 Cemaziye'l-ahir 967 (1560) in "T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, Osmanlı Arşivi Daire Başkanlığı, Yayın Nu:12, Divan-ı Humayun

included protecting water sources and forbidding the building of anything on the basins according to law, were abandoned quickly. This implies the radical transformation from streams to streets and from bay areas to waterfront palaces (for details, see Chapter 2.2.6).

In the second half of the 19th century, the existing water infrastructure frequently needed repairing for various reasons, which resulted in new material flows. For instance, a record exists from 1884 about fixing the water conduits of Halkalı (Figure 2.32) and Kırkçeşme (Figure 2.33) and efforts to increase the supply of tap water for public needs as well as the order of iron pipes for repairing them, which was essential considering new material flows.[176] From 1895, a record notes the cost of exploration for repairing ruined water conduits of Kırkçeşme,[177] and in the same year, another record exists on the costs of repairing the water conduits of Kırkçeşme, Halkalı, and Taksim (Figure 2.34), which will be detailed below.[178] In 1900, a record in the archives about fixing the aqueducts along the water conduits of Kırkçeşme[179] revealed a very new situation regarding the metabolic flows of water. Fixing the water conduits required new material flows, such as iron pipes, lead metal, and timber. These material supplies, like iron pipes for fixing water conduits, generated new material flows from Europe to İstanbul and from the peripheral forests of İstanbul (supplying timber for water conduits) to the center by the municipality.

The BOA Archives show this metabolic flow at work in the repairs of the Taksim water conduits of Yıldız Palace.[180] We see a change in the economic burden, which shifts from the Sultan to the people, because, according to records in the

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Sicilleri Dizisi: I," 3 Nolu Mühimme Defteri (966-968 / 1558-1560-Özet, Transkripsiyon ve İndeks, Ankara 1993, p. 387; MD6, 726, 14 Recep 972 (1565), in "T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, Osmanlı Arşivi Daire Başkanlığı, Yayın Nu:28, Divan-ı Humayun Sicilleri Dizisi: III," 6 Nolu Mühimme Defteri (972 / 1564-1565-Özet, Transkripsiyon ve İndeks, Ankara 1995, p. 411.

[176] BOA, Y..PRK.EV.., 1- 47, H-27-02-1302 (1884).

[177] BOA, İ..EV., 9- 79, H-28-12-1312 (1895).

[178] BOA, İ..EV., 8- 17, H-09-04-1312 (1895).

[179] BOA, İ..EV., 22- 29, H-24-03-1317 (1900).

[180] BOA, DH.MKT. 1529- 11, H-26-11-1305 (1888). It is significant that the water pipes for fixing water conduits were exempt from customs duty in the 19th century.

Ottoman Archives, repair costs of the water conduits of Tophane were met by the Sultan in 1799.[181] On the other hand, repair costs of the water conduits of Kırkçeşme, contaminated by the waters of cesspits, fell upon citizens in 1852.[182] Also, concerning the geographical distribution, nourishment such as wheat for the workers in the extensive works of the water supply system could be provided from the periphery of İstanbul.[183] A proposal for supplying tap water from the basins of the Istranca Mountains (realized between 1995 and 1997) to the city by a private company's associated partners, Stanifort, Oppenheim, and Guarracino, had its roots in the 19th century, too.

Dersaadet Anonim Şirketi (İstanbul Anonymous Company), also known as the Terkos Water Company, was established in 1869, and in May 1882 it had a statute for the following 75 years to provide the infrastructural network for supplying Terkos water to İstanbul. This private company started to control, channel, and direct water for commodifying it by industrial discipline through the mechanized vision of the 19th century's context. Supplying tap water through Terkos Lake by the Terkos Water Company was the proposal of Eugene Haussmann.[184] The company's importance also came from its serving Dolmabahçe Palace and Yıldız Palace. The main water conduit between Terkos and Feriköy, which supplied fresh water to the palaces, was critical and specially protected. Moreover, telephone line infrastructure was also constructed by the Terkos Water Company in 1910 between Terkos and Feriköy in order to exchange information about problems and damages of the water conduits in a timely manner.[185] Furthermore, the Terkos Water Company substituted the existing water structure when it was required. A record from the archive shows

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[181] BOA, HAT 255-14604, H-29-12-1213 (1799).
[182] BOA, A. MKT. NZD. 65-39, H-04-02-1269 (1852).
For detailed information about the supplied budget for water conduits, see Mehmet Mehdi İlhan 2008.
[183] BOA, Cevdet Kataloğu, Belediye kısmı, no. 2316, 1260 (1844).
[184] The Terkos Water Company bringing water from Terkos Lake as per Haussmann's project developed after Sultan Abdülaziz's trip to France. For further details, see Zeynep Çelik 1984, 96-97, and Nuran Yıldırım 1994, 19.
[185] BOA, MV. 146- 6, H- 08 -11- 1328 (1910).

that when the water conduits and dikes of Kırkçeşme needed to be repaired in 1894, Terkos would provide fresh water to the forty fountains.[186]

All of these transformations regarding water are significant pieces of evidence of the emergence of a new urban metabolism. In parallel, new materials started to flow from long distances after Tanzimat in the 19th century. Tap water sources like the Çıçır, Hünkar, and Kestane springs, as well as other streams in İstanbul, had been used for recreational facilities, apart from being sources for potable water, until they were channeled, controlled, or urbanized for the city's growth and extension. For a deeper understanding of the metabolic flows of water and their relation with urban metabolism and urbanization, Maria Kaika (2006, 295) describes this new relation of urban areas and nature:

> It signaled the moment when nature's water could be controlled and channeled at man's will and announced a new relationship between nature and the city... However, the same process that liberated the city from the constraints posed by lack of water also signaled the city's perpetual dependency on the production of (new) nature in order to sustain its life, its form, and its metabolism. Now water not only could, but also had to be tamed, managed, channeled, and redirected in order to sustain the city's growth and expansion over space and in time.

Moreover, the accompanying increase in disposal of wastes into the water basins and the contamination of tap water basins resulted in widespread cholera, which will be discussed in the following subsection. While exercising the tap water in the late 19th century's geographical context, according to Çelik, supplying tap water to the "*fashionable and westernized quarters*" of the city seemed to be a concern for "public" health (1984, 98-99):

> Possibly as a consequence of the concern for public health, the Gavand/Ritter project was revived in 1902 and the waters of the Kagithane River were carried to Pera and to some Bosphorus villages. The operation was undertaken after a scientific investigation which concluded that "there existed no water of such high quality as the Kagithane River water in any other

[186] BOA, İ.HUS.., 28- 61, H-06-02-1312 (1894).

> European capital." The neighborhoods that benefited from the Kagithane waters were once again Sisli, Nisantasi, Tesvikiye, Harbiye, Taksim, parts of Pera flanking the Grande Rue, Tophane, Dolmabahce, and Besiktas to Ortakoy, namely, the fashionable and westernized quarters to the north of the Golden Horn.

In the above quotation, the uneven characteristics of metabolized socio-natures in the 19th century are briefly explained through the relations between tap water supply and the quarters that benefited from tap water.

In short, on the one hand, we witness here the loosening of the strict socio-organizational character of the metabolic flows of water in terms of protection and production by direct human and animal labor, and management by the state/Sultan. On the other hand, we see the emerging techno-managerial aspects of the social production of nature by technology-driven private companies and in terms of management by the municipality while still meeting the needs of the palace. Tap water's flows in terms of infrastructure were under the effects of the first impacts of foreign capital investments and capitalist relations. These included privatization programs, health problems, and a population boom along the waterfronts with the growth of capitalism in the 19th century. All of these visions and attempts to discipline nature revealed radical changes to the labor-intensive and artisan character (e.g., *saka*, *lökünсü*, *suyolcuları*) of the metabolic flows of water in İstanbul. Furthermore, they started to metabolize new materials such as telephone lines and iron pipes, lime, and timber from long distances for infrastructure. Extended urbanization along the waterfronts, made possible via access to tap water in far corners of the Bosporus, both resulted from and caused the emergence of a new urban metabolism of İstanbul with a "modern" but uneven water supply system. The next subsection will explore the metabolic flows of disease in the form of cholera and the disciplining of nature as well as its relation with the flows of water in the 19th century.

Figure 2.31 “Saka – Water Carrier, G. Berggren.”
Hagop Mintzuri. İstanbul Anıları 1897- 1940, Tarih Vakfi Yurt Yayınları, 3. Baskı, 104, 1998.

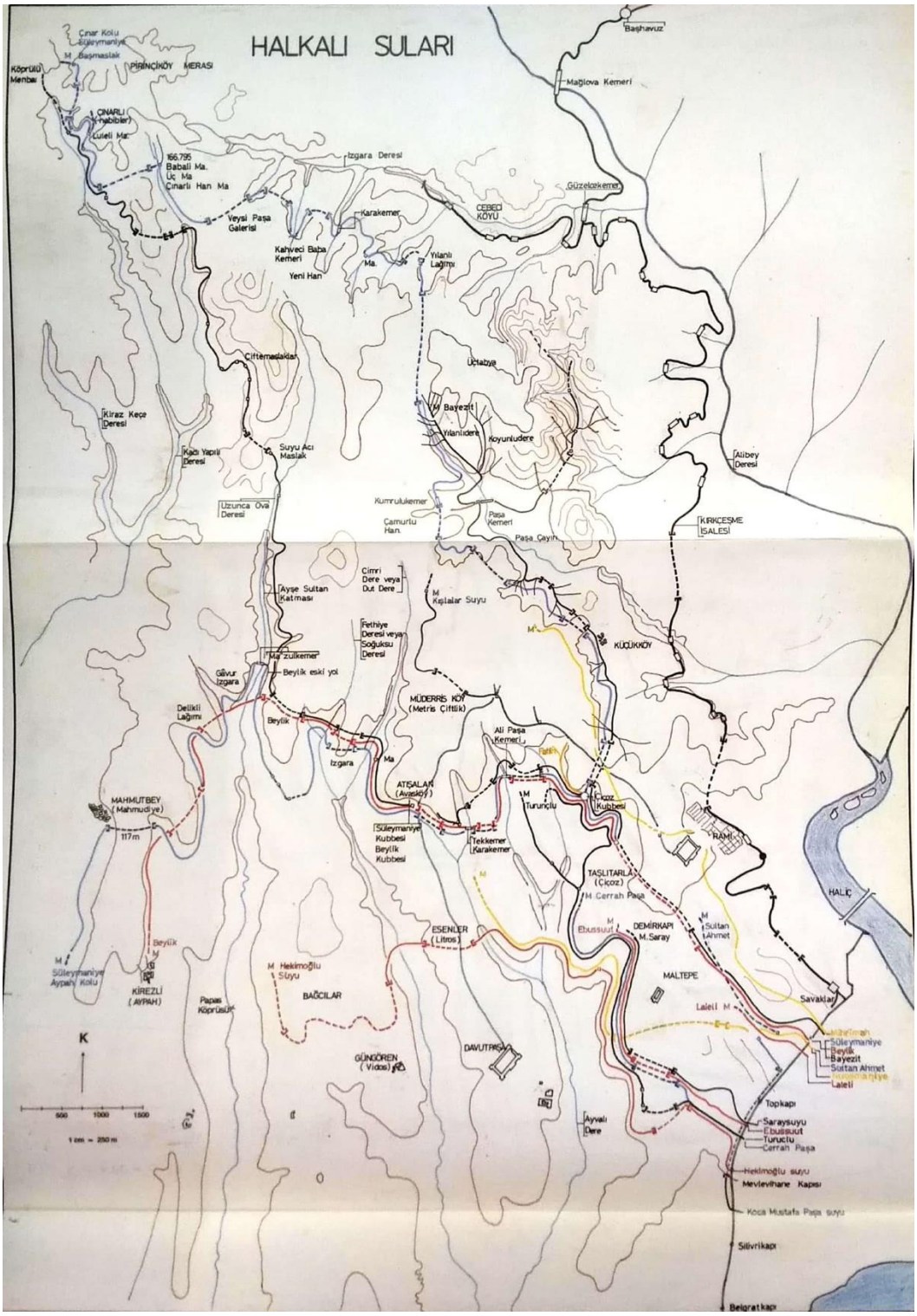

Figure 2.32. Halkalı Waters Conveyance System (isale hattı-kaynaktan depoya).
Kazım Çeçen, 1991.

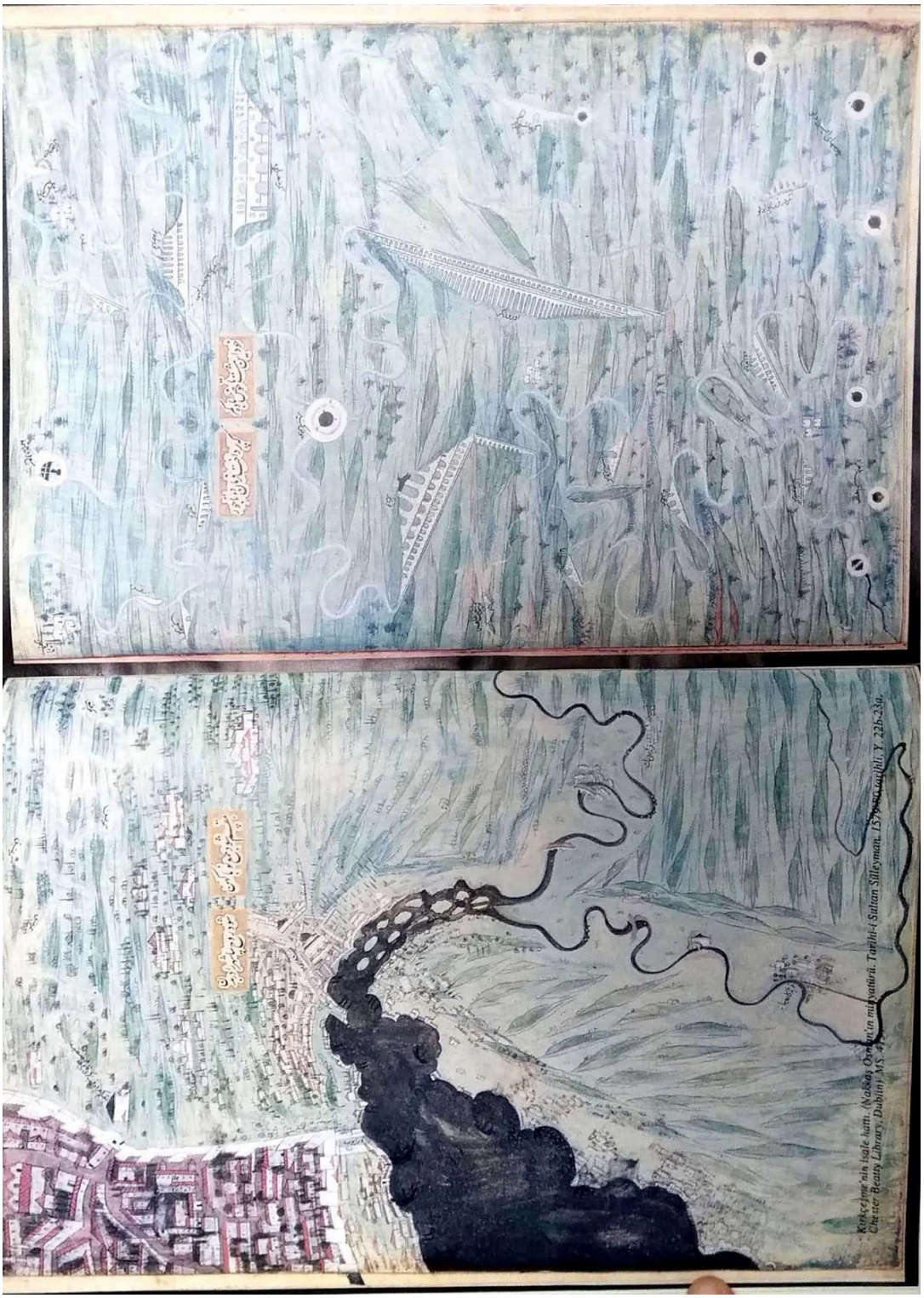

Figure 2.33 Kırkçeşme Waters Conveyance System, Miniature by Nakkaş Osman.
Kazım Çeçen 26-27, 1991.

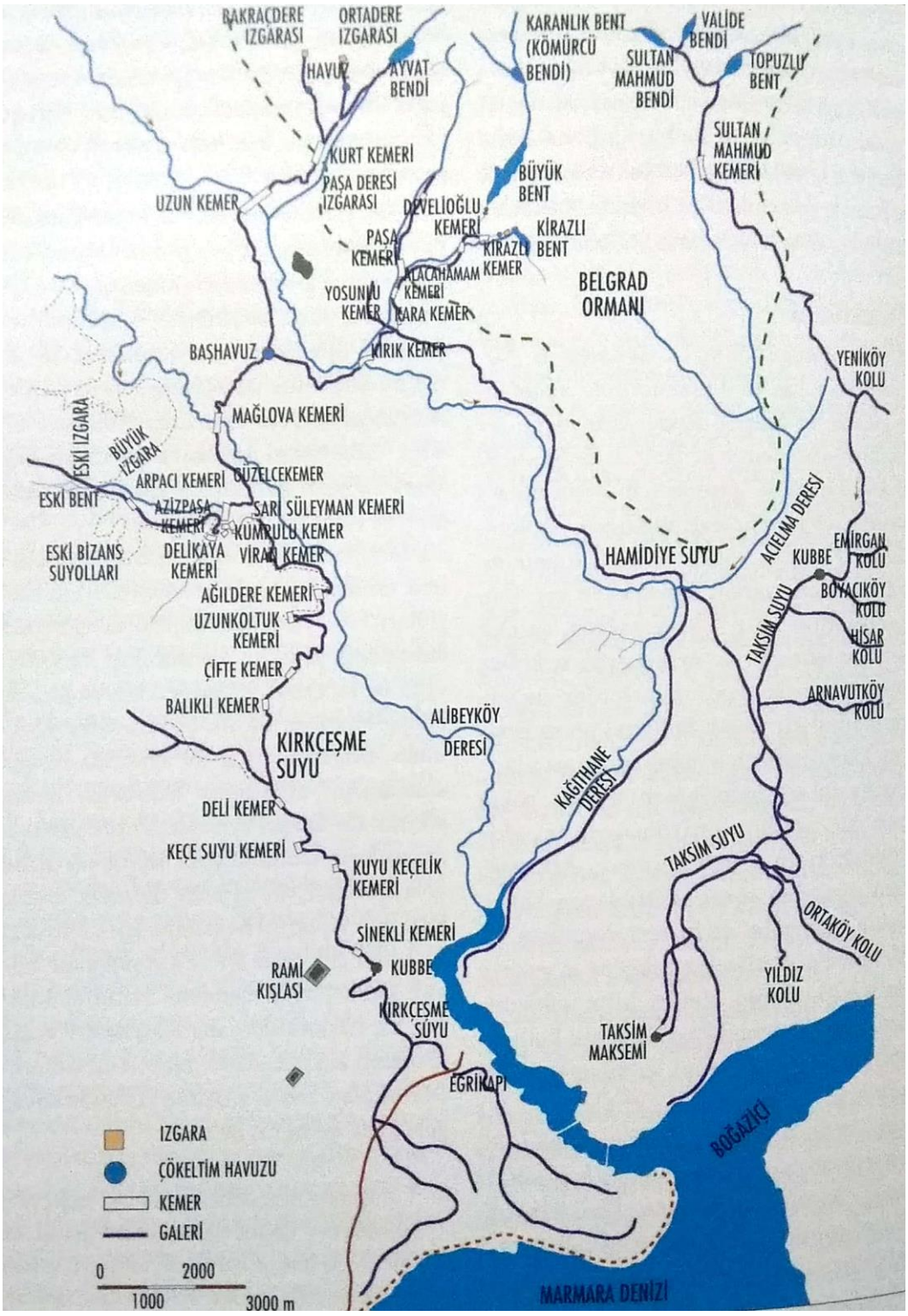

Figure 2.34 According to Kazım Çeçen, Waters Conveyance of Kırkçeşme, Taksim, and Hamidiye Waters. *Doğan, Kuban, 328, 2010.*

2.3.2 Cholera

"Life was a constant interplay between the body and the environment." (11th Century) [187]

Water, water infrastructure, waterfronts, coastal cities, and watersheds are in a direct and complicated relationship with the conditions of diseases both past and present. Historically, coastal cities served as ecological niches for the preconditions of outbreaks within various fragile metabolized natures and economies. Efforts to understand diseases and public health issues in Ottoman history through an interdisciplinary approach is an entirely new field, so it is challenging to address it in urban studies concerning the urban metabolism of İstanbul. For understanding the flows of disease in terms of the emergence of a new urban metabolism, this section focuses on the evolution of a new understanding of natural/unnatural, a decline in hygienic conditions, uneven developments of the drainage system, particular regulations on health and the environment by the municipality, the disciplining of nature and bodies in general (chemical treatments, etc.), and the spatial agenda of waterfronts (quarantines) in the context of 19th century İstanbul.

First of all, because of the new conditions of technology and bacteriology (germ theory), the city's reshaping process was accelerated. The idea of disciplining nature via unique implementations of scientific ideology, particularly at the waterfronts, started to be applied against diseases in the 19th century in İstanbul. At this point, Alan Mikhail (2011, 201) states that diseases like plague were considered as "natural" and "a regular part of society" in Ottoman Egypt in the 18th century, while in the 19th century, it "came to be set apart from society." The first cholera epidemic of İstanbul began on 26 July 1831, and 5275 people lost their lives (Ürekli 2010, 120). The second wave of cholera occurred in 1847-48, and the third wave of

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[187] Quotation from the 11th century: see Adil S. Gamal (editor) *Medieval Islamic Medicine: Ibn Rıdwan's Treatise "On the Prevention of Bodily Ills in Egypt,"* trans. by Michael W. Dols. (University of California Press, Berkeley, 1984), 18.

epidemic followed the Crimean War (1853-55) and infected people throughout Egypt in 1865. The fourth wave of epidemic in 1865, which had started in Singapore in 1863 and spread via transportation routes, reached the Ottoman Empire in July via a ship belonging to the Ottoman Navy at the waterfronts of Kasımpaşa (Ulman and Yıldırım 2006, 269). Ulman and Yıldırım (2006) explain essential details in their study about how epidemics spread and unevenly affected the inhabitants of İstanbul in terms of environmental conditions. They state that a dozen sailors from the crew were taken to the Naval Hospital with a different diagnosis; when they all lost their lives on the same day, it was explained by the physicians as cholera (Ibid, 269). Ulman and Yıldırım (2006, 269) further explain that the poor workers of the Arsenal, who lived in inadequate conditions in the Kasımpaşa district, were affected by cholera rapidly, which they then spread through the city, while the commander and the doctor of the ship escaped the disease. At the same time, the great Hocapaşa Fire (1865) demolished 10,000 houses in İstanbul on the very same days, and one week after the Hocapaşa Fire, the disease was stopped. Ulman and Yıldırım (2006, 270) explain that the fire functioned as a "disinfection process" for the city, but by the time that the disease had died down, nearly 30,000 people had lost their lives. People called that epidemic "the Great Cholera of İstanbul."

Ulman and Yıldırım (2006) provide important details about how the epidemic spread and unevenly affected İstanbulites. The controlling and disciplining mechanisms of both epidemics and bodies required ad hoc spatial organization along the waterfronts of İstanbul, referred to as a quarantine station or *tahaffuzhane* (literally meaning protection). Simultaneously, at the turn of the 19th century Louis Pasteur's (1822-1895) "germ theory of disease" helped foster a shift in importance from environmental conditions (sanitation, hygiene, etc.) to chemistry, drugs, and medicine regarding diseases and public health issues.[188] Thus,

[188] It must also be noted that İstanbulites, particularly in the poor neighborhoods, could not reach adequate numbers of pharmacies and hospitals in this period of epidemic diseases (Ulman and Yıldırım 2006, 270). For further details, see Y.I. Ulman and N. Yıldırım (2006), "The Great Cholera

here we witness the emergence of a modern idea that claims to discipline nature towards scientific ideology in many ways. The survey method began to be used as a kind of controlling mechanism in the 19th century. Evaluation of the laboring population's health via surveys was carried out for the first time in history in London by the Poor Law Commission. The commission developed a report in July 1842 entitled "Report on the Sanitary Condition of the Labouring Population in Great Britain" (Figure 2.35), which mentioned the absence of sanitary conditions and the relationship between disease and filthy environments (Melosi 2005, 9). One year later, in 1843, a supplementary report was published on the sanitary conditions of deaths and burials in urban districts, called "A Supplementary Report on the Results of a Special Inquiry into the Practice of Interment in Towns" (Figure 2.36).

Poor hygiene conditions were perpetuated due to lack of a sewerage system in the city until very late and uneven implementation of it concomitantly with the population boom. For understanding these uneven implementations through the waterfronts, we can briefly consider the drainage system. Establishing of sewerage along the Bosporus, which was as important as providing tap water, happened much earlier than its establishment on the İstanbul peninsula (Çelik 1984, 99). Moreover, Yıldırım (1994, 17) asserts that inadequate quality of tap water for public usage was observed in the 1890s in İstanbul. Fountains and baths were also part of the supply of tap water along the Bosporus. Preventive conditions and regularizations for epidemics and healthy environments could not be maintained properly throughout the entire urban landscape of İstanbul. The decline in hygienic conditions and sewage for the city's residents affected tap water sources in some areas, primarily resulting in the loss of lives by epidemics. In general terms, regularization attempts for the building, infrastructure, sanitation, and construction in the city of İstanbul via the municipality throughout the late 19th century and the beginning of the 20th century had strong similarities with the context of the acts and laws of European countries

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Epidemic of İstanbul in 1865," in *40th International Congress on the History of Medicine, Proceedings 1, August 26-30, 2006 Budapest, Hungary*, 269-272.

such as England, Italy, France, and Prussia within the same period.[189] These similar laws and acts of European countries include the English Public Health Acts of the 1840s and 1850s, 1865 Planning Law in Italy, 1873 French Royal Ordinance, and 1878 Town Planning Act in Prussia, as well as the 1872 American Public Health Association (APHA) and the New York Metropolitan Health Law (1860) in the context of the USA. Programs and commissions in Europe and the USA rendered a new "age of sanitation" with the advent of modern science, germ theory, and sanitary ideas (Melosi 2005) together with circumstances of increasing widespread deaths in the laboring population within the filthy environments of cities. In particular, developing urban sanitation systems and creating hygienic environments via technology was a matter of "national prestige and pride for a Western metropolis" in the 19th century (Kaika 2006, 281). For instance, London, with its "Great Stink" problem mainly spreading from the Thames River in 1858, saw hard days concerning public health and diseases like cholera in the city (Figure 2.37). With the help of campaigns for increasing awareness in the media of the day, the development of large-scale works of engineering, embankments on the Thames River, and the construction of an urban sewage system provided more prestigious environments, particularly around the urban landscape of the Thames. We can see similarities in this period in İstanbul, with the first examples of a service revolution of municipal organizations and industrial discipline through the urban waterfronts for the sake of "public health." However, concerning the total legitimization of these developments and the creation of healthy environments, İstanbul had to wait for a new political project, the Republican Regime, in the 20th century.

Sam White is a historian whose work intends to transcend the boundaries of disciplines while exploring diseases in Ottoman history with the help of new insights from environmental history. White's (2010) work on the spread of diseases in the geography of the Ottoman Empire and the relations of socio-natural conditions in the

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[189] The six main legal acts that influenced İstanbul's urban form were passed in the years of 1848, 1858, 1863, 1875, 1877, and 1882. For detailed explanations, see Zeynep Çelik 1984, 87-91.

period of the Little Ice Age is important regarding epidemics, and the environmental conditions give us significant insights that are important in the context of the urban political ecology of disease in İstanbul for this study. White (2010, 552) states:

> … We now have a far better sense of the interaction among disease mortality and such phenomena as weather, prices, nutrition, and urbanization as well as the various official policies and social conditions that tended to either exacerbate or alleviate such crises.

The very first examples of a service revolution in the case of the disease environment of İstanbul are also illustrative. Concerning medicine and public health care in the Ottoman Empire, the 19th century was significant. Widespread vault sewages were built as an infrastructural development, in direct relationship with public health and cholera after the legislation about urban structuring (*Turuk ve Ebniye Nizamnamesi*, 26 November 1861). Concerning preventive medicine, the first institution with a quarantine office in İstinye appeared in 1831 (İhsanoğlu 2002, 504). Furthermore, the first health care management committee (*Beynelminel Sıhhiye Meclisi*) was established in 1839. The Ottoman government issued the 1888 Regulation about the health of waters and established quarantines (***tahaffuzhane***) at the waterfronts. These places, located on waterfronts of the Bosporus, were places for checking the ships that came from the Black Sea in case of emergencies about the flows of disease. In 1838, the Kuleli Barracks (Figure 2.38) were used as a quarantine station instead of the tents along the Fenerbahçe waterfronts.

The *tahaffuzhane* places were located in Büyükliman (Kavak) (Figure 2.39), Rumeli Kavağı, Büyükdere, Anadolu Kavağı-Manastırağzı, Umuryeri (Figure 2.40), and Serviburnu (Figure 2.41). İhsanoğlu (2002, 504) states that the widespread cholera epidemic in İstanbul in 1893 had a causative effect on public health and developments in the field of microbiology.[190] Preventive developments for public

[190] Due to inadequate equipment and technology for diagnosis, like advanced laboratories, efforts remained insufficient until the important European scientist Pasteur was asked for help after the 1893 cholera epidemic. Andre Chantemesse, a French physician who gave the first lecture about bacteriology in a medical faculty with Victor Comil, came to İstanbul upon Pasteur's urging. Ekmeleddin İhsanoğlu 2002, 504: Nuran Yıldırım 1994, 14-29.

health care in İstanbul were the reason for all these changes. According to Çelik (1984, 97), the 1888 Regulation (*Sihhat-i Umumiye*) about the bacteriological study of the waters had aimed to improve public health before the big cholera epidemic of 1893 in İstanbul. The 1888 Regulation focused on the health of waters and established quarantines, but did not manage to prevent the 1893 cholera epidemic. Moreover, until that year, physicians and the government did not have a consensus about whether the disease really was cholera (Yıldırım 1994, 14-15).

Epidemics have been used as an apparatus for "disciplining" and "isolating" the socio-metabolized natures and the fragile economies of countries after the 19th century. Mainly, viruses remind us that we live in networked socio-natures in a global world. Diseases such as cholera, Ebola, and other modern viruses have been the subject of novels and movies. However, the tone of fear and tension is increasing. Novels such as *Death in Venice* by Thomas Mann (1912), *Love in the Time of Cholera* by Gabriel Garcia Marquez (1985), and *The Hot Zone* (1994) by Richard Preston, together with the famous film *Contagion* (2011) by Steven Soderbergh, are essential.

Cholera is also still a severe threat to public health in the 21st century due to uneven access to healthy potable water and coastal depression areas, which are ecological niches for diseases. For instance, cholera epidemics hit Haiti in 2010 after an earthquake. The World Health Organization (WHO) states that from 21,000 to 143,000 people lose their lives to cholera every year worldwide.[191] The last cholera outbreak was seen in İstanbul (Esenler) in 1970, after many years, and was controlled within thirteen days.[192]

This section of the dissertation has thus aimed to explore the connection between the city's conditions and epidemics in a modern manner and how disease

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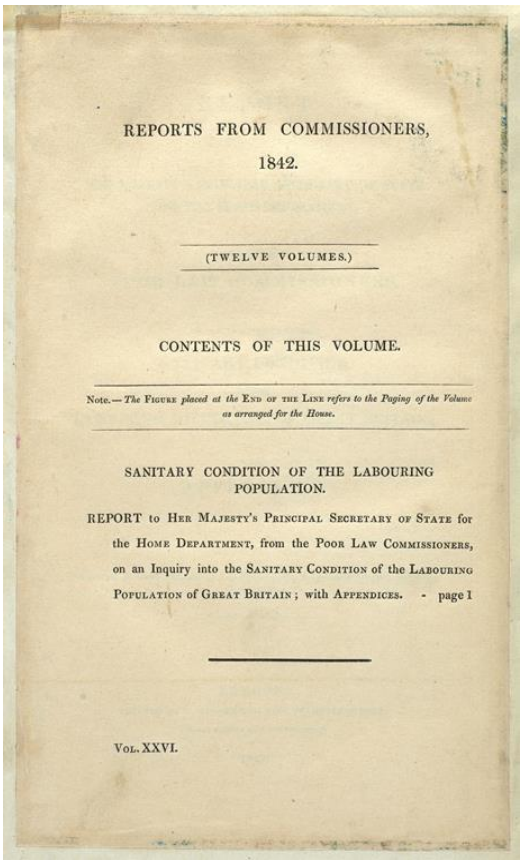
[191] Researchers have estimated that every year there are 1.3 to 4.0 million cases of cholera, and 21,000 to 143,000 deaths worldwide due to these infections. https://www.who.int/health-topics/cholera#tab=tab_1.

[192] Adalet Partisi Merkez Yayınları No: 50 (1972), "Millet Hizmetinde Adalet Partisi 1965-1971," p. 12.

was managed and used as an apparatus for disciplining the production of nature and ourselves through intra-actions in the environmental history of İstanbul. **To summarize**, the uneven developments and socio-natural conditions of the city threatened public health through the metabolic flows of water in the context of cholera. The cholera resulted in widespread loss of lives with perhaps the most important relationship with the emergence of a new idea of "disciplining nature" at the turn of a new era. Subsequently, implementations of disciplining nature materialized along the waterfronts of İstanbul. Managerial steps and new codes and regulations were established about health and the environment with a more or less holistic approach (*Turuk ve Ebniye Nizamnamesi, Sıhhat-i Umumiye*, *Beynelminel Sıhhiye Meclisi*) by the municipality. At the same time, uneven implementations of drainage works impacted the urban landscape of İstanbul. Before the development of germ theory and the shift towards drugs and chemistry, the survey method was applied for sanitary conditions and health precautions for the laboring population. Next, this chapter turns to the metabolic flows of waste and sanitary conditions, which were also intricately connected with the flows of disease and waterfront transformations embedded in the metabolic flows of water in İstanbul in the 19th century.



REPORTS FROM COMMISSIONERS,

1842.

(TWELVE VOLUMES.)

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SANITARY CONDITION OF THE LABOURING POPULATION.

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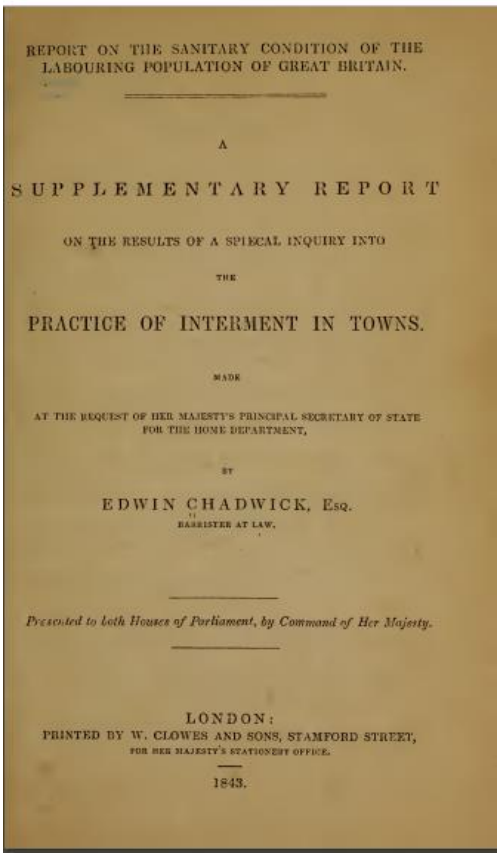

REPORT ON THE SANITARY CONDITION OF THE LABOURING POPULATION OF GREAT BRITAIN.

A

SUPPLEMENTARY REPORT

ON THE RESULTS OF A SPECIAL INQUIRY INTO

THE

PRACTICE OF INTERMENT IN TOWNS.

MADE

AT THE REQUEST OF HER MAJESTY'S PRINCIPAL SECRETARY OF STATE FOR THE HOME DEPARTMENT,

BY

EDWIN CHADWICK, Esq.
BARRISTER AT LAW.

Presented to both Houses of Parliament, by Command of Her Majesty.

LONDON:
PRINTED BY W. CLOWES AND SONS, STAMFORD STREET,
FOR HER MAJESTY'S STATIONERY OFFICE.

1843.

Figure 2.35 Left on the page "Report on the Sanitary Condition of the Labouring Population in Great Britain." Figure 2.36 Right on the page "A Supplementary Report on the Results of a Special Inquiry into the Practice of Interment in Towns."

Figure 2.37 Map of a disease area in London.
https://www.parliament.uk.

Figure 2.38 Kuleli Barrack Used as quarantine place in 1838. *Nuran Yıldırım. İstanbul Boğazında Karantina Uygulamaları. Yeni Deniz Mecmuası, 53, March 2016.*

Figure 2.39 The Tahaffuzhane of Kavak and Its Hospital in 1877. *İ.Ü. Nadir Eserler Kütüphanesi, Albüm, 90667/5*. *Nuran Yıldırım. İstanbul Boğazında Karantina Uygulamaları. Yeni Deniz Mecmuası, 54, March 2016.*

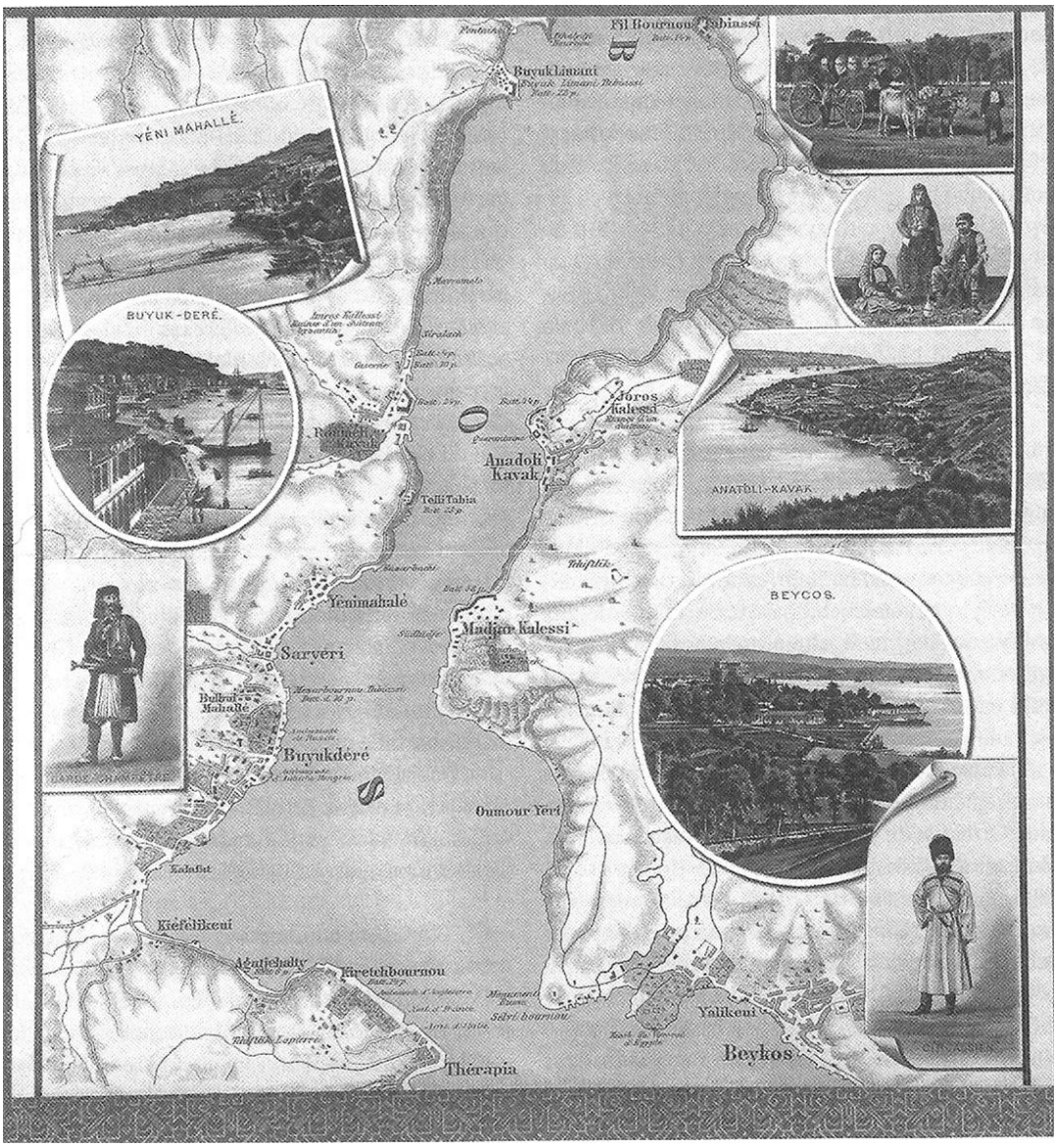

Figure 2.40 The Tahaffuzhane Located at the Bosphorus. Left on the map: Büyükliman, Rumeli Kavağı, Büyükdere Right on the map: Anadolu Kavağı, Umuryeri). *Nuran Yıldırım. İstanbul Boğazında Karantina Uygulamaları. Yeni Deniz Mecmuası, 44, March 2016.*

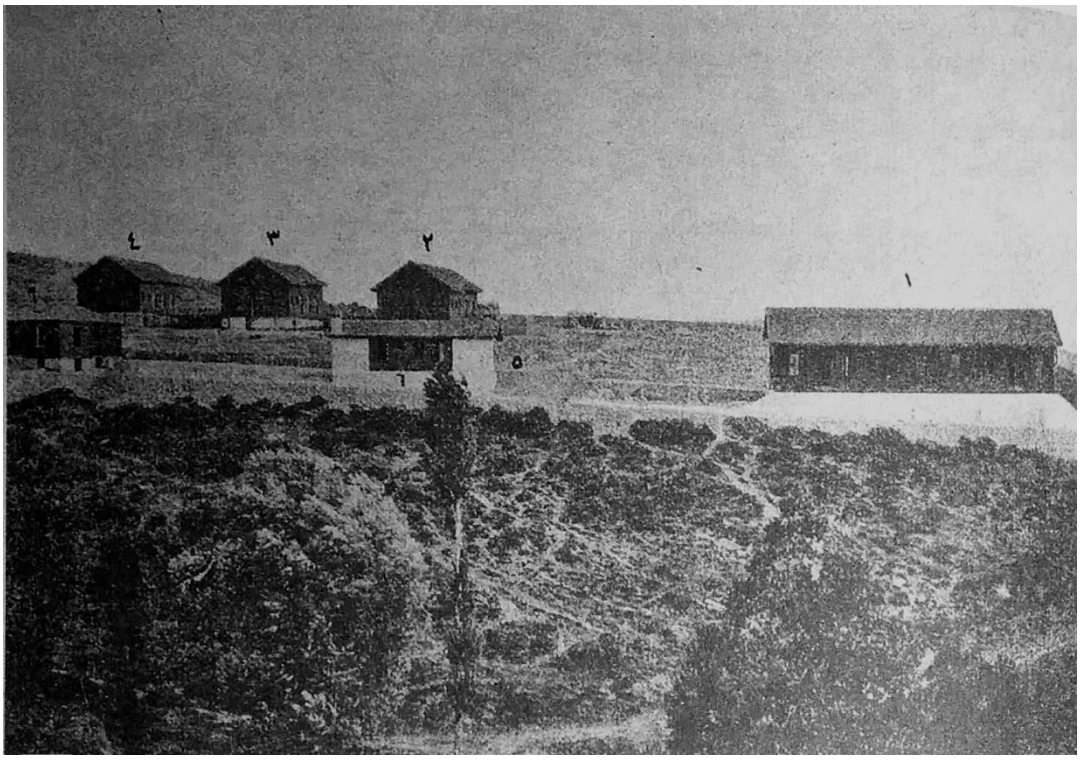

Figure 2.41 The Hospital Barracks of Serviburnu Quarantine Place; on the Right, the Officers Department, 1901. *Nuran Yıldırım. İstanbul Boğazında Karantina Uygulamaları. Yeni Deniz Mecmuası, 56, March 2016.*

2.3.3 Waste and Sanitation

Martin V. Melosi (2005, 17) describes the 19th century as taking an "*out of sight, out of mind*" approach to wastes, and it would not be wrong to say that this is still valid today, and perhaps even a "modern" attitude. Edwin Chadwick was an essential figure in the mid-19th century in both the US context and Europe with his influence on sanitary laws in relation to the health of urban dwellers and waste collection. However, organizations such as waste management progressed slowly. At this point, bacteriology, as mentioned in the previous subsection, helped create a shift concerning the idea of a relation between public health and material conditions within the city. Therefore, infrastructural developments (e.g., sewerage) in many cities worldwide, including İstanbul, were delayed in the 19th century and "fully"

completed in the 20th century. The flows of waste refer to a system characterized by poor drainage, dirty waters, inadequate sewerage (sewer holes, water closets *a la Turca*), and solid wastes due to the horses, scavengers, *tanzifat* quays, garbage boats, waterfronts, and water basins found at that time in İstanbul. Waste disposal management and the flow of wastes along the waterfronts of İstanbul have carried essential metabolic interactions throughout the ages.

Concerning the 19th century and the very first years of the 20th century, the labor-intensive and ad hoc character of these interactions concerning flows of waste was still essential and dominant. The ad hoc precautions taken about flows of waste for keeping the Golden Horn, as an enclosed water body, healthy, created a particular line of work for salaried men on duty for controlling nature by municipal order. Especially during the periods of cholera outbreaks, a particular tax was paid, sanitation works were taken seriously, and sewage projects were prepared as the very first infrastructural development (1918-1920), as will be explained in this section.

Sanitation and sewer systems have a long history and can be seen in many ancient cultures, but they did not show a universal and widespread character for the citizens of the ancient world. The ancient Greeks organized the first municipal dumps in the Western world around 500 BC. According to Melosi (2005, 4), the municipal dumps defined the city's borders, and the first known legislation about forbidding garbage thrown into the streets can be seen from the ancient Greeks. All of the waterfront areas of İstanbul had been used as random disposal areas before the second half of the 19th century. Moreover, water closets *a la Turca* were an essential part of the sewerage in the houses of İstanbul concerning sanitary conditions and epidemics, which could only be maintained by wealthy people with adequate water in this period (Ulman and Yıldırım 2006, 270). Lack of a closed sewer system regarding the relation between random open sewer holes and water basins in dense urban areas is emphasized as the significant cause of cities' unhealthy conditions around the world. Furthermore, ***tanzifat* quays** (or ***çöplük iskelesi*, garbage dump**) were sprinkled along the waterfronts of İstanbul. The garbage of the city was transported to the *tanzifat* quays (Figure 2.42) as dumping points along the

waterfronts. Metabolic flows of waste in the period included separation, purification, transportation, and collection movements, and transformations through waterfronts. Mazak and Güldal (2011, 74) summarize the records of 1861 on the regularization of waste management from the Government Archive, which explained that waste disposal should be done in the Kumkapı and Yenikapı areas, not the waterfronts of the Golden Horn any longer.

In the 18th and 19th centuries, "scavengers" were known as garbage men and they were given the name ***tanzifat amelesi*** **(Ottoman street sweeper**) in 1868, responsible for cleaning the streets and bazaars. In the same year, the *tanzifat amelesi* with a wooden wheelbarrow could be seen in Kadıköy, too. It was very typical to see a *tanzifat amelesi* walking the streets of İstanbul, collecting garbage on his back via a basket (*küfe*) to sustain his life. All of the garbage collected in the old Fikirtepe mining quarry in Kadıköy was not thrown into the sea on the Anatolian side. After 1860, a tax (*Tanzimat Resmi*) was applied for collecting garbage under municipal order with salaried sanitation workers.

From records in the archives, we know about the cost of repairs of the *tanzifat* quays and that Kasımpaşa[193] (1905), Beşiktaş[194] (1895), and Hatabkapısı[195] (1902) were the locations where *tanzifat* quays were found. According to the records, the *tanzifat* quay at the Galata Fish Market[196] had been demolished before and was reconstructed again in 1901. The garbage was separated by a scavenger or *çöp esnafı*, searching for important things and cleaning and separating the waste materials using seawater at the *tanzifat* quays (Figure 2.43). After the separation, garbage was transported by boats to the open seas near the islands of İstanbul like Yassıada (Figure 2.44). The metabolic flows of waste regarding separation, purity, transportation, and collection were made possible by direct human and animal labor as a municipal service in this way. Bonkosfki Paşa, responsible for precautions

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[193] BOA, İ..ŞE. 18- 9, H-03-11-1322 (1905).
[194] BOA, İ..ŞE. 8- 24, H-23-04-1313 (1895).
[195] BOA, İ..ŞE. 16- 2, H-11-06-1320 (1902).
[196] BOA, İ..ŞE. 14- 9, H-07-11-1318 (1901).

against cholera outbreaks concerning sanitary works, took the responsibility for Municipalities 1, 2, 6, and 9 in 1893.[197] Mösyö Ojen Mon Dragon from Paris was appointed for the sanitation works in İstanbul in the same year.[198]

Concerning sewers as an infrastructural development, if we look at the Western countries, Joel A. Tarr (1996, 9) mentions that no city had sewage facilities for discharging human waste before 1850. Furthermore, the sewers constructed after 1880 by municipalities were mainly for storm water collection and conveying water. In some countries collecting waste in them was forbidden by acts and laws. Even at the beginning of the 20th century in the USA, privy structures and pumps not suitable for healthy environments could be seen together near dwelling areas (Figure 2.45). A French company developed general sewage projects between 1918 and 1920 for İstanbul. Only the Fatih, Laleli, and Beyazıt streets were included, with sewage systems still used today. As mentioned previously in this chapter, Kaika (2006, 281) states that developing an urban sanitation system and creating hygienic environments via technology were matters of "national prestige and pride for a Western metropolis" in the 19th century.

In short, we see in this period of İstanbul the first examples of a service revolution of municipal organizations blended with direct human and animal labor through salaried cleaners. The *tanzifat amelesi* worked for the municipality. Furthermore, a meeting was held in 1866, called the International İstanbul Sanitary Conference. As a result of this conference, the first municipal hospital was founded, and new regularization of health issues came into effect (Ulman and Yıldırım 2006, 272). However, concerning the total legitimization of these improvements and visions of "public health" in contemporary terms, İstanbul had to wait for the Republican Regime in the 20th century. In contrast to the general legitimization process with nation-state intervention in Western countries in the 19th century, this section has sought to highlight Turkey's distinct context for dealing with sanitary

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[197] BOA, İ..HUS. 18- 48, H-17-05-1311 (1893).
[198] BOA, İ..HUS. 18- 57, H-21-05-1311 (1893).

conditions and flows of waste through labor-intensive characteristics. The exercise of the flows of waste and sanitary conditions showed particular characteristics of being “labor-intensive,” “uneven,” and “ad hoc.” A tendency to shift to the idea of sanitary conditions by disciplining waste can also be observed in terms of municipal orders. We can observe that garbage collection and waste disposal depended both on human and animal labor, and municipal service in the hands of capital investments resulted in uneven conditions.

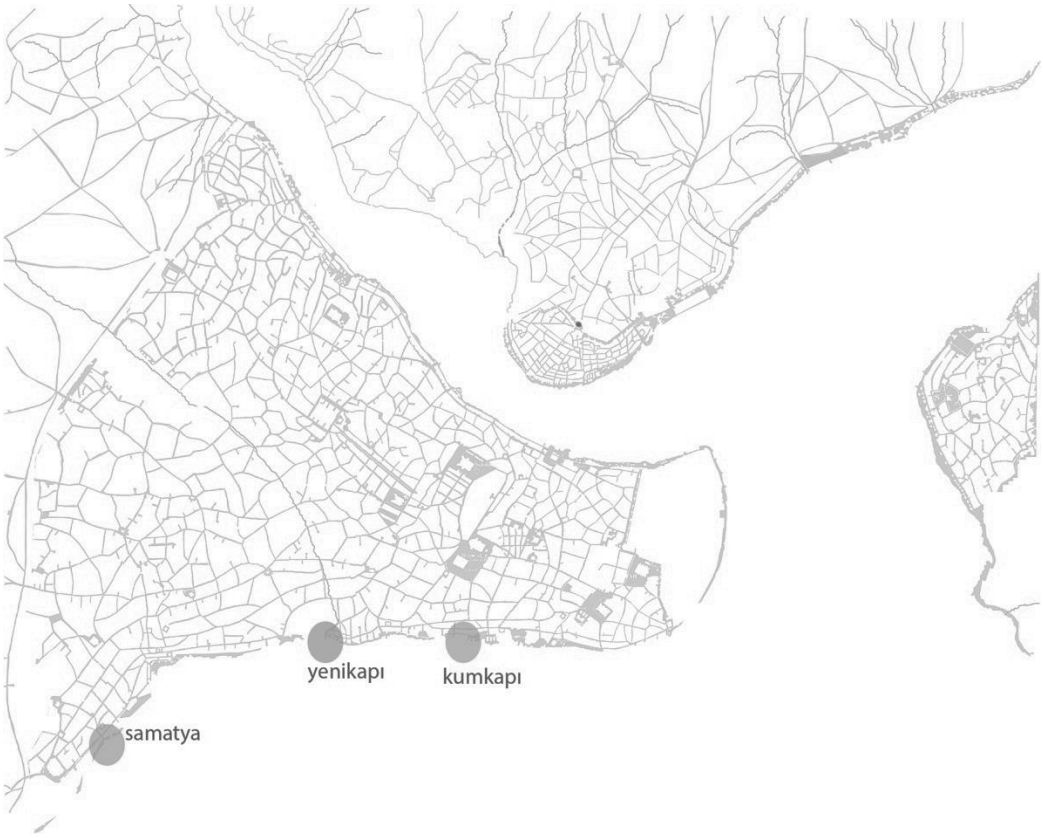

Figure 2.42 The Garbage of İstanbul Was Transported to Dumping Points or *Tanzifat* Quays at the waterfronts through the second half of the 19th century with the regularizations of Municipality.

Figure 2.43 A *Tanzifat* Quay before 1905. *Osmanlı'dan Günümüze Temizlik İşçileri ve Aletleri Sergisi Kitabı. Municipality of Kağıthane, 18, 2005.*

Figure 2.44 Garbage Boats before Transporting Wastes near Yassıada in the First Half of the 20th Century. *Osmanlı'dan Günümüze Temizlik İşçileri ve Aletleri Sergisi Kitabı. Municipality of Kağıthane, 24, 2005*

Figure 2.45 Privy structures and pump in Pittsburg, USA, 1909. *Paul Underwood Kellogg (ed.), The Pittsburg District: Civic Frontage, The Pittsburgh Survey. New York: Survey Associates, 1914.*

This chapter has aimed to fill the gap in the classical reading of İstanbul's late 19th century and early 20th century based on regularization attempts defined as the rules of "Western-minded" legislation. Çelik (1984) renders the ongoing transformations between 1838 and 1908 in the context of the "Westernization effort," and administrative lines operated to meet the relevant needs as described by scholars such as İhsanoğlu (2002), Hanioğlu (2008), and Gül (2015). Moreover, efforts to understand the city through socio-natural insights give knowledge about changes in the ideology of nature (towards a scientific ideology of nature) and how the metabolism of the city shifted (from labor-intensive to capital-intensive), as well as the uneven production of nature in that period. Extended urbanization embedded in the flows of land and water resulted in and caused the emergence of a new urban metabolism of İstanbul, which was related to the "modern" and "uneven." This study asserts that this new emergent urban metabolism of İstanbul in the 19th century is reminiscent of very early insights into the 21st century's metabolism.

CHAPTER 3

1923-1950: THE REPUBLICAN REGIME AS A POLITICAL PROJECT AND EXPLORATION OF METABOLIC FLOWS OF URBAN VOIDS IN İSTANBUL

3.1 The Republican Regime as a Political Project: Metabolic Flows of "Urban Voids" in İstanbul

> *"The central message that emerges from urban political ecology is a decidedly political one. To the extent that cities are produced through socio-ecological processes, attention has to be paid to the political processes through which particular socio-environmental urban conditions are made and remade. From a progressive or emancipatory position, then, urban political ecology asks questions about who produces what kind of socio-ecological configurations for whom."* [199]

> *"In conquering İstanbul, Fatih [Sultan Mehmet] bestowed it upon the Turkish homeland. Our Chief, İsmet İnönü, will achieve a success as beautiful and as big as that conquest in the process of having İstanbul reconstructed, and will win a victory for both peace and civilization."* [200]

The declaration of the Turkish Republic in 1923 not only implied a new political project and modern metabolic interaction, but also involved interrelating projections of the future urban landscapes in İstanbul as well as a new consensus and struggles.

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[199] Nik Heynen, Maria Kaika, and Erik Swyngedouw, "Urban political ecology: Politicizing the production of urban natures," in *In the Nature of Cities* (Routledge, 2006), 2.

[200] Speech of Lütfi Kırdar, who was the Governor and Mayor of İstanbul between 1938 and 1949, on Radio İstanbul in 1943. Abidin Daver, *Dünkü Bugünkü Yarınki İstanbul, İstanbul Radyosundan Konuşmalar* (Belediye Matbaası, İstanbul, 1944), IV. Translated by the author.

The urban metabolism of İstanbul in this chapter shows on the one hand the character of preparing the grounds for connecting the country and the city via disciplining nature as space for the sake of "developing projections" (Tekeli and İlkin 2004)[201] and desires to create a healthy society and, on the other hand, of paving the way for the creation of the uneven urban landscapes and hazardous conditions that would soon materialize as a whole in the 21st century. This new political project was rooted in the 19th century's vision of the reforms of the late Ottoman Empire, as we explored in the previous chapter.

After World War I, the transformation of the mode of production as well as the redistribution of power relations worldwide were significant for the form of this new political project that was taking shape. This chapter tries to understand the shifting urban metabolism through the metabolic flows of urban voids embedded in visions and projections for making roads and boulevards, parks and gardens, public squares, and *plaj*s. The previous chapter tried to understand the socio-natural transformations of waterfronts after the Tanzimat period by examining particular flows (land and water) of İstanbul. It claimed that the conflict between labor-intensive and capital-intensive metabolism existed at the turn of the era, as well as uneven consequences that were explored by tracing back the metabolic flows of land and water along the waterfronts of İstanbul for understanding the urban landscape in the 19th century.

In this chapter, **urban voids** of İstanbul are captured as the context for exploring metabolic flows in favor of understanding nation-states' ideology of nature and urban metabolism. This chapter asserts that the metabolic flows of urban voids through four parts were essential in the early period of the new political project, namely the projections of coastal roads and boulevards, woods/parks and gardens, public squares, and *plaj*s of İstanbul. Production of nature by engineering urban voids as well as creating a new synthesis of material and human flows were the

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[201] İlhan Tekeli and Selim İlkin, *Cumhuriyetin Harcı 3: Modernite Altyapısı Oluşurken* (İstanbul Bilgi Üniversitesi Yayınları, 2004), 217-233.

preeminent characteristics of the national agenda for the young Turkish Republic between 1923 and 1950. In those years, this new political project had the ability to provide consensus on the creation of a national bourgeois class and maximize class relations to the fullest extent, while envisioning a healthy civil society and public sanitation (Municipal Public Sanitation Law, 1930) and disciplining nature within arguments about "national development" (Law of Municipalities No. 1580, Law of Buildings and Roads in 1933, Municipalities Law of Expropriation in 1934). This consensus was realized via spatial processes with an institutional character and control mechanism that depended on the division of humans from nature, which renders the bourgeois ideology of nature.[202] This division is explored in this chapter through the metabolic flows of "urban voids" along the waterfronts of İstanbul with the aim of figuring out what kind of metabolic flows were stimulated with a will to create urban voids of İstanbul. It addresses the urban voids throughout the waterfronts and how they were interrelated with the entire metabolism of İstanbul, as well as who benefited from them with this new political projection between 1923 and 1950.[203]

In the Master Plan of İstanbul's urban landscape, prepared by Henri Prost (1874-1959), the dominant concept is "*espaces libres*" (*serbest sahalar* in Turkish), which means free space, emphasizing urban voids and used by Prost particularly for highlighting public open spaces, including boulevards, parks, sports areas, public terraces, *plaj*s, *gazino*s, and children's parks for attempts at transformation (Bilsel 2011, 107; Akpınar 2010, 70) conducted via expropriations or "creative" destructions.[204] Previous studies (Çelik 1986, Bozdoğan 2002, Akpınar 2003, Bilsel 2011, Gül 2015) have been limited to seeing the "ethnic-religious differentiation" of

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[202] For a detailed explanation of the bourgeois ideology of nature, see Neil Smith, *Uneven Development: Nature, Capital and the Production of Space.* 3rd edition. (The University of Georgia Press, Athens and London, 2008), 10-49.

[203] For a quintessential source about urban political ecology debates and socio-ecological configurations in the Western world, see Nik Heynen, Maria Kaika, and Erik Swyngedouw *In the Nature of Cities* (Routledge, 2006).

[204] Cana Bilsel, "Les Transformations d'Istanbul": Henri Prost's planning of Istanbul (1936-1951)," *ITU AZ* 8, no. 1 (2011): 107.

the urban pattern and "Westernization" attempts within the context of the "modernization of a city" as the basic components for understanding the urban landscape of İstanbul in the late 19th century and early 20th century. Furthermore, the class-based differentiation of the urban landscape and the uneven results of it in İstanbul have been addressed for the period after WWII (Akpınar 2003, 42). At this point, İlhan Tekeli (2001, 72) represents an exceptional contribution to the above debate, as he claimed that the class-based transformations of the urban landscape had started much earlier than WWII. Tekeli emphasizes the period in which class-based differentiation had been started, instead of religious/nation-based differentiation, but he restricts his approach to the residential areas.

In contrast to these essential scholarly works, this study argues that common/free/public places and relationally disciplined nature together with the re-distribution of natural resources are embedded in the planned and designed creation of metabolic flows as "urban voids," subject to the preliminary insights of class-based differences, spatial fix, and urban conflicts, with the shifting metabolism of İstanbul between 1923 and 1950. The other important elaboration in this chapter involves arguing that the emerging metabolic interactions of İstanbul in the 19th century saw total materialization within the complex relations of a nation-state apparatus in the youthful period of the Turkish Republic. Tekeli (2013) defines this period between 1923 and 1950 as the Jacobin (Radical) Modernity Period. This study tries to further and deepen the body of work that reads the period as the first and radical modern transformation of İstanbul for dismantling its Ottoman past in various ways, and it is claimed here that the nation-state's vision was a desire to keep, materialize, and rescale the control over the emerging metabolism (from labor-intensive and ad hoc to capital-intensive, and from industrially disciplined by foreign private corporates to driven by the nation-state) of the city in the 19th century for the sake of altering the production and control of nature as space in the process of the whole.

The labor agenda of the young republic was characterized by "*new notions of population [which] were largely based on a bureaucratic logic of enumeration,*

statistics, charts,"[205] as well as the already emerged metabolic relationality between nature and humans in the 19th century that should be disciplined in various ways for the sake of the nation's development during the very hard times of the country in the first half of the 20th century. Despite all the prohibitive conditions for the sake of disciplining workers, the challenges and urban struggles for working life conditions were generally observed in İstanbul at the very beginning of the Republican Period, too (Tekeli and Eyice 1994, 283).

Mail distributors and the workers of the Ayvansaray Flour Mill and textile factories went on strikes for better working conditions, higher salaries, and shortened working hours in 1924, but they failed.[206] After the passing of a code entitled *Takrir-i Sükun* in 1925, according to the difficult circumstances, only the workers of *Şirket-i Hayriye* raised their voices, going on strike and speaking to the media. Workers at the Kuruçeşme Warehouse in 1925, arbor workers in 1926-1927, tobacco workers in 1927, and railway, weaving, tobacco, iron and steel, and streetcar workers in 1928 went on strike and struggled (Tekeli and Eyice 1994, 284). The code entitled "National Protection Law" *(Milli Koruma Kanunu* in Turkish) standardized heavily disciplined working conditions and made everyday life difficult in 1940. Then, in 1946, as part of a democratization package, the ban on the establishment of class-based organizations was removed (Tekeli and Eyice 1994, 284).

The new projections and visions of the new political project elaborated above have been an issue in literature as well as scholarly debates. Many writers and scholars have analyzed the changes concerning urban patterns and daily life in the 20th century in Turkey according to dualities like "West and East" or "ethnic-religious differentiation" (i.e., alienation/us versus the other). At this point, this study argues that the Westernized context seems to be used on behalf of the capitalist

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[205] Borrowing from Mikhail's observations in the context of Egypt in the 19th century, we can see the same logic in nation states during the 20th century. For details, see Alan Mikhail, *Nature and Empire in Ottoman Egypt: An Environmental History*, (Cambridge University Press, 2011), 172.
[206] İlhan Tekeli and Semavi Eyice (editors) *Dünden Bugüne İstanbul Ansiklopedisi*, Vol. 4, (Kültür Bakanlığı ve Tarih Vakfi Ortak Yayını, 1994), 283.

production of nature as space as a source of fragmented urban landscapes and uneven development. For instance, a famous and important Turkish novel entitled *A Mind at Peace*[207] (1949; original title in Turkish: *Huzur*) by Ahmet Hamdi Tanpınar gives us fertile ground for a critical discussion about reading the period in terms of the above arguments. The novel is also important for exploring and imagining conflicts in terms of the uneven socio-natural conditions in the daily life of the dwellers of İstanbul in the 1930s. *A Mind at Peace* emerged as a serial publication in the newspaper *Cumhuriyet* in 1948, and one year later it was printed as a novel. The book has been criticized for the relationship between Mümtaz and Nuran, the main characters, by many scholars and critics via the lenses of "cultural conflicts," "modernization," and "fragmentation" contexts in a Westernized world in the unique atmosphere of İstanbul and the young Turkish Republic (1930s).

In short, luxurious and beautiful environments belong to the Ottoman past and remind Mümtaz and Nuran of the old days in the novel, while the filthy part of the city symbolizes the attempt at "Westernization" and its results. This study also argues (as explained in detail in Chapter 2) that the preliminary insights of the uneven production of nature as space between 1923 and 1950 can be examined as having been rooted in the Ottoman past, too (19th century).

The new political project, which created more or less uneven geographies, is rooted in the 19th century's vision of reforms, or, in other words, in the late Ottoman Empire. At this point, the argument of Prost supports this study's claim, wherein he declared his plans and projections to actually be follow-ups to the former attempts of urban transformations held in the late Ottoman period of İstanbul, representing only a part of it (Bilsel 2010, 63).[208] Modern technology has been explored as a modern quest for controlling nature by many scholars (Proudhon 1972, Marx 1992,

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[207] Ahmet Hamdi Tanpınar, *A Mind at Peace* (1949). Translated from the Turkish by Erdağ Göknar (2008), Archipelago Books.
[208] Cana Bilsel, "İstanbul'un Dönüşümleri: Prost Planlaması ve Modern Kenti Yaratmak," in *Osmanlı Başkentinden Küreselleşen İstanbul'a: Mimarlık ve Kent 1910-2010* (Osmanlı Bankası Arşiv ve Araştırma Merkezi, 2010), 63.

Foster 2000, Kaika 2006), described as "*Modernity's Promethean Project*"[209] throughout urban landscapes such as İstanbul. For example, Akçura (1993, 117) argues that the spring waters of the Bosporus in the 1930s, and particularly in Sarıyer and Beykoz, defined an "axis to evoke something of the periods of waters" as implied in the 19th century in İstanbul. Commodifying nature (spring water) as space (private water-bottling plants) with the help of developing transportation resulted in uneven access to fresh water in this period. On both sides of the Bosporus fresh spring waters (Çıçır, Hünkar, Kestane, Kocataş, etc.) underwent a transition from free access for the public to water companies for the sake of scientific treatment in the 1930s. With the modern technology of water companies, spring waters were conveyed by pipes from their sources to distribution centers, bottled, sealed, and labeled without human hands. Assembly lines and scientific management "have led partly to the alleviation of labor, partly to needless exploitation of the worker" (Giedion 2013, 79). Scientific management is used here as a method of organizing the way human work is performed through production of nature.

In short, this chapter asserts that the visions and imaginary projections on İstanbul throughout its waterfronts in the early Republican Period cannot be separated from its socio-natural past and future. These are examined in light of the metabolic flows of Prost's free spaces as urban voids which had similar characteristics of the vision and spatial agenda of a Keynesian state. The visions of a design, plan, and production of nature via technology and expertise were the basic motives for the production of nature as space through the waterfronts of İstanbul by Prost's plans and reports, which are the key medium for this chapter. This period can be exemplified by the division of humans from nature with the desire of combining them via countless efforts embedded in the vision of creating "urban voids" throughout the waterfronts of İstanbul. Furthermore, the nation-state apparatus's

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[209] Prometheus, as quoted from Kaika (2006, 276), mythologically refers to "'the one who foresees,' stole fire from the gods and brought it to human beings, turning them 'from savages to men' (Aeschylus 1975, ca. 430 BC)."

ability to provide consensus among wide public segments on the legitimization of the division of humans from nature is important. The dynamics of state capitalism and its premise based on the production of nature as space were embraced by the projections of the young republic, with the help of European architects and planners commissioned for master plans as well as infrastructural administrative developments in the 1930s.

The characteristics of these projections on İstanbul's urban socio-natures are basically related to providing for the formation of a local bourgeoisie, the physical connection to the network of trade centers (by railways and motorways), disciplining nature, and the promotion of urban hygiene for the laboring population. All of them were strictly connected to İstanbul's catastrophic past events, like great fires and diseases, as well as reforms and visions of movements of modern architecture and city planning in the course of the capitalist mode of production. Moreover, these contexts were strongly interrelated with the socio-natural degradations of the future İstanbul. The visions of the design, plan, and production of nature as waterfronts have a role in the transformation of the ideology of nature in daily life. The agenda of the visions and imaginary projections of the young republic may be outlined in three periods, classified as 1923-1929 (foreign industrial capital investments), 1930-1939 (national bourgeoisie and national economy), and 1939-1950 (war period, population decrease and economic burden) according to their motivations and spatial agendas. After a brief summary in this introductory section of these three periods between 1923 and 1950, this chapter tries to explore the metabolic flows of urban voids followed by an epilogue that elaborates on the urban political ecology of urban metabolism through Prost's plans and reports in the early Republican Period of İstanbul.

3.1.1 First Period: Between 1923 and 1929

The first period is mainly characterized by the dominance of foreign industrial capital investments between 1923 and 1929. Foreign capital investment had nearly twice the

share of domestic investment considering industrial investments in that period (Boratav 2005, 42). The main capital investments depended on railway construction across Anatolia. The proper conditions were present for the birth of building contractorship in Turkey in 1925 (Tekeli and İlkin 2004, 453-454). The rights of concession of foreign capital investments for "developing" the country[210] throughout the urban landscape are explained by the relation between urbanization and the mode of production in this period. From 1923 to 1930, the main debate addressed the seeming conflict between Ankara, the new capital of the Republic of Turkey, and İstanbul, the old capital city of the Ottomans, in terms of uneven development and disregard.

At this point, Akpınar (2003, 300) argues in her dissertation that, contrary to popular belief, which claims that İstanbul was neglected by the new state in this period, the government aimed to deal with every city equally with development plans, and the faulty impression of İstanbul's neglect comes from the fewer advertisement programs about İstanbul compared to Ankara and other Anatolian cities (Akpınar 2003, 43-44). İstanbul can be seen as a stage for administrative reform until the 1930s. Moreover, according to Burcu Özgüven (2011, 20), a scholar of İstanbul's development in the 1930s, concerning the urban organization of İstanbul, the city more or less displayed medieval characteristics until the 1930s. At the same time, Ankara, the new capital city, had begun to be shaped in the 1930s, too. İstanbul was a stage for industrial capitalist visions with a concomitant tendency towards nature being claimed to serve the public good in various areas of life through the 1930s. For instance, in the beginning of this period, a slaughterhouse was set up at the waterfronts of Sütlüce (Haliç) to provide meat to the laboring population in "healthy and hygienic conditions."[211] According to Ziyaoğlu (1971, 302), in the first year of the young republic, Ali Haydar Yuluğ, who was in charge as Mayor and

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[210] The reports and books about the İzmir Economic Congress of 1923 (İzmir İktisat Kongresi-1923) can be consulted for details about this openness to foreign capital investment and partnerships.
[211] Rakım Ziyaoğlu, *İstanbul Kadıları, Şehreminileri, Belediye Reisleri ve Partiler Tarihi* (İsmail Akgün Matbaacılık ve Kitapçılık,1971), 300-301.

Governor of İstanbul between 1923 and 1924, made agreements with private companies like İstanbul Electric, İstanbul Tramway, Haliç Steamship Company, Dolmabahçe Gas, İstanbul Water, Üsküdar-Kadıköy Gas, Üsküdar-Kadıköy Water, and Yedikule Gas for taking a share from each company on behalf of the municipality, which would not have been possible before. In the future, they would be totally nationalized.

The first sewage system works were also undertaken in this period, and water infrastructure was extended to new areas like Kayışdağı, Çamlıca, and Kanlıkavak to overcome the inadequacy of the tap waters from Terkos under the chairmanship of Emin Erkul (1924-1928) in this period (Ziyaoğlu 1971, 316). In all of these developments in the first years, generally related to emergencies of public health as well as public good, and generally aimed at realizing such a vision, the government did not hesitate to take help from Western countries in economic regards. Tekeli and İlkin (2004) assert that creating a railway network in Turkey, which was projected for important connections to foreign markets, was the key point of the 1923 *Umur-u Nafia Programı*, or the Public Works Program. This program was announced in 1923, before the declaration of the Republic and consensus about declaring Ankara the capital city of the young Turkish Republic. For the time being, İstanbul was still the capital, and it was not a surprise that all of the visions about railroads were related to İstanbul. Furthermore, the program saw the Orient Railways from İstanbul to Europe and the Baghdad railways as the main axes and attempted to connect them (Tekeli and İlkin 2004, 224). This agenda for the creation of a railway network was simultaneously a great mediator for establishing the formation of a local bourgeoisie with commercial partnerships with foreign companies[212] (e.g., the family of the Turkish novelist Orhan Pamuk). Projections about the waterfronts of the Bosporus,

[212] After the experience of a new railway route between Samsun and Çarşamba, it was obvious that the local bourgeoisie and local capital were not developed enough for new routes at that time. In consequence of this situation, a new regularization was established for the obligation for railroad building that foreign companies find Turkish finance partnership. For a detailed explanation, see İlhan Tekeli and Selim İlkin, *Cumhuriyetin Harcı 3: Modernite Altyapısı Oluşurken* (İstanbul Bilgi Üniversitesi Yayınları, 2004), 294.

to be detailed later, can be accepted as another example of such commercial partnership. For now, we turn to the second period, which is contextualized between 1930 and 1939.

3.1.2 Second Period: Between 1930 and 1939

The second period was characterized by state funding of institutional developments and the creation of a national bourgeoisie and national economy between 1930 and 1939 (Şener 2015, 209-219). In this period, municipal services, waterways, railways, and energy services were matters of the national state. In the 1930s, the Turkish Republic was nationalized many railway routes from foreign companies and brought them under state ownership by establishing new national laws concerning the economic losses arising from the contracts as well as taking a general stand about the policy of state control. Industrial technology had simultaneously developed and the Silahtarağa Power Plant,[213] now used as a university complex, was bought from the İstanbul Tramway Electricity and Tunnel Companies in 1939 (with Law No. 3645), and the municipality officially took over the management of the İstanbul Electricity, Tramway, and Tunnel (İETT) Company to produce electricity for the two sides of the Golden Horn and Bosporus. Furthermore, public health was another important concern for the state. With the help of legislations including the Municipal Public Sanitation Law (*Belediye ve Umumi Hıfsızsıhha Kanunu*) and Law of Municipalities No. 1580 (*1580 sayılı Belediyeler Kanunu*) in 1930, the state authorized the municipality to assume responsibility for healthy urban landscapes and the associated health concerns of the laboring population, children, and youth. There would be ten branch offices (Eminönü, Fatih, Bakırköy, Beyoğlu, Beşiktaş,

[213] "The Silahtarağa Power Plant was the Ottoman Empire's first urban-scale electrical power plant. Built at the mouth of the Kağıthane and Alibeyköy rivers at the tail-end of the Golden Horn, the power plant was Istanbul's sole electricity provider from 1914 to 1952. Silahtarağa's generating capacity reached a peak of 120,000 kilowatts in 1956, after which it gradually declined until the plant was decommissioned on 18 March 1983." Source: https://www.santralistanbul.org/en/silahtaraga-power-plant/.

Sarıyer, Beykoz, Üsküdar, Kadıköy, and Adalar) in İstanbul with the new legislations about municipalities. Laws on public sanitation embraced various issues from the health conditions of dwellings to children's and women's health, and from birth to death, all health necessities were carefully embraced in detail. In particular, in the Public Sanitation Law, articles 29 through 56 in the section "Health Care in Coasts and Borders" (*Hudutlar ve sahiller sıhhi müdafaası)* explained about the prevention of epidemics through the ports of İstanbul via taking precautions and using quarantine stations along the waterfront areas.[214] Tap water resources, their transportation and distribution, and relevant punitive sanctions were also explained.

The other momentous aspect about the Municipal Public Sanitation Law (*Belediye ve Umumi Hıfsızsıhha Kanunu*) is that it is the oldest law about working life in Turkey, and it has been functioning since its introduction as a basic legal text in terms of occupational health and safety (Demir 2019, 2015). A bank was founded, named *Belediyeler Bankası* or *İller Bankası* (Municipal Bank), for providing financial support for the works of the municipality in 1933. According to Tekeli and Ortaylı (1978, 45), with the Law on Buildings and Roads in 1933 (*Yapı ve Yollar Kanunu*), and one year later in 1934 the Municipalities Law of Expropriation (*Belediyeler İstimlak Kanunu*), the municipal interventions gained institutional characteristics. Moreover, all infrastructure services would belong to municipal organizations for the operation of those services; the İstanbul Water Administration (*İstanbul Sular İdaresi*) in 1933 and the İETT (İstanbul Electricity, Tramway, and Tunnel) in 1939 were established in İstanbul. Furthermore, the Terkos Water Company in 1932, Üsküdar-Kadıköy Water Company in 1938, İstanbul Electric Company in 1938, and İstanbul Tram and Tunnel Company in 1939 were purchased from foreign private corporations. Scholars explain the shift in production and distribution of water from foreign and private to national and public responsibility in the same period in Europe as a matter of "rescaling of the control over the water

[214] Umumi Hıfzısıhha Kanunu, no: 1593, Resmi Gazete 6/5/1930, Sayı: 1489, Tertip: 3, Cilt: 11, Sayfa: 143, Kabul Tarihi: 24/4/1930.

monopoly," like Hug March does for Barcelona (March 2015, 353). The vision for production of water through infrastructural channels in İstanbul could be realized by state intervention after changing the control over production of water from foreign (private) to national (public) in the 1930s. As we will see in the following chapters, however, national production of nature is contextual and belonging to the state would not always mean that it was safe from economic profit.

In summary, we can define this second period by the development of state capitalism for the young Turkish Republic. State capitalism was a solution for the economic depression of 1929 in the context of underdeveloped countries worldwide. Moreover, the first factories that were developed by the state in a modern manner were in the chemical industry, paper industry, and iron steel industry. In 1931, tax laws were put into practice in the areas of land, building, livestock, economic depression, and transactions. The building sector and capitalist urbanization practices emerged with subindustries such as cement.[215] The evolution of the urban landscape in the 20th century was basically influenced by the planning and implementation of industrial enterprises, scientific methods, technical expertise, and transportation as presented in this chapter. Railroad networks and road-making agendas were perceived as points of patriotic interest, like in other nation-states. In short, the ideology of nature and metabolic interactions were radically changed in this period, as will be explained in more detail later. Now we move to the third period, between 1930 and 1950.

3.1.3 Third Period: Between 1939 and 1950

War periods were very important for the young Turkish Republic and İstanbul, like the rest of the world. The establishment of the state materialized only after WWI, and another turning point for the Republic of Turkey was WWII in terms of socio-

[215] For detailed information on the development of the cement industry, see Chapter 5.

natural aspects. The Marmara region, namely İstanbul and its peripheral areas, was the center of industry with 49% of industrial enterprises. Considering industrial investments, 30% were in İstanbul itself, 12.9% were in İzmir, and 7.3% were in Bursa (Şener 2015, 212). The war years (1939-1945) were especially very hard times for the dwellers of İstanbul. Many young men joined the army under the military conditions of the war period in Turkey. Workers and peasants experienced very poor conditions, forced to work long hours for low wages in a politically unorganized situation for the sake of the creation of a national bourgeoisie and the development of a national capitalist economy. The duty of Lütfi Kırdar as governor and mayor of İstanbul ended in 1949, and in 1950 Prost's work in İstanbul ended. Other problems of İstanbul during 1939-1950 were a tendency towards population decrease and the abandonment of the area of the Bosporus for habitation and daily life. The company that provided transportation facilities along the Bosporus (*Şirket-i Hayriye*) tried to revitalize the area and daily life there by issuing a periodical on the Bosporus, offering night services, and making some financial moves.

3.2 Metabolic Flows of Urban Voids in İstanbul

So-called creative destruction came to help for the sake of the creation of "urban voids" (or free spaces in English, *serbest sahalar* in Turkish, *espaces libres* in French) as a foundational context in this period of İstanbul thanks to Prost's plans and reports. It was not only an engineering or design issue; it was also a matter of inventing those urban areas via the help of creating a consensus that nature should be disciplined. This could be made possible within the political projection of the young Turkish Republic concerning the waterfronts of İstanbul. Basic attempts for an emerging public life as well as public interest in the urban landscape were to be embodied heavily in the waterfronts of İstanbul. Basically, as we argued in the preceding chapter, in the 19th century, on the one hand the preliminary insights of the uneven production of nature as waterfronts can be observed, while, on the other hand, the resistance of the labor-intensive metabolism and its consequences can be

followed via exercising particular metabolic flows such as land and water. In this section, the metabolic flows of urban voids, embedded in the agendas for the making of roads, parks, squares, and *plaj*s in İstanbul between 1923 and 1950, are exercised as unique visions and projections concerning the city's former times for understanding the shifting urban metabolism. This section claims that each period of İstanbul reveals particular metabolic interactions. Accordingly, between 1923 and 1950, the will to create free urban voids via creative destruction and spatial fix was essential. The historical and geographical blend of capitalist urbanism with the nation-state maintained an agreement on public places until the 1980s. This consensus depended on merging the city with nature by the hands of science, technology, and state, looking out for "public interest" (in the modern context) through expropriations for the sake of creation of "public space" for an urbanized nature via "beautifying" efforts.

Considering İstanbul, this consensus and ideology were having a spatial response on the waterfronts of İstanbul for the first time. Expropriations were embodied in two ways: expropriations by protecting and by demolishing. The residential characteristics of the Bosporus for bureaucrats, ambassadors, pashas, and the Ottoman dynasty started to be changed at the beginning of the century by WWI and were then radically changed with the new political project of Turkey in 1923. On the one hand, transformations along the waterfronts were important developments, from the former waterfront residences and other buildings of the Ottoman dynasty and ambassadors to the new public schools and hospitals. On the other hand, the shift from former residential areas, cemeteries, many old buildings, and old fire areas, which served "as a source of dust and microbes" (Akpınar 2003, 81), to various urban voids like boulevards, streets, squares, parks, public terraces, sports areas, parcels, lots, children's parks, *gazino*s, and *plaj*s, was a basic concern of the Republican projection for İstanbul, as demonstrated in this chapter. WWII and the concomitant economic depression had many consequences in public life. *Şirket-i Hayriye* was transferred to the Ministry of Transportation in 1944 as a result of the economic crisis. The daily life of İstanbulites through the waterfronts of the

Bosporus started to be transformed during this economic depression. *Şirket-i Hayriye* took some measures to encourage sea transport during these hard days of İstanbul. It was announced that "*Şirketi Hayriye will carry the construction materials of the new builders along the Bosporus free of charge and will give three years of valid pass to the owners of new builders*," as quoted from the book *Boğaziçi* (Yalçın 1936, 4-8) by Tekeli (2013, 78). In spite of some preventive attempts concerning economic burden, a large construction program was also planned with the same desire. According to Abidin Daver[216] (1944, 1-4), the 10-year construction program (1943-1953) would overlap with the 500th anniversary of the conquest of İstanbul in 1953. An opportunity to review the decisions of the plans and visions for İstanbul would have been created by this program, too. The government desired to hold an international event and Olympic games in İstanbul (Daver, 1944), and the very plan itself is the creation of a change in various ways (economic, etc.) through events and programs of the Olympics. In this construction program, the waterfronts (especially the Haliç and old İstanbul) received special attention. The term "beautifying the urban" was the most recurring theme for the 10-year construction program and Prost's plan.

Tekeli (2013, 88) states that the theme was envisioned within four decisions in the program: first, preservation of the silhouette of old İstanbul; second, "reaching the natural beauty," including the Bosporus; third, making infrastructures such as roads convenient for the modern understanding of architecture; and fourth, conservation and restoration of historical buildings. Tekeli (2013) adds that the implementations undertaken with the leadership of Lütfi Kırdar were subject to criticism and seen as improvidence, especially during the war years. A total of 1,148 buildings were demolished during the implementations between 1939 and 1948 for the sake of creating urban voids such as both inner and coastal boulevards, woods,

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[216] Abidin Daver (1886-1954) was a member of parliament in İstanbul between 1939 and 1943. He was also a writer and journalist. His books, mostly about the sea, were published and titled as *Deniz*, *Gemi*, *Dünkü-Bugünkü-Yarınki Istanbul*, *Kanatların Zaferi*, *Mülazımın Romanı*, and *Radyo Konferansları*.

parks, gardens, and *plaj*s as well as public squares, and this was the other context for critiques concerning property rights and concerns for history. More or less, the attempt at "beautifying" and creating urban voids can be explained with a will to reach a "natural" beauty with the integration of the modern urban metabolism embedded in techno-managerial organization and scientific ideology for disciplining socio-natural relations (Figure 3.1). At this point, the context of reaching "natural" beauty, which emphasized seeing the circulation of capital as "natural" in modern İstanbul, can be explained with a reference to Harvey in *Paris, Capital of Modernity* (2003, 47):

> The circulation of capital could thereby be rendered "natural" and the reshaping metropolis (its boulevards, park spaces, squares, and monuments) could be interpreted as in accord with natural design.

İstanbul can be seen similarly to Harvey's Paris, with the circulation of capital and the rebuilding of urban areas via the consensus of being "natural" and harmonizing with "natural design." Tafuri (1976, 8) uses the concept of "urban naturalism," which means, for him, the insertion of the picturesque into the city and architecture, and says that this tendency proves there is no distinction between the value of nature and the value of the city as a productive mechanism of new forms of economic accumulation.

As Smith explains, Lefebvre treats the nature-space relationship as a contradiction in the sphere of urbanization (Smith 2003, XV). Furthermore, he adds that, for Lefebvre, "*the transition from agriculture to industry brings with a 'fetishism of nature' while parodic reproduction of nature can be seen in open spaces, parks, and gardens*" (Smith 2003, XV). In a related way, in this dissertation, we apply this relational process to study a distinct form of urban nature: waterfront areas and inner landscapes. Stuart Oliver (2006), in the book *In the Nature of the Cities*, uses the term "disciplining" to explain the desire to metabolize nature in the context of the transformation of the River Thames in the late 18th and early 19th centuries. We use the concept of disciplining the waterfront of İstanbul in order to understand how citizens, the city, politics, and ecology have merged in several

transformation projects on the Bosporus and the Sea of Marmara to produce disciplined nature in the 20th century.

In this manner, an important apparatus had to desire combining the vast green area (nature) with the city (culture) by the poetic-romantic understanding of nature through various projects like campus complexes (Sargın and Savaş 2013, 81) as public spaces. The Academy of Fine Arts (which is currently Mimar Sinan University) moved into its current location as a campus complex along the Bosporus in 1927 (İhsanoğlu 2002, 493). The Mimar Sinan University Campus moved to the new location along the vast waterscape of the Bosporus with a scenic, romantic view of nature with a vision for public interest regarding structures on the coasts as well as the combination of nature and culture. The campus of Mimar Sinan University is located at the waterfronts of Kabataş, formerly used as a palace for members of the Ottoman dynasty (the Twin Palaces: Münire Sultan Sarayı and Cemile Sultan Sarayı).

The Çırağan Palace located along the Bosporus was also suggested to be used for public interest as a public exhibition center by Yunus Nadi Abalıoğlu in order to develop economy and tourism (Özgüven 2011, 29).[217] It was further suggested to turn Çırağan Palace into a hotel in the time of Emin Erkul (1924-1928), the first mayor of İstanbul in the Republican Period. It was perceived as an attempt to serve the public, but this attempt was also desired for the sake of economic gain (Ziyaoğlu 1971, 317).

Dolmabahçe Palace, meanwhile, was a center for the Congress of the International Touring Clubs Federation, and in this Congress the London-Calcutta Tourist Highway Project and its possible advantages for tourism and problems for the urban environment were discussed in 1930 (Özgüven 2011, 33).

The waterfront residence of Mustafa Reşit Paşa was first used as a fisheries institute and then a public hospital after the establishment of the Republic. The

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[217] Yunus Nadi Abalıoğlu was a journalist as well as owner of the newspaper *Cumhuriyet*, and in the 1930s Çırağan Palace was damaged. According to him, it could be used as an exhibition center.

building is still home today to a public hospital and social center of İstanbul University. The Kadıköy waterfront had been a stage for the Kadıköy marketplace building, which is now used as a state music conservatory building, with the help of loans from France. In the 10-year construction program (1943-1953), the waterfronts of Yeşilköy were defined as the location for an airport. As Tekeli (2012, 87) states, even in the beginning of the 10-year construction program the location of the "Port of İstanbul" (Figure 3.2) was uncertain and there was debate about whether it would be located at Haydarpaşa or on the Bakırköy-Yedikule axis. The location of the port was important for the socio-natural future of İstanbul concerning industrial settlements. In 1947, the Municipal Development Directorate published an ordinance stating that while the heavy industrial area should be located between the waterfronts of Eyüp and Silahtarağa, Eyüp and Edirnekapı, and Yedikule and Bakırköy, both sides of the Golden Horn were determined as the location for medium-sized industry (Angel 1987, 37-38).

In short, the basic characteristics of this new political project can be exemplified as the certain division of humans from nature within the desire of combining them through the metabolic flows of voids. Moreover, its ability to provide consensus among wide segments of the public on the legitimization of the division of the human from nature with an institutional character (the nation-state) and the disciplining of nature was essential, too. All of these implementations and attempts came to represent the triumph of human will over nature. The idea of preservation and the will to create urban voids seemed to contradict each other in many respects, as can be seen in this period of İstanbul in the relevant plans, reports, programs, codes, journals, and implementations. Now we will specifically explore the metabolic flows of urban voids throughout the coastal roads and boulevards, woods/parks and gardens, public squares of İstanbul, and *plaj*s, respectively.

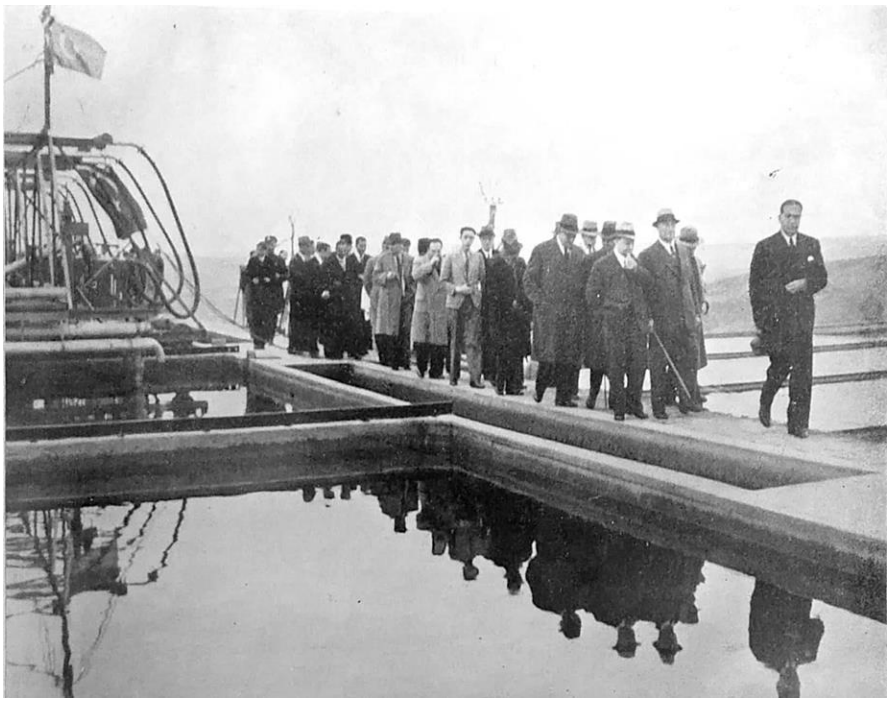

Figure 3.1 Opening Ceremony for the Filter Devices in Terkos Lake, Scientific Ideology of Nature. *Güzelleşen İstanbul.1939-1943*

Figure 3.2 Port of İstanbul. *Ahmet Hamdi, 39, 1929.*

3.2.1 Coastal Roads and Boulevards

The transportation system and main road axis were of essential importance in the 10-year construction program (1943-1953) and Prost's plan. In 1929, the Macadam Pavements and Bridge Code was established, emphasizing a consensus on the road-making agenda as national solidarity. This section explores the metabolic flows of urban voids in the context of coastal roads and boulevards along the waterfronts through scientific methods. While the urban land was scattered and divided via the railways, waterways, and streetcars during the population boom in the late Ottoman period, the young republic sought to make the city "more compact" by creating road lines proper for motor vehicles (Tekeli 2012, 88). In this period, İstanbul had 1,489 km of road lines—more than Paris—but one-third of those roads were paved with cobblestone and two-thirds of them were earthen roads. Added to this, beautifying and cleaning "old," "dirty," and "unhealthy" environments was the other justification for the implementations for the transportation system. The speech on the 10-year Master Plan for İstanbul (1943-1953) given by the Mayor and Governor of İstanbul, Lütfi Kırdar, to Radio İstanbul on 18 June 1943 is essential for understanding the will to create *urban voids* as boulevards and coastal roads (Daver 1944, I):

> …From Sarayburnu to Yedikule as well as from Sarayburnu to Gazi Bridge [Unkapanı] will be reconstructed all along the waterfronts. The railway line between Yedikule and Sirkeci will be taken underground, and moreover, a grand boulevard along the waterfronts of Unkapanı and Yedikule will be opened. Residential areas overlooking the Sea of Marmara will be built where ugly neighborhoods, tin homes, ruined structures, orchards, and wood and coal warehouses drawing the attention of guests arriving with the European train are to be demolished, which are in bad conditions now, but are actually very beautiful places. A new road will be opened along the prospective coastal roads.[218]

[218] Abidin Daver, *Dünkü-Bugünkü-Yarınki İstanbul, İstanbul Radyosundan Konuşmalar* (Belediye Matbaası, İstanbul, 1944), I. Translated from Turkish into English by the author.

Lütfi Kırdar (1887-1961), who was also a physician, explained the former urban pattern via the logic of a bacteriological city[219] and claimed to beautify it with an analogy of clearance or getting rid of ugliness, as in the above quotation. Ugliness was used as a reference to poor neighborhoods as well as socio-naturally and historically important areas such as *bostan*s. The vivid *bostan* areas, which reproduced everyday life throughout history in İstanbul, were replaced by new houses with gardens as symbolic spaces of a modern disciplined nature. For instance, the *bostan* called "*Sütçü Bostanı*," which caused flooding on rainy days, was expropriated and turned into a "clean public park" and "broad avenue" in this period. Opening urban voids such as boulevards and coastal roads was part of a road making agenda (Figure 3.3 and Figure 3.4). It was freeing the image of the new state from the very reproduction of everyday life and socio-natural mediums that were out of control.

The transportation routes were important as urban voids for encounters. The proposal of a grand boulevard along the waterfronts as emphasized in Kırdar's speech above entailed a great promenade with trees, which would be similar to the *Promenade Des Anglais* in Nice, to be used by İstanbulites for recreational purposes and for mingling and showing themselves off, not just any ordinary road (Daver 1944, 2). Accordingly, asphalt roads with alleys that followed the waterfronts and the hillsides of the Bosporus were planned, too (Daver 1944, 4). Concerning Laleli-Aksaray Avenue, green emerged as a beautifying element in a refuge design in Kırdar's speech, too (Daver 1944, 6). Taming and controlling nature and intricately disciplining the population through engineering and construction works as a modern will were explored in the road-making agenda. The production of nature by planning and engineering "urban voids" as roads and boulevards like Atatürk Boulevard (Figure 3.5) while creating new material and human flows were the main characteristics of the national road making agenda for this period. Urbanization of

[219] Reference to Gandy's bacteriological city: see Matthew Gandy, "Rethinking urban metabolism: Water, space and the modern city," *CITY* 8, no. 3 (2004): 363-379.

nature by the construction of new transportation routes with asphalt and concrete pavements became widespread and dominant in the early 20th century in the US context and in Europe (McShane, 1979). A report of the Turkey Asphalt Contractors Association (2006) likewise states that the transportation network was formed with soil grading for 4,450 km as well as macadam pavements for 13,885 km, and the roads needed to be repaired at the beginning of the Republican Period.[220] A few years after the declaration of the Republic, in 1929, the "Macadam Pavements and Bridge Code" was institutionalized by the Official Gazette of the Turkish Republic.[221] It was introduced as a matter of national solidarity and made every healthy unemployed man between 18 and 60 responsible for the road construction.[222] Either physical participation or the paying of a fee was required in the campaign for road construction by macadam pavement. If there was no road construction to be done within a 12-hour distance from a worker's home, then he would be transferred to the water constructions of the Ministry of Public Works according to this code.[223] This could decrease unemployment and discipline the population at the same time that it stimulated new metabolic flows of machines such as steamrollers and materials such as fuel, stone, soil, nourishment, and canvas (for tents). Fitting for disciplined environments, in July 1924, the streetcar workers and then after them the workers of the Orient Railways went on a strike that was forcefully suppressed by the state (*İstanbul Encyclopedia since Yesterday, Vol. IV*, 283).

Concerning new road-making along the waterfronts of İstanbul as a beautification and purification attempt, Kırdar (1943) gave examples in his speech on Radio İstanbul. The asphalt pavements of Büyük Postane Street, the concrete foundation and asphalt and mosaic pavements on Ankara and Babıali Streets, and those on the street between Sirkeci and Sultan Mahmut Türbesi were described as "clean" by Kırdar. Furthermore, he mentioned the preparations for the asphalt paving

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[220] www.asmud.org.tr. Accessed April 2020.
[221] Turkish Republic Official Gazette, No: 1214, Code No: 1525, Date: 02.06.1929, 7523-7530.
[222] Ibid., 7524.
[223] Ibid., 7525.

of Divanyolu Street and the relocation of infrastructural equipment such as electric and telephone cables and gas and water pipes under the sidewalks (Daver 1944, 6). The road-making agenda (Figure 3.6) had great resonance in the print media in this period. Engineer Marten Wagner published an article about the road issues of İstanbul in the journal *Arkitekt* in 1947. According to Wagner (1947, 90), reducing the costs should be the basic political issue for road-making. For instance, according to the costs of amortization, the maintenance and lighting to make a street 50 meters wide that did not actually have much traffic, just to create a "good image," was unnecessary for Wagner (1947, 89).

In another volume of the journal *Arkitekt* in 1948, H.E. Hilts gave some advice and offered explanations about durable, economic, and functional road structuring and networks. He also explained the human source of this agenda. He stated that roads with stone or macadam pavements should be mixed with bitumen material if necessary, but that the most important material was soil (Hilts 1948, 43). Furthermore, the importance of scientific methods through the production of nature by engineering urban voids of the city could be seen in the advice about establishing "*soil laboratories*" (Hilts 1948, 43) within the discourses about function, economy, and durability. In these soil laboratories, the soil material would be classified, diagnosed, and controlled by *scientific methods* (Hilts 1948). Hilts also gave information about the human sources of road construction, including the engineers who decided the location of the land for construction, inspector groups, material and project engineers, and field groups for maintenance and structuring (Hilts 1948). On the other hand, in relation to the road network, the building and the maintenance of bridges were important, too.

Arkitekt complained about the Karaköy Bridge being neglected in terms of economy. Increasing costs of materials such as iron plating and coating as well as labor costs were stressed in *Arkitekt* (1947, 254). The idea of a network of highways surrounding İstanbul officially appeared in 1930 thanks to the Touring Club with the influence of this basic agenda for connecting İstanbul and Turkey to the European markets regarding developmental strategies for the economy. Moreover, the transit

motorway between Edirne and İstanbul was defended as a public work by Çetinkaya, the Minister of Public Works, between 1934 and 1939 (Özgüven 2011, 33). Prost proposed two main axes for the European side of the Bosporus. While one stretched along the coasts starting from the Galata Bridge through Kabataş, Büyükdere, and Sarıyer, the other was on the hills of the Bosporus, along Taksim-Büyükdere and Kilyos. A coastal road that would start from Eminönü and pass through the archaeological park to Yenikapı was also considered. According to the Report on the Explanation of the Master Plan of İstanbul prepared by Henri Prost in 1937, its related visions for the waterfronts were as follows (Özler 2007, 84-85):

*The coastal road between Üsküdar and Beykoz was widened and prepared for motor vehicles. The road line between Üsküdar and Şile was built in this period.

*The road lines of Üsküdar, Kısıklı, Ümraniye, and Bağlarbaşı and the road between Kadıköy and Çamlıca were built. The road connections of Büyük Çamlıca and Küçük Çamlıca to Kadıköy and Üsküdar were re-established again.

*An overpass at Haydarpaşa was built and the Haydarpaşa coastal area was restructured again. The Kadıköy Pier Square was widened, and the Pier Street and Bahariye Main Road Line were opened. The area of Altıyolağzı to Yoğurtçu was widened. An area from the cemetery in Yoğurtçu, Kadıköy, was turned into a park.

*The roads from Kadıköy to Pendik were improved, which resulted in a shift from locations of summer homes (*sayfiye in Turkish*) such as Kızıltoprak, Göztepe, Erenköy, Bostancı, Maltepe, Kartal, and Pendik to residential places. These road lines were Bostancı-Maltepe, Suadiye, Samandıra-İzmit (macadam pavements bordering İstanbul), Caddebostanı-Çiftehavuzlar, Göztepe-Kayışdağı, Erenköy (some roads), Pendik-Kurtköy, Merdivenköy, Pendik-Kartal, Çiftehavuzlar-Kalamış, Göztepe, Kızıltoprak-Bağdat Street, Kızıltoprak-Kurbağalıdere, and Kartal-Yakacık.

When it was certain that Yenikapı would not be the location for the new port (as Prost had suggested), new visions began to develop for the waterfronts of Yenikapı on the Sea of Marmara (Figure 3.7). Tekeli (2012, 87) mentions this and reminds us that according to the program a wide and planted boulevard at the

waterfronts between Sarayburnu and Yedikule would be designed as a *tenezzüh caddesi*.[224] *Tenezzüh* literally means a pleasure trip (*gezinti* in modern Turkish). In the very first years of the Republic of Turkey, a vision that tried to increase "nature" holidays, the love and desire of railways, environmental awareness, and vacations towards "nature" from city by railroads was spread with the national state railway company (TCDD) through the services of *tenezzüh* trains. A *tenezzüh* train service with a special promotional fare between Haydarpaşa and Sapanca[225] was particularly popular after 1934, and later the *tenezzüh* trains were called "nostalgic trains." In 2002, nostalgic train trips to Sapanca from Haydarpaşa were held, joined by famous writers and poets such as Leyla Erbil, Cengiz Bektaş, Metin Üstündağ, and Hulki Aktunç.[226]

As Smith (2008, 21) explains briefly, such summer camps and vacations with a contemporary expression of the "back to nature" vision through the external (outside of the human and culture/city) and universal character (spiritual morality, romanticization) of nature as a set of visions grounded in daily experience can be observed in the Turkish context in the Republican Period. As Smith (2008, 21) stated, "*...nature was external; it was a world to be conquered or a place to go back to*," especially in the 19th century. The production of nature as space via the transportation network (i.e., streams to road axis with asphalt pavement) emerged as a common ground in 20th century İstanbul. On the other hand, railroads and railway transportation in İstanbul had a special role in experiencing and legitimizing nature in the prism of the ideology of nature with a shift from external to universal "at least for the weekend" (Smith, 2008, 27). More simply, all of these infrastructural developments by the 10-year construction program throughout the waterfronts constituted the bourgeois ideology of nature in the beginning of the 20th century in

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[224] *Tenezzüh caddesi* means a street for a pleasurable trip or outing.
[225] For Tenenzüh Trains between Haydarpaşa and Sapanca, see http://kentvedemiryolu.com/sapanca-tenezzuh-trenleri/. Accessed March 2019.
[226] For Tenenzüh Trains, see http://kentvedemiryolu.com/sapanca-tenezzuh-trenleri/. Accessed March 2019.

İstanbul. As we saw in Chapter 2.2.6, Salah (2013) had stated in her dissertation that the very form of suburban settlements from "*sayfiye to balieue*" and the waterfront transformation of the Asian side of the Sea of Marmara in İstanbul can be understood via the routes of the Anatolian Railways from the late 19th century to World War II. According to the Report of the Turkish Asphalt Industry, in the beginning of the 1940s state roads were classified as first-class roads, second-class roads, and village roads, while all of the macadam roads were to be turned into asphalt and concrete ones (1942). At this point, with the argument of establishing an "organized and planned" road network in Turkey, which emphasized the usage of modern technology and increasing control over production of nature as space, it was concluded in 1946 that support should be accepted from the USA (*Türkiye Asfalt Endüstrisi 2006 Raporu, Tarihçe Kısmı*). At the end of the 1940s, labor-intensive road construction gave way to machine road construction, which was started in 1948 with the help of the Marshall Plan. The machine technology sped up the road construction, and the government's agenda called for about 23,000 km of state road to be realized in a 9-year period (*Türkiye Asfalt Endüstrisi 2006 Raporu, Tarihçe Kısmı*).

As Tekeli (2012, 86) mentions, a boulevard, which had previously been the Kasımpaşa Stream, was formed by a soil fill and extended towards Taksim and Kurtuluş, while the new road axis of Bebek-İstinye was widened and paved and the Beşiktaş-Dolmabahçe axis was paved with asphalt. Coastal roads were to be opened along the waterfronts of the Bosporus according to Prost's Plan of 1939-1945. The Yeniköy-Sarıyer, Üsküdar-Beykoz, Üsküdar-Şile, Bostancı-Maltepe, and Pendik-Kartal routes were opened, as well. In 1933, while Lambert's plan proposed a coastal road between Kumkapı and Bakırköy, Ehlgötz's plan proposed one between Sarayburnu and Yeşilköy.

Some technical professionals like Theodor Fischer displayed sensitivity to expropriations concerning the agenda of coastal road proposals in this period. Fischer was an architect, and his article that was translated into Turkish and published in the journal *Arkitekt* in 1945 mentioned the problems of expropriations and unplanned

structural developments in terms of economy, rights of property, and memory (Figure 3.8 and Figure 3.9). Fischer emphasized that the budget for infrastructure regarding potable and waste water, lighting, and security measures would be extremely high if unplanned structural movements and destructions were resisted in a city (Fischer, 1945). The following is an excerpt from his article in *Arkitekt* (Fischer 1945, 279):

> What does an old field road lined with fields and border stones remind us of, or this old ditch? All of this here will be ignored and flattened. Is it necessary to flatten that old soil, which has seen and carried the grief of so many generations, in just one stroke of a pen, just to make the geometric work easier? I wonder if, in doing so, the things that could be gained somehow are not actually lost? In the meantime, it is better not to mention the right to own property that we inherited or the holiness of that right. Otherwise, we will leave the peacefulness of opinions stated objectively and we will enter politics. If the world-view that we have just mentioned is materialized regarding the pen of the person who is obliged to make plans, all the signs of nature that sometimes become a difficulty but in my opinion are a curative and beneficial difficulty will not be considered Whereas for a person who works not with a butcher's hand, but with his anatomy, all these signs lead to good and characteristic situations.

Referring to a butcher's hand considering expropriations and destruction is essential, which reminds us of Robert Moses. The difficulty of expropriations and the increasing sensitivity to them concerning the road-making agenda in İstanbul can be seen in the project proposal of an urban design along the waterfronts of the Haliç, referred to as *Estekade*, as well (Figure 3.10). The proposal of a structure as urban design for coastal road-making along the waterfronts of the Golden Horn between the two bridges was mentioned in *Arkitekt* in 1948. The project proposal, as emphasized by the Turkey branch manager of Braithwaite and Co. Engineers, J.M. Ostrowski, claimed that the project needed no expropriation; rather, it would be ensured that the rental costs to be taken from the shops and warehouses and the construction costs would be covered in a short time (Ostrowski 1948, 194).

In this section, the **taming and controlling of nature** as well as the **disciplining of the laboring population** by construction works of urban voids as a modern vision and projection have been explored. The production of nature by urban voids embedded in roads and boulevards creating new material and human flows was the main characteristic of the national road network agenda of this period. It is also noteworthy that both railways and motorways as part of a road-making agenda were significant in this period for reshaping the waterfronts of İstanbul. New coastal roads and ease of transportation emphasized a strong spatial fix and resulted in increasing rents all around. Moreover, perhaps seemingly contradictorily, initiations for full-length coastal roads along the waterfronts and the use of motor vehicles introduced public alienation from water into daily life for the majority, with these being perceived only as passing routes, which would grow day by day as a means of production of space and completely materialized after the 1960s.

Figure 3.3 Karaköy- Taksim Route Part of a Road-Making Agenda in İstanbul. *Cumhuriyet Dönemi İstanbul Planlama Raporları 1934-1995, 89, 2017.*

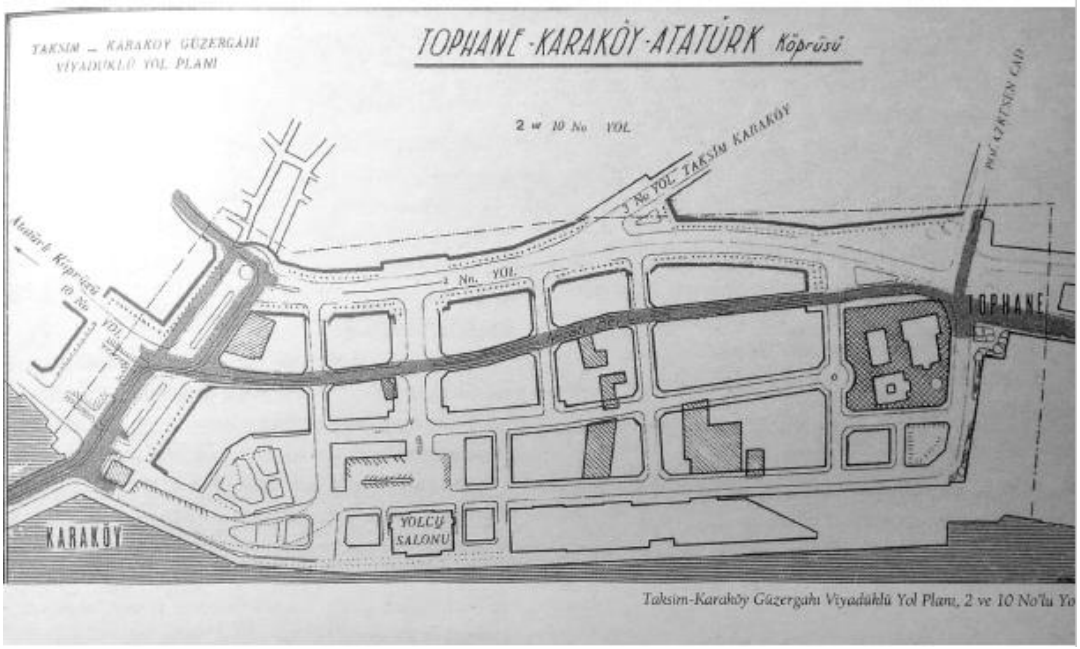

Figure 3.4 Tophane- Karaköy- Atatürk Bridge Road Plan No.2 and No.10. *Cumhuriyet Dönemi İstanbul Planlama Raporları 1934-1995, 119, 2017.*

Figure 3.5 Atatürk Boulevard, Symbol of the Road-Making Agenda in the Context of *Urban Voids*

Figure 3.6 Prost Plan- Transportation Routes: Connections between Atatürk Boulevard, Bridges, and Yenikapı İnternational Station on the Historical Peninsula. *Cumhuriyet Dönemi İstanbul Planlama Raporları*

Figure 3.7 Projection for the İnternational Exhibition at the End of the Atatürk Boulevard along the Sea of Marmara in 1953. *Güzelleşen İstanbul.1939-1943.*

Figure 3.8 Expropriation for the Creation of Refik Saydam District.
Güzelleşen İstanbul.1939-1943.

Figure 3.9 Extensive Expropriations for the Creation of Atatürk Boulevard.
Güzelleşen İstanbul.1939-1943.

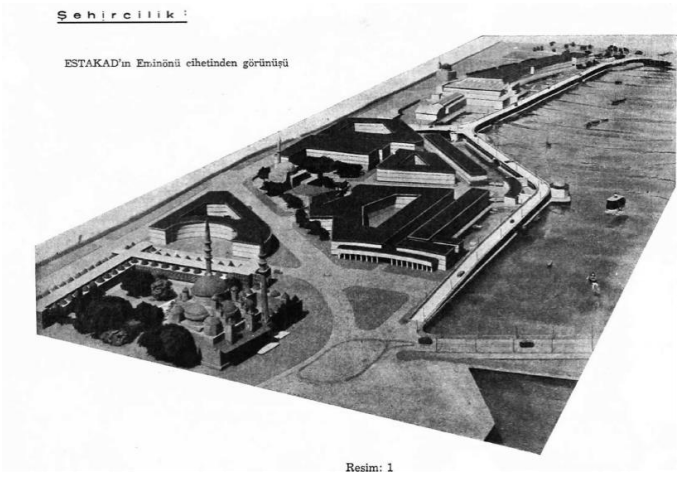

Figure 3.10 Design Proposal between Galata and Atatürk Bridges by Braithwaite and Co. Engineers Ltd. *Arkitekt, 1948.*

3.2.2 Woods, Parks, and Gardens

> *Of course, in İstanbul, crowned with nature and history, there will always be many works to be brought into being by human intelligence, science, and manual labor.*[227]

Instead of picturesque values of the landscape, the scientific conquest of nature was upheld by the production of ordered, constructed, sterile, and functional socio-natures designating the metabolic flows of urban voids embedded in the woods, parks, and gardens of İstanbul in this period. By bringing a dominant concept of urban voids, limited in this section to woods, parks, and gardens, into the city, the urban metabolism was reengineered with a scientific treatment together with the disciplining of the population through visions of "health" and national solidarity and pride in this period. Various vegetation areas were subjected to both scientific treatment (young trees) and destruction (*bostan*s) through the metabolic flows of urban voids along the waterfronts. For understanding the new ideology of nature,

[227] *Güzelleşen İstanbul*, 1944. Translated into English by the author.

explained and summarized by the blending of human intelligence and science with labor, we quote above from the book *Beautifying İstanbul* (*Güzelleşen İstanbul* in Turkish) from 1944. The practical meaning and distinctive aims of woods, parks, and public gardens as urban voids were questioned (Fischer 1945, 276-280) at every turn during the construction of İstanbul between 1923 and 1950. Concerning modern visions and projections of İstanbul as well as the municipal borders of Turkey, urban voids in Turkish refer to "*serbest ve yeşil sahalar*," or open and green areas, which seemed to be important in terms of preserving public health as well as meeting the needs of new transportation and architecture. In accordance with the new political projections, the parks that formerly belonged to the palace were opened to the public in this period. Not only were old green spaces turned into public parks, but new urban parks were also projected, designed, and implemented, such as İzmir Kültürpark, Ankara Gençlik Parkı, the Abbasağa Children's Park, and İnönü Gezisi. According to Tekeli (2009, 92), within the municipal program of Turkey there were 29 parks in 1923, while 209 parks in 1933, 304 parks in 1938, and 536 parks in 1945 could be observed.

In *Arkitekt*, Rıfat Türegün (1946, 92) mentions the European context while comparing the proportion of urban voids in different cities (London-Berlin-Paris). Türegün (1946, 92) offers an explanation of why the worst of all hazardous environments for tuberculosis were seen in Paris by indicating the amount of free spaces. In the same article, Türegün (1946, 91) also emphasizes the need for expropriations, referring to the master plan for Switzerland in which urban voids were designed and according to the plan all spaces would be expropriated within 25 years. Narrow streets and small gardens in between houses as well as irregular building structures should be removed from the urban landscape according to him. Before the Republican Period of İstanbul, gardens were specific to house patterns and relatively small, and parks belonged to the palace. On the other hand, common applications of public parks as urban voids also raised some objections and criticisms in terms of uneven developments of cities and the basic requirements of people. The

Report of the Council of the Eskişehir Municipality made the following observation (Tekeli 2009, 96):

> For example, attempting to construct a park as the first task in a town struggling with lack of water and poverty is, without a doubt, similar to dressing a naked body in a frock coat.[228]

As another example, according to Yaltırık et al. (1997, 44), in 1941, poor families cut down the trees along the roads and in the parks and gardens for firewood during the cold winter days of İstanbul. The 10-year Master Plan for İstanbul (1943-1953) placed importance on parks as urban voids not only as part of hygienic conditions and public health, but also with a blend of national and historical pride relating the 500th anniversary of the conquest of İstanbul in 1953 to the current conquests and control of green spaces. The area between Harbiye and Dolmabahçe was projected as a part of the historical valley where Fatih carried his ships from land to water on the waterfronts of the Golden Horn (Daver 1944, 3). Furthermore, Daver (1944, 3) stated that Yıldız Park in Beşiktaş would be a stage for reconstructions via hotels, pensions, and *gazino*s. In that plan, the Çamlıca woods were named as an area for the construction of a hotel and a Turkish café, as well. The *bostan*s would be expropriated for the sake of disciplined nature as urban park areas within the vision of regularization and expropriation revealed in Kırdar's speech (Daver 1944, III):

> There are zoos and botanical gardens, groves, and parks in every civilized city. Zoos and botanical gardens will be established in İstanbul, and all the existing old groves and parks will be regulated and opened to the public. In the meantime, the side of Taksim Garden facing the sea will be regulated down to Dolmabahçe, all of the *bostan*s there will be expropriated and converted to a park, and will be merged with the park that will spreading from Harbiye-Maçka down to Dolmabahçe.[229]

Apart from expropriations for the creation of modern parks (Figure 3.11), we understand from the above quotation that Taksim Garden was seen in continuity

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[228] Translated into English by the author.
[229] Translated into English by the author.

between Dolmabahçe Valley and the waterfronts. In accordance with the national and historic pride of conquest and disciplining nature, Fischer was trying to understand the instrumentality of nature in *Arkitekt* (Fischer 1945, 278) with these words: "… *I wonder how nature will meet our desires.*" The Büyükdere Nursery Garden on the waterfronts of the Bosporus, which was formerly a *çayır*, can be given as an example of the instrumentality of nature in the context of education and scientific treatment. The Büyükdere Nursery Garden was established for educational purposes as a fruit breeding station and for horticultural training in the 1930s instead of the valley and meadow of Büyükdere. This *çayır* was widely used as an open, unconstructed public space for recreational purposes in the 19th century (see Chapter 2.2.6). However, the scientific treatment of nature in a public manner can be seen in the Republican Period, and this view of nature rooted in and exercised by the early capitalist mode of production was first seen in the ruling class's perception of nature to be shaped by professional gardeners, especially in private palace gardens, in the 19th century.

Landscape professionals such as Fritz Vensel, Munika Koch, and Sester arranged the gardens of Dolmabahçe and Beylerbeyi Palaces (Işın 2001, 208).[230] For supplying the plant materials to those extensive parks and gardens, a nursery garden belonging to the High Forestry School (*Yüksek Orman Mektebi*) and an implementation garden were established in Bahçeköy in 1924. Along the waterfronts of Florya, to make the area "a water and garden city" in 1938, 29,000 young trees provided from the High Forestry School's garden were planted (Yaltırık et al. 1997, 43). In 1938, 120 hectares of land belonging to the Arpacı Farm in Beykoz were turned into a nursery to provide the saplings to be used in the afforestation of İstanbul. Next, we will focus on "nation parks" (*Millet Parkları*) in the plans of Prost in the context of the metabolic flows of urban voids.

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[230] Ekrem Işın, *Everyday Life in İstanbul.* YKY, 2001, 208.

Figure 3.11 An Example of Expropriations for the Sake of Creation of Urban Voids as Modern Parks. *Güzelleşen İstanbul.1939-1943.*

3.2.2.1 *Millet Parkları*

Nation parks (*Millet Parkları*) more or less functioned as a spatial fix that resulted in increasing the rents around them via Prost's Master Plan for İstanbul in 1937. Parks were to be opened on both the Asian side of the city, such as Fenerbahçe Park (1940), and the European side, such as Beşiktaş Barbaros Park, Taksim Belediye Park, and Bebek Park (1940) and Abbasağa Park (1940). In addition to those, two big parks were proposed by Prost. One of them was located in the area around Dolmabahçe, including the Maçka, Taksim, and Harbiye districts. A green sports area for students and an open-air theater were proposed.

The other was located at Yenibahçe, where a botanical park, culture park, zoo, and sports areas along the city walls were planned. Destruction from Karaköy Square to the Galata Tower was recommended for urban voids as green area (Tekeli, 2012). The theme of "nation parks" would be on urban and state agendas again in the campaigns for local elections in 2019, some 80 years later, but this time under the name of "nation gardens" ("*Millet Bahçeleri*" in Turkish). Rather than promoting patriotic feelings, a national development agenda, technology and technical expertise, or a healthy generation and desires for a disciplined nation, the updated focus of these "nation gardens" involved capital investment budgets, the economic background of a greener İstanbul, green images, environmental concerns, boasts of mega projection, destruction, construction, and calculations like fields of millions of square kilometers (in the case of the reconstruction of existing settlements or an airport like Atatürk Airport[231]). Next, we will see a particularly historically loaded and socio-naturally important urban void: İnönü Gezisi or Taksim Gezi Park.

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[231] T24, November 22, 2019. https://t24.com.tr/haber/ataturk-havalimani-na-kurulacak-millet-bahcesi-projesinde-detaylar-belli-oldu,849211. Accessed March 2020.

3.2.2.2 İnönü Gezisi

An urban void as a public park called *İnönü Gezisi* in the Taksim area, important for Turkish urban environmental and political history,[232] opened in 1943 and is still used by İstanbulites as an important public park called Taksim Gezi Park. This park is an important place for the historical metabolic flows of materials, bodies, desires, and struggles, all whirling by through various attempts. In the book entitled *Beautifying İstanbul* (*Güzelleşen İstanbul* in Turkish) (1944), the park is described for the daily tours of all the inhabitants from Tunnel to Şişli and Ayazpaşa to Kurtuluş. İstanbulites could benefit from the fresh air and take a rest in this modern park. The Topçu Military Barracks were located on the land of İnönü Gezisi between 1780 and 1940. The barracks were demolished in 1940 for the purpose of maintaining the continuity of urban green areas as urban voids according to the proposed Master Plan for İstanbul by Prost, the city planner. Prost's Master Plan for the Beyoğlu Area (Figure 3.12) (*Beyoğlu Ciheti Nazım Plan*) had to wait until 1954, except for İnönü Gezisi (Figure 3.13).

The constructed landscape of İnönü Gezisi (Figure 3.14), with its flower beds, grass landscapes, asphalt roads, marble pavements, and newly planted trees, can be grasped as an example of the modern understanding of nature considering İstanbul apart from all other historically loaded meanings. The metabolic flows of materials and plants materialized within the park-making process in İnönü Gezisi through the scientific ideology of the young nation-state. The name İnönü Gezisi came from İsmet İnönü, who is called the Great National Chief in *Beautifying İstanbul* and was the second president of Turkey after Mustafa Kemal Atatürk. To acknowledge the national state's respect for and commitment to İsmet İnönü, the public garden was named in his honor. Later called Gezi Park, this garden was declared as a

[232] For detailed explanation, see https://en.wikipedia.org/wiki/Gezi_Park_protests or https://www.hurriyetdailynews.com/opinion/serkan-demirtas/the-gezi-protests-a-historic-struggle-for-democracy-67220. Accessed March 2020.

preservation area by decree after 50 years, numbered 4720, of the İstanbul No. 1 Cultural and Natural Heritage Protection Board on 07.07.1993. Another important type of urban void between 1923 and 1950 in İstanbul was represented by the children's gardens of İstanbul, to which we now turn.

Figure 3.12 Beyoğlu Ciheti Nazım Plan, İstanbul, Prost 1937. *Cumhuriyet Dönemi İstanbul Planlama Raporları*

Figure 3.13 İnönü Gezisi in the 1940s. *İstanbul Araştırmaları Enstitüsü Blog. https://blog.iae.org.tr/sergiler/taksim-gezi-parkinin-tarihcesi*

Figure 3.14 İnönü Gezisi, Taksim, Designed through the scientific ideology of nature. *Pinterest.*

3.2.2.3 Children's Gardens of İstanbul

The children's gardens of İstanbul in the early years of the young republic were a matter of vivid metabolic interaction as urban voids. Urban voids that could be used by children and entered free of charge were very important in the Republican ideology (Daver et al. 1944).[233] The main arguments for voids particularly designed for children were based on the creation of a "healthy nation." Not only empty lots, which commemorated the Ottoman past for its days of great fires within hazardous environments, but also old cemeteries in the urban landscape of İstanbul were turned into gardens for the children of the city. For instance, the Children's Garden of Abbasağa in Beşiktaş (Figure 3.15) was transformed from an old cemetery area to a children's garden in the 1940s, launched with enthusiastic opening ceremonies by Lütfi Kırdar with children (Figure 3.16). In Nişantaşı, across the Valikonağı Street an empty lot and Tepebaşı (Figure 3.17) were turned into children's gardens (Figure 3.18). In Akaretler, Vişnezade Park with its sea view, an area across from Kabataş Pier, Barbaros Garden near the Beşiktaş Pier, a field in front of an engineering school, and areas along the waterfronts of Büyükdere called Büyükdere Maltız Bazaar were used for the children's gardens of the period (Daver et al. 1944). These children's gardens of İstanbul started new material and plant flows suitable for the will to create urban voids for a healthy generation and disciplined landscapes.

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[233] Daver, A., Günay, S., Resmor, M. N., *Güzelleşen İstanbul XX.NCi YIL* (İstanbul Maarif Matbaası, 1944).

Figure 3.15 Children's Garden of Abbasağa in Beşiktaş, Transformed from a Cemetery to a Garden in İstanbul in the 1940's. *Güzelleşen İstanbul.*

Figure 3.16 Photo from the opening ceremony of the Children's Garden of Abbasağa in Beşiktaş in 1940's; Children with Lütfi Kırdar. *Güzelleşen İstanbul.*

Figure 3.17 Children's Garden of Tepebaşı. *Güzelleşen İstanbul (1940's)*

Figure 3.18 Photo from the Opening Ceremony of the Children's Garden of Tepebaşı. *Güzelleşen İstanbul (1940's).*

3.2.2.4 Woods

The Suphi Paşa Woods in Çamlıca and Abbas Paşa Woods in Çubuklu were purchased by the state, and together with Yıldız Park and the Emirgan Woods they were regularized and opened to public use for İstanbulites. A zoo and gardens would be established in Yıldız Park. Coffee houses were planned to be built at the Bosporus and Çamlıca, with their striking landscapes (Tekeli 2013, 87). Visions and projections between 1939 and 1948 for the woods of the Bosporus show particular characteristics. These characteristics were used for legitimization of the uneven production of nature as space between low-income and high-income groups by disciplining nature and planning principles notably for the sake of the maintenance of the woods along the Bosporus. The proposals of gated communities along the Bosporus were not targeted toward low-income groups, which had to live in Galata and Beyoğlu under undesirable conditions. The woods of the Bosporus remained the private property of villa owners, closed to public access, with the first gated communities established in the 1940s.

In short, Prost's plans and reports were essential in terms of woods, parks, and gardens through the creation of metabolic flows as "urban voids" for building a consensus about "freeing the ideology" of the young republican nation-state via opening those places to the "public." This ideology seems to produce and discipline nature as well as young bodies with the help of scientific treatment and spatial reorganizations throughout the waterfronts. In accordance with the aim of creating a "healthy" nation, particularly focused on children and young citizens, the metabolic flows of plants, materials, human labor, and bodies were channeled into extensive woods, parks, and garden projections by scientific treatment and discipline for creating unity in the ideas of nature and the nation-state. The creation of those urban voids with great mobilization also faced some objections and criticisms. However, those objections and criticisms about uneven developments and variable requirements could not be seen or expressed as freely in public places. Next, we will focus on the metabolic flows of urban voids embedded in public squares.

3.2.3 Public Squares

Demolishing, expropriating, filling, and paving have been used as agents for disciplining nature between land and water concerning the metabolic flows of urban voids as public squares. In this period, the discourses of beautifying İstanbul and the reconstruction of İstanbul were always mentioned side by side. The first such example is the "cleaning" of Eminönü Square (Figure 3.19) (Daver 1944, 4-5). Regarding the conditions of Eminönü Square (Figure 3.20), we may focus on Kırdar's comparison between the past and current situations as of 1943, and how he grasped the socio-natural problems and addressed the disciplining of socio-nature by emphasizing expropriations and the paving of surfaces as a solution (Daver 1944, III):

> …In 1911, on such an autumn day, I came to İstanbul from Paris after a long stay. It was raining heavily. Torrents of water rushed into the square from the surrounding streets, and Eminönü Square was turned into a lake. It was impossible to cross the square. Porters with their trouser legs rolled up were carrying men across for 20 coins. The thought of crossing the square on the back of a porter was so offensive to me that I walked across, sinking up to my knees in the muddy floods, and I felt so saddened by this disastrous view that greeted me after returning from Paris, I couldn't help but cry.[234]

It is a matter of pride, disciplining nature and reaching a "clean" landscape. The Kabataş Quay Square and Dolmabahçe and Barbaros (Beşiktaş) Square were rearranged in this period, too. While the arrangements of Kabataş Square were performed according to Prost's plan, the mansion and the police station building located at the beginning of the historical stairs were demolished (Kök and Akpınar, 2019). The demolitions between Beşiktaş and Karaköy gained a massive character during the Menderes period. Along with many other destructions, the TEKEL directorate and warehouse buildings on the right and left of the pier were demolished

[234] Translated into English by the author.

in the Menderes period, as well. Like other waterfront squares, it has been redesigned, reclaimed over and over again, demolished, and rebuilt many times from the early Republican Period to today. On the other hand, Prost proposed to redesign Üsküdar Square (Figure 3.21) and the quay and ferry port with the 1939-1945 plan. A master plan for the Anatolian side of İstanbul, which included Üsküdar, Kadıköy, and Çamlıca, was prepared in 1940 (Figure 3.22). According to this plan the waterfronts of Moda, Fenerbahçe, and Suadiye were subjected to a proposal of new settlements (Tekeli 2013, 83). Furthermore, a protection principle for particular cemeteries as green spaces was introduced with this plan, as well (Tekeli 2013, 85).

Concerning the plan for the waterfronts of the Anatolian side, Üsküdar Square was subject to a proposal for reconstruction and was to become a nodal point connected with the city for traffic purposes. Üsküdar Square as a nodal point would connect with the Şile, Küçük Çamlıca, and Ankara roads. A ferry dock and pier were to be designed and the pier square would be opened up to tobacco depots (Tekeli 2013, 85). In these times, with the absence of a bridge for motor vehicles (the first bridge would be built in 1973), this connection was achieved by ferryboats between Kabataş and Üsküdar as well as Sarayburnu and Haydarpaşa (Tekeli 2013, 86). The structure built as a marketplace along the waterfronts of Kadıköy in 1927 by the Italian architect U. Ferrari was also used as a marketplace (*hal* in Turkish) after particular arrangements until 1973.[235] Between 1927 and 1937, however, the building remained functionless. It would trigger expropriations, which allowed for opening the street that went down from the Altıyol thoroughfare in 1938 for easy transportation and a sensation of building from the land and creation of Kadıköy Square (Figure 3.23) (Atılgan 2017). The debates and contentious issues would all arise from the metabolic flows of urban voids as squares, as well. Not only the expropriations and destruction for the creation of urban voids as squares but also the ignorance of the topography of İstanbul would be a contentious issue. The Revision

[235] The marketplace moved to Ataşehir after 1973.

Commission of 1951 would assert that Prost's plans were fragmented. Moreover, the proposals for squares and boulevards were in a sense impossible in consequence of their ignorance of the character of the topography in İstanbul (Suher 2001, 16; Gül 2015, 169).

Figure 3.19 "Cleaning" by Expropriations of Eminönü Square.
Güzelleşen İstanbul.1939-1943.

Figure 3.20 Expropriations for the Public Square of Eminönü. *Güzelleşen İstanbul.1939-1943.*

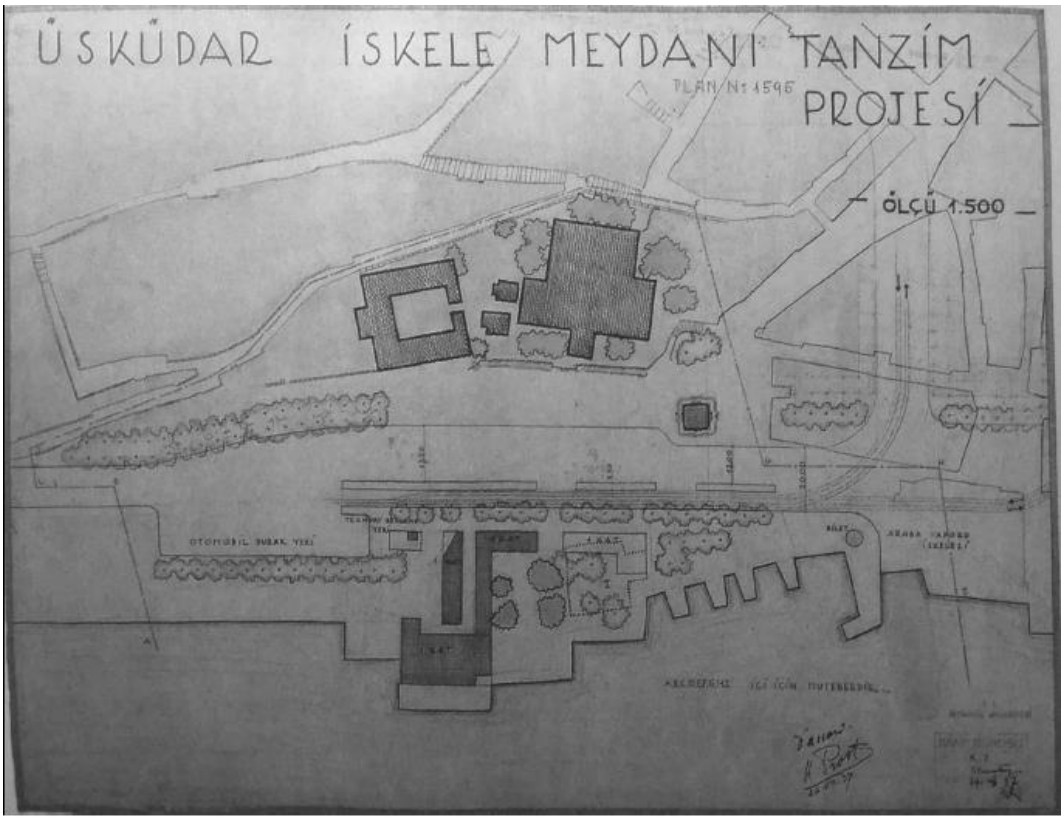

Figure 3.21 Üsküdar Quay Square Plan, H. Prost, 24.11.1937.

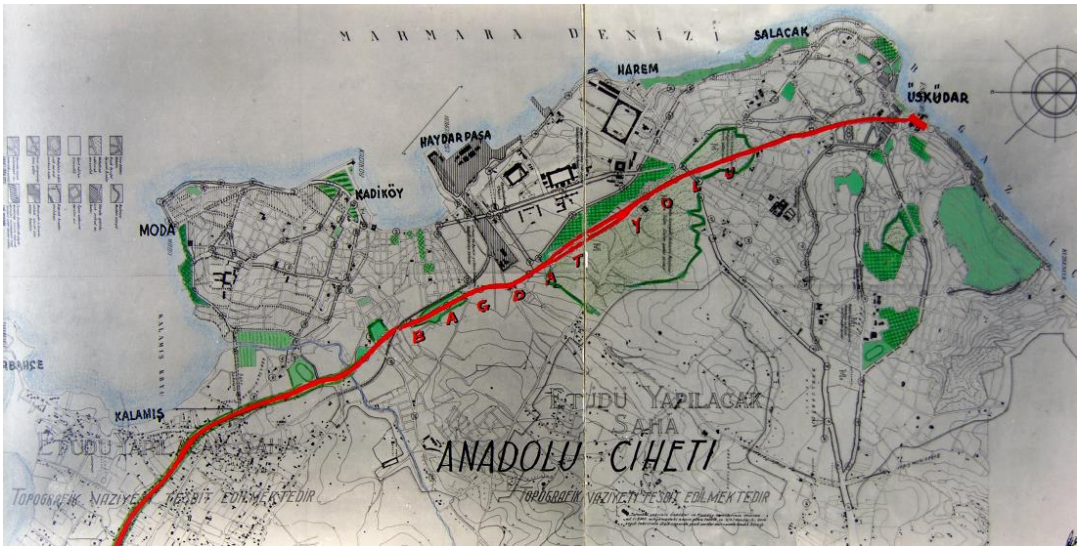

Figure 3.22 Henri Prost, Anadolu Ciheti Nazım Planı. *Cana Bilsel, Pierre Pinon (ed.), İmparatorluk Başkentinden Cumhuriyet'in Modern Kentine: Henri Prost'un İstanbul Planlaması (1936-1951), İstanbul Araştırmaları Enstitüsü Katalogları 2010.*

Figure 3.23 Expropriation for Kadıköy Square. *Güzelleşen İstanbul.1939-1943.*

3.2.4 *Plaj*s

The context of the beach had been shifted from a place of danger and distaste to desire and attraction (Urry 2013, 68). As John Urry adds (2013, 68), waterfronts were designed and constructed to a greater extent in the last two centuries and indicated different classes and functions, from places of "paradise and excess" to "factories, work and domestic life." For example, Mimi Sheller (2008, 1396) mentions the reconstructions of the Caribbean for the "super-rich and automobile global elite" class. At this point, *plaj*s in İstanbul emphasize the visions of the design, plan, and

production of nature as space via technology, expertise, and rational minds and are primary tools for creating a healthy generation (Figure 3.24), materializing as the remaking of the waterfronts of İstanbul as a place for sports and leisure time.

The 1930s, 1940s, and 1950s were the golden years of *plaj*s along the waterfronts of İstanbul as part of an agenda that sought to create urban voids for the public. Akçura (2017) states that the waterfronts of İstanbul started to be contaminated during the 1950s. Day by day in this period, social life and vivid relations between land and water were retreating from the waterfronts of the Bosporus compared with the 19th century, and transportation by sea was beginning to lose its dominance in this period. As a result, for the sake of sustaining the socio-economic relations through waterfronts, the vision and projection of *plaj*s were partly materialized by the Bosporus steamship company *Şirket-i Hayriye* (see also Chapter 2.2.5) through both investments in construction and night ferry services. For example, the *plaj*s of Altınkum and Küçüksu were materialized by *Şirket-i Hayriye* as an investment within revitalizing efforts for the usage of waterfronts. In the 10-year construction program (1943-1953), a municipal *plaj* was to be established at the waterfronts of Florya, and in the 10-year Master Plan for İstanbul (1943-1953), all waterfront lines of the Anatolian side and Princes Islands would be converted similarly to the Florya *plaj* (Daver, 1944, 3).

The waterfronts of the Bosporus and Sea of Marmara became popular urban landscapes for entertainment and swimming, particularly in the 1930s. These places mostly had entrance fees and some of them were high-priced and private, like in Tarabya and Suadiye, but there was no entry charge for some like in Harem that belonged to the municipality (Evren, 2000). Although the first *plaj* of İstanbul was located at Florya in the occupation years of İstanbul (1918-1923), the extensive usage of waterfronts for swimming and leisure only fully materialized after the proclamation of the Turkish Republic. The famous *plaj*s of İstanbul were located throughout the waterfronts of Florya (Figure 3.25), Suadiye (Figure 3.26), Caddebostan, Bostancı, Süreyya-Maltepe, Salacak-Kızkulesi, Harem, Fenerbahçe, Moda (Figure 3.27), Salıpazarı, Suadiye, Kartal, Beyazpark-Büyükdere (Figure

3.28),[236] Konak-Tarabya, Altınkum-Sarıyer, Değirmen, and Yörükali in Büyükada, as well as the Lido swimming pool in Ortaköy (Figure 3.29), Bakırköy, Yeşilköy, Marmara (between Florya and Küçükçekmece), and Küçüksu. The *plaj* of Caddebostan and the Süreyya *plaj* were located in *bostan* (orchard) areas along the waterfronts before the 1930s. The night ferries were ready for the İstanbulites and the *plaj*s remained active 24 hours a day with operettas, movie screenings, variety shows, dances, and music (Akçura 2017, 22). The spatial arrangements of the *plaj*s were unique urban voids for the waterfronts of İstanbul. The particular wooden structures (Figure 3.30) used as stairs, diving boards, watch-towers, and areas for waiting or sunbathing before or after swimming were located along and even beyond the waterfronts of the Bosporus because of the absence of long sandy landscapes and the other geographical characteristics of the Bosporus, except for a few unique places like Altınkum in Sarıyer.

In short, the metabolic flows of urban voids embedded in *plaj*s appeared with a particular agenda proper for a healthy, modern, disciplined society. In this period, though, the waterfront landscapes of İstanbul actually served the lucky ones, as well as creating a spatial fix along the waterfronts of İstanbul between 1923 and 1950. In the 1970s the *plaj*s would begin to vanish according to the hygienic conditions of the sea water and changing metabolic relations. These material conditions related to the shift in the urban metabolism of İstanbul will be explored in the following chapters.

[236] From 1926 to 1980 it was a unique location for swimming with the Beyazpark *plaj* and *gazino* among the waterfronts of İstanbul.

Race across the Bosphorus in 1935; swimmers before the start...

Figure 3.24 Race across the Bosporus, İstanbul 1935. *Gökhan Akçura, 83, 1993.*

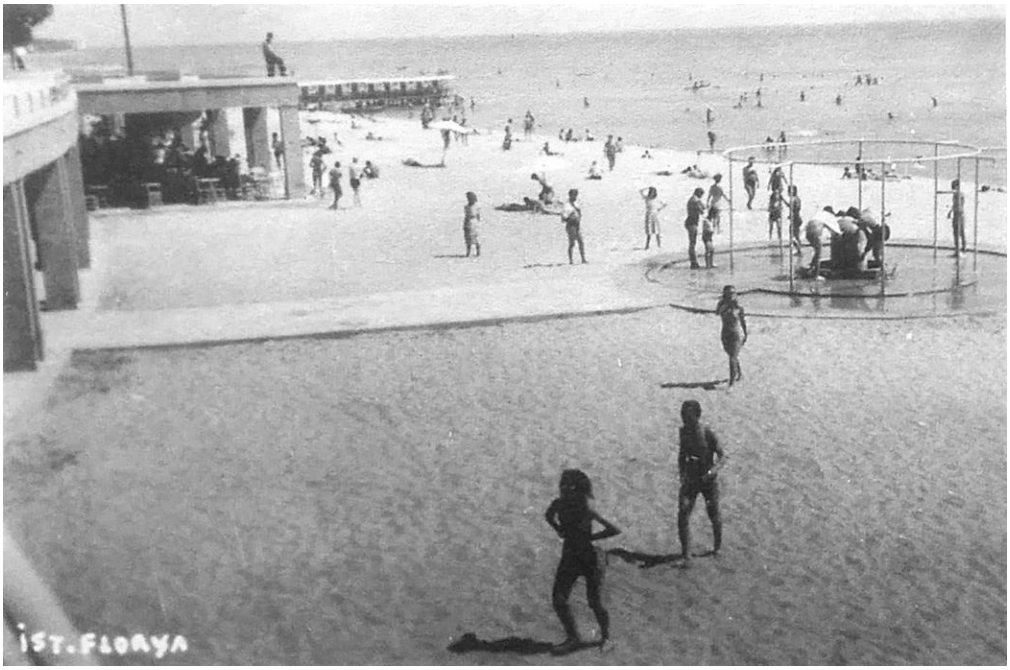

Figure 3.25 Florya *Plaj*. *Burçak Evren, 99, 2000.*

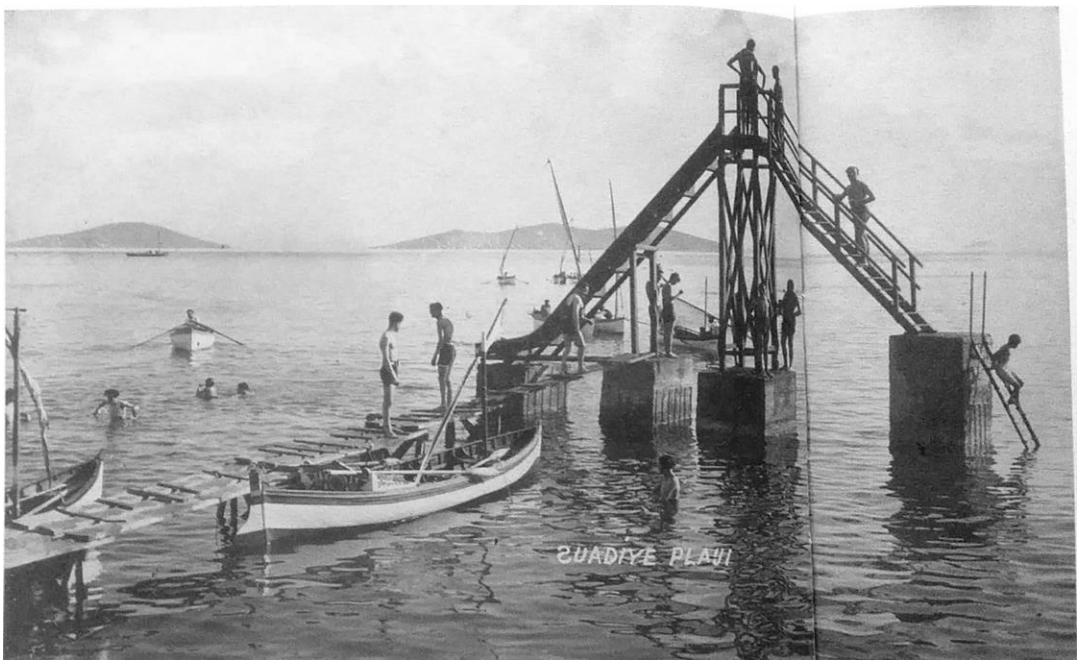

Figure 3.26 Suadiye *Plaj*. *Burçak Evren, 142-43, 2000.*

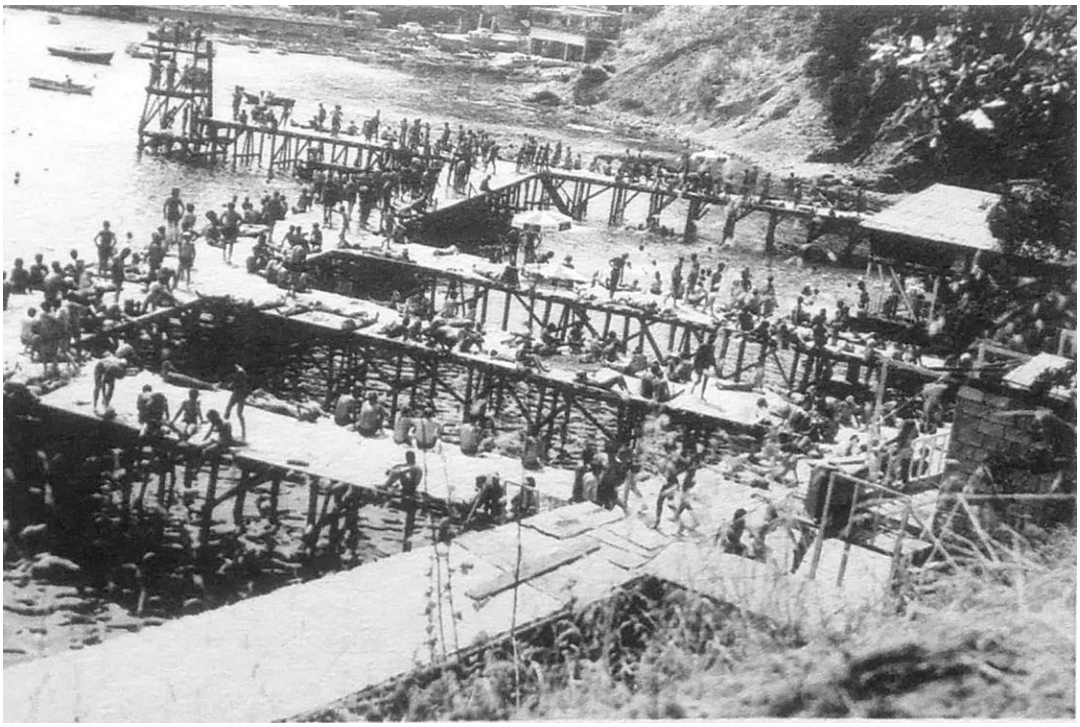
Figure 3.27 Moda *Plaj*. *Burçak Evren, 127, 2000.*

Figure 3.28 Beyaz Park Beach Gazino, 1932, Büyükdere.

Figure 3.29 A Swimming Pool Instead of Çiftesarays along the Waterfronts of Ortaköy on the Way to Kuruçeşme, 1942. *eskiistanbul.net.*

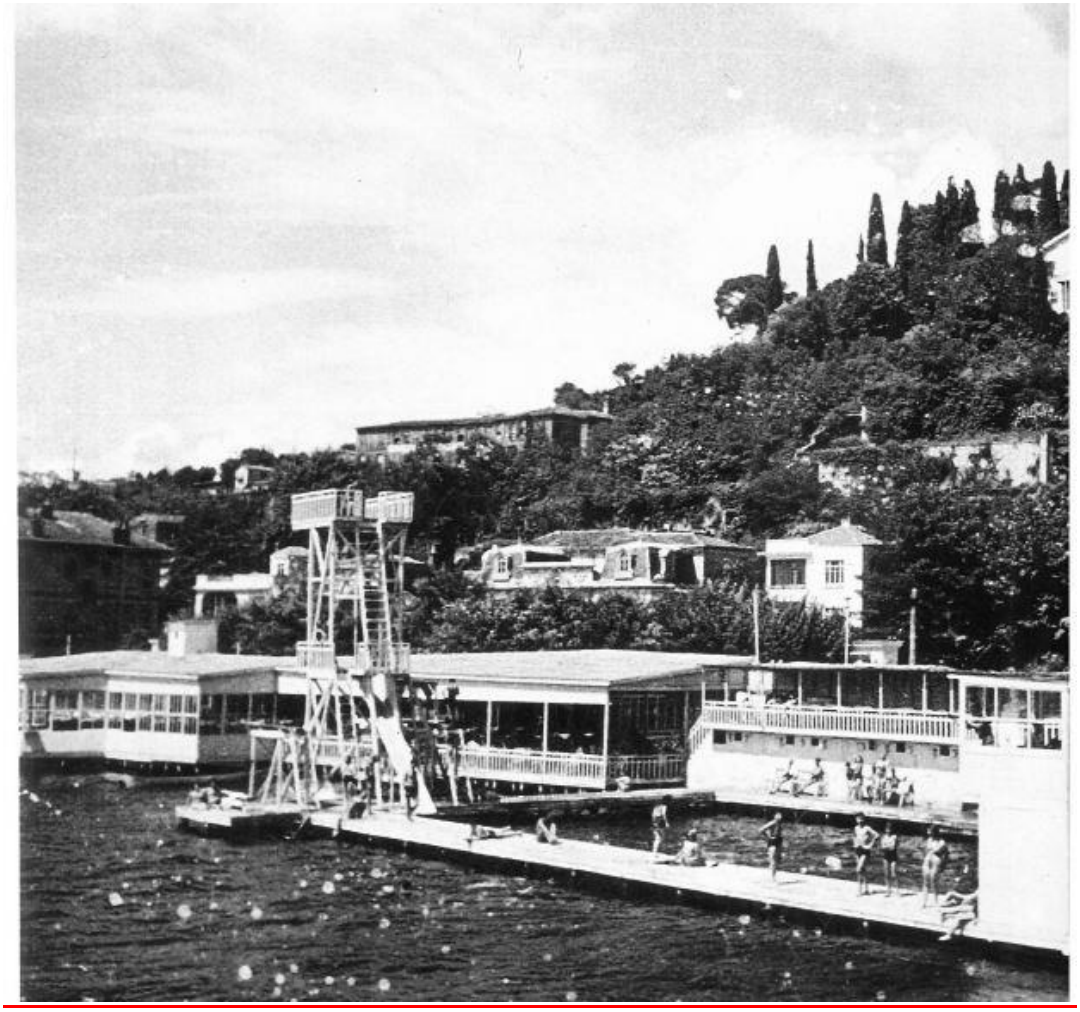

Figure 3.30 Wooden Structures of a *Plaj* along the Waterfronts of Büyükdere.
Gökhan Akçura, 86, 1993

In Chapter 3, the primary characteristics of the Republican project can be exemplified by the particular division of human from nature within the desire to combine them through "urban voids." Moreover, the ability to provide consensus among broad public segments on the legitimization of human division from nature with an institutional character (nation-state) and the disciplining of nature is essential. This chapter has recorded how the bourgeois ideology of nature and spatial fix shaped the ecologically driven visions and socially advanced imaginaries of Prost's plans and reports, which would be remembered for their socially unjust and ecologically frustrated characteristics in the future. Prost asserted that the former urban pattern of the old part of the city was not rational, but was instead based on

random form and created unhealthy urban landscapes. Moreover, the so-called rational order was not only about a physical form of the urban landscape but also the capitalist production, technical expertise, scientific production, and control embedded in the new synthesis of material and human flows. Instead of picturesque values of the landscape, the scientific conquest of nature was upheld by the production of ordered, constructed, sterile, and functional socio-natures designating the flows of voids. Prost's plans can be seen as a kind of extension of the former plans "as a continuation of the urban operations of the Late Ottoman period" (Bilsel 2010, 128), like Moltke's and Bouvard's.

In short, this chapter extensively revealed that all attempts had continuity throughout the historical and geographical context of İstanbul. We argued that the capitalist urbanization praxis produces historically specific forms of uneven production of nature in the context of İstanbul through the "legitimization" of unevenness and division of human from nature in the first half of the 20th century. The rethinking of the notion of a modern society with nation-state through the relationship between society and nature as if it would be without class conflict in the historical-geographical context of Turkey and particularly for İstanbul in that period is essential in this chapter.

CHAPTER 4

1950-1980: MATERIALIZATION OF A MODERN INDUSTRIAL CAPITALISM THROUGH METABOLIC FLOWS OF OIL AND COAL IN İSTANBUL

4.1 Introduction: Towards a Motorized Urban Metabolism in İstanbul

> *"A new human 'mastery' of nature was achieved through novel systems of movement over, under and across nature, especially powered by steam engines. These first systems used the resources of coal and iron ore, which led to the manufacture of new mobile machines."*[237]

> *"In fact, however, Moses' great construction in and around New York in the 1920s and 30s served as a rehearsal for the infinitely greater reconstruction of the whole fabric of America after World War Two. The motive forces in this reconstruction were the multibillion-dollar Federal Highway Program and the vast suburban housing initiatives of the Federal Housing Administration. This new order integrated the whole nation into a unified flow whose lifeblood was the automobile."*[238]

Considering the polarized post-WWII period, massive destructions, constructions of highways, boulevards and parkways, celebration of the automobile, the accelerated economic collaboration of the USA and Western Europe, and increasing capital accumulation via rapid urbanization processes seem to define the heroic moment of

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[237] John Urry, *Societies Beyond Oil: Oil Dregs and Social Futures* (Zed Books, 2013), 38.
[238] Marshall Berman, *All That Is Solid Melts Into Air: The Experience of Modernity* (Penguin Books, 1982), 307.

modernity's Promethean Project,[239] as the introductory excerpt from Marshall Berman (1982) briefly explains in the context of New York. Energy[240] and motion, largely celebrated as a modern way of life, were embedded in uneven socio-natural relations, processes, and results within the capitalist mode of production in the 20th century. This heroic moment in Turkey, which is explained by Tekeli (2013) as the Populist Modernity Period (1950-1980), is explored in this study through the space-making agenda of oil and coal embedded in the motorized urban metabolism of İstanbul. All of these developments heavily depended on the extensive usage of oil and coal, which radically altered the metabolic relation between humans and nature through the creation of modern urban socio-natures in the 20th century in many cities. İstanbul is one such city. Together with the influences of high-carbon societies, the waterfronts of İstanbul arose with appropriate dwellings that served for inequalities of mobility, production, and reproduction of labor along the Marmara and Haliç as well as the Bosporus hills. The emergence of the working class as factory workers and the bourgeois class with consumer culture and mobile life concomitant with the increasing number of industrial plants and dwellings throughout the waterfronts had a relationship with the fossil-powered high-carbon urbanization agenda of nature in İstanbul.

This chapter asserts that an exploration of the accelerating metabolic flow of oil and coal materialized as space is critical for understanding the procession of the urban metabolism of İstanbul in the period between 1950 and 1980. The first bridge over the Bosporus (1973), ring roads, highways, coastal roads, docks, quays, new industrial plants, manufacturing facilities, and the first squatter settlements (Zeytinburnu-Kazlıçeşme) emerged and established themselves along the

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[239] Maria Kaika (2005, 6-7) suggests the concept of the Promethean Project in three phases: the Nascent Promethean Project, Heroic Moment of Modernity's Promethean Project, and Modernity's Promethean Project Discredited.

[240] Matthew T. Huber mentions that "energy is the kind of 'transhistorical' abstraction that applies to all human societies at all levels of interaction with the natural environment." See: Matthew T. Huber, "Energizing historical materialism: Fossil fuels, space and the capitalist mode of production," *Geoforum* 40 (2008): 106.

waterfronts of İstanbul. The metabolic flows of oil and coal, chosen for the very production of motion and energy as space throughout the waterfronts with an industrial character, are examined in this chapter for exploring the urban political ecology of urban metabolism between 1950 and 1980 in İstanbul. This period represents the moment of the first apparent increase in CO_2 emissions, and it contributed to the development of a high-carbon society under the influence of a new urban agenda in which motorized urban metabolism flourished. Matthew T. Huber (2008, 105)[241] states that only a very few historical materialists have focused on the connection between "fossil fuel and capital accumulation" concerning industrial socio-natures. A focus on fossil fuels can lead to a rejection of nature and resources as "external," locating them instead as "internal" relations for the capitalist mode of production (Walker 2001, Emel et al. 2002, Huber 2008).

Coal constituted the first resource and power for the shifting metabolic relationship between humans and nature. The new geological period known as the "Anthropocene" emerged in history with the use of coal-fired systems (Urry 2013, 2). While coal thus implies the beginning of a shifting metabolism for urbanized nature, oil constitutes the essential source of energy in terms of reshaping society and the urban environment in the 20th century. As John Urry (2013, 5-6) states, the journey of oil first started in Pennsylvania in the 1840s and it was originally used for lighting neighborhoods, replacing the use of whale oil. However, the era of low-cost and productive oil for transportation in the 20th century, powering steamships, cars, and airplanes rather than merely lighting houses, began with the discovery of the first gusher in Texas in 1901.[242] Low-cost mobile oil had an immense effect on the 20th century around the world, but this study is particularly concerned with how metabolic flows of oil and coal intersected with the space-making agenda and vision

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[241] Here, Huber is reviewing the historical importance of the energy shift from solar or biological sources of energy (muscles, wind, and water) to fossilized sources of energy (coal, oil, and gas).
[242]As he further adds (Urry 2013, 39), the earliest extraction of oil occurred in Russia, beginning in Azerbaijan in 1848. By 1884 nearly two hundred small refineries operated in Baku. In 1878 the first oil tanker was launched on the Caspian Sea. The first ever oil refineries were built in Poland between 1854 and 1856.

in İstanbul through the waterfronts from the 1950s to 1980. First, we attempt to explore the metabolic flows of oil and coal in terms of their causes and effects on the urban metabolism of İstanbul. After the exploration of these metabolic flows, we reach a motorized urban metabolism and uneven conditions of urban landscapes. The motorized urban metabolism via metabolic flows of oil and coal highlights the relations between infrastructures (the first bridge, highways, coastal roads, quays, docks, power plants, industry) and dwellings (*gecekondu*s via building materials and heating) throughout waterfronts in terms of socio-natural relations in this period. The subsection on oil explores the decentralization agenda and creative destruction through the realization of the metabolic flows of oil embedded in road constructions, the first bridge over the Bosporus, and quays for fuel oil. At the same time, the installation of new infrastructures (e.g., for signalization, illumination, telecommunications, and wire fencing) with land clearance for the sake of high-carbon society and landscaping put pressure on the urban ecosystem of İstanbul. Traffic islands became new vegetated landscapes. Graveyards were expropriated for the projection of oil-powered transportation. Oil-powered ships were also typical in this period, and the waterfronts of İstanbul were a stage for special quays of fuel oil companies.

The second subsection, related to coal, examines the Kuruçeşme coal storage area, which was a unique hub for the very source of the energy of İstanbul and the marble industry on Marmara Island, particularly important for the building sector in this period. Thereafter, the Silahtarağa Power Plant is explored. The coal used there came from the Kuruçeşme depot, and the power plant produced a particular waste recycled in the cement and brick industry located on the waterfronts of the Haliç. Lastly, the squatter settlements known in Turkish as *gecekondu*s are examined in terms of their building materials, locational preferences, heating, and organization. The massive demolitions overseen by Menderes had significant relations with dramatic changes throughout the waterfronts. The ability of the discourse to create consensus as well as hegemony, and to deepen the struggles and conflicts to shape daily life and the urban waterfront landscape, is essential. Finally, in this chapter's

epilogue, we reflect upon the modern class relations and production of waterfronts in İstanbul through metabolic flows of oil and coal towards a motorized character of urban metabolism, which is claimed to be specific for this period concerning the urban environmental history of İstanbul.

According to Kaika (2005), modernity's Promethean Project symbolizes urban development within large-scale infrastructural networks and technical systems from the late 19th century to the first three-quarters of the 20th century. Furthermore, in the local context, all of these visions were particularly integrated into the modern industrial capital accumulation model, and the projections had specific effects on the waterfronts of İstanbul. The emergence of modern industrial capitalism and the ways in which its urban strategy (demolitions and constructions) operated throughout the urban landscape of desire for a vision of freedom (*hürriyet*) as an ideological apparatus for bourgeois democracy are significant in this chapter. According to Akpınar, the years between 1950 and 1960 showed "a sudden and tremendous dynamic change not only in politics and economics but also in architectural and urban fields" (2003, 149).

The Law of Municipalities No. 1580, accepted in 1930, provided a constitutional and administrative foundation for the city in this period. With an expansion of urban land at the periphery, new arrangements were also being made for including new territories within İstanbul's structure. In 1955, the border of the municipality was extended to both the west (Florya to Küçükçekmece) and east (Üsküdar to Ümraniye) of İstanbul (Akpınar 2003, 141). It is important to note here that the mayorship and governorship were separated from each other in 1957; until then, those roles were filled by the same person, who was assigned by the state, not with a separate election. In 1963, Haşim İşcan became the first elected mayor of İstanbul.

Throughout the 1960s, the working class and the industrial bourgeoisie began to emerge with unique conditions such as struggles, solidarities, and working, habitation, and transportation cultures, which could be seen in the transformation of waterfronts and the outskirts of the Bosporus, Marmara, and Haliç. For instance, the

phrase "city with *gecekondu*s, venders, and *dolmuş*es" ("*gecekondulu, işportalı, dolmuşlu şehir*") was coined for this period by Tekeli, Gülöksüz, and Okyay (1976). While the periphery of İstanbul had previously been a stage for private manufacturing and large-scale plants, increasing numbers of small-scale manufacturing facilities located in and around the city center were not only supported by the government between 1950 and 1970 (Keyder and Öncü 1994, 395), but were also defined as a demand by new city dwellers, workers, and tradesman (Tekeli et al. 1976). The year 1950 was significantly influential concerning the change in the flows of political power just as much as the socio-natural transformation in the history of Turkey, and the year 1945 was particularly symbolic as a turning point in the history of Turkey.[243] The years between 1945 and 1960 are significant moments concerning the transition from agricultural capitalism to industrial capitalism. All of these developments paved the way for a motorized urban metabolism within the context of İstanbul.

The Democrat Party (DP) was established in 1945, and the Republican People's Party (RPP) began to make some arrangements concerning its ongoing policies and politics up until the elections of 1950. After 1950, multiparty politics, private enterprise, and mechanized agriculture had essential roles in the changing socio-natural relations in Turkey. Following the programs and projections of the state party period (i.e., the RPP), which embodied the centralization of power, nation-building and state interventions for developments began to change in this new period. The DP period opened Turkey to the international market and foreign investments for essential socio-natural alterations. However, this shift was only fully realized in the 1980s (see Chapter 5). In the second half of the 1950s, Menderes began to symbolize the grand-scale demolitions and constructions of İstanbul throughout the inner city and waterfronts. His implementations addressed desires to mitigate the economic recession concerning the shift in market conditions, the decline in

[243] The multiparty period started and the Democrat Party (DP) was established in 1945.

international demand, and challenging climatic conditions for agriculture in rural areas (Gül 2015,174; Herslag 1968, 144-149, 178-184). At the same time, as Güvenç (2015, 125-126) states, modern quays capable of serving five ships at a time were established between Salıpazarı and Fındıklı with warehouses and storage areas in the 1950s, in contrast with imports being at a standstill, and with the wrong location and timing, too (Güvenç 2015, 122-127). During the grand-scale shift towards urbanized and industrialized environments in İstanbul, socio-natural problems such as infrastructural inequality became widespread with the flow of rural immigrants from Anatolia and the concomitant housing shortage. The extension of settlement areas through the Bosporus could be seen after the period of Menderes's implementations (Salman and Kuban 2006, 105). This housing shortage in İstanbul expressed itself with the *gecekondu*[244] phenomenon (or squatter settlements), and political struggles regarding the legal status of these settlements faced the absence of infrastructure such as water, sewage, electricity, and waste disposal. Weiker (1981, 63) mentions that the urban population of Turkey went from "16.3 percent in 1927 to only 18.5 percent in 1950, but it jumped to 35.8 percent in 1970 and 41.4 percent in 1975." Considering İstanbul, in 1950, the population was almost over a million, and since that year, it has been increasing (Freely 1996, 303) (Table 4.1). Moreover, an increase in the development of the industrial sector can be seen in an industrial census conducted in 1964 in İstanbul (Tekeli 2013, 96). There was a much more momentous trend towards motor vehicles between 1945 and 1970 in İstanbul, as can be seen in Table 4.2.

The first bridge over the Bosporus was built in 1973, and before the construction began, discontent about the bridge had already arisen. The relevant report by the Chamber of Architects and the socio-natural effects of the bridge will be elaborated on in detail through the lens of urban political ecology later in this

[244] Literally meaning "put up during the night." Different policies about *gecekondu*s can be seen over time. For both detailed and general history, see Heper 1978, 17-33; Şenyapılı 1978, 46-80; Tekeli, Gülöksüz, and Okyay 1976, 218-254; Keleş 1972.

chapter. The impacts of all these advancements and goals in İstanbul were no less intense than those seen in Western countries. In such surroundings, a population boom with migration from rural areas, the very first urban traffic problems and housing shortages, the inadequacy of infrastructure for some dwellers, an increase in industrial development, and daily solutions that became unwantedly permanent later were all to be expected. In 1970, for example, the absence of sewage infrastructure in squatter settlement areas became problematic concerning a cholera outbreak in İstanbul that year.[245]

The Constitution of 1961 established the State Planning Organization (*Devlet Planlama Teşkilatı*: DPT) for the sake of improving five-year developmental plans and preparing other plans. The Greater İstanbul Master Plan Office (*Büyük İstanbul Nazım Plan Bürosu*) was in charge between 1966 and 1984. The industrial bourgeoisie and a traditional working class both flourished in Turkey, especially between 1960 and 1970. After the constitutional charter of 1961, the first unions of employers (TİSK)[246] and of labor (DİSK)[247] emerged via Union Law No. 274 and Law of Labor Contract, Strike, and Lockout No. 275,[248] with strong organizing capabilities. All of these characteristics—mainly developments of industrial capitalism—and the concomitant struggles, conflicts, and conditions had a relationship with the motorized urban metabolism of İstanbul embedded in the metabolic flows of oil and coal. Local elections offered a stage for the struggles of political parties as illustrated by their posters. The materialization of the developmental projections and visions of the DP by the extensive creation of highways showed itself via a propaganda poster in the elections of 1957 with a slogan of *Roads instead of mountains, vineyards instead of ruins* (Figure 4.1), while the RPP propagandized the absence of the basic needs for daily life with the design of a

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[245] For a detailed explanation of cholera outbreaks in İstanbul through history, please see Chapter 2.3.2.
[246] Türkiye İşveren Sendikaları Konfederasyonu, 20 December 1962.
[247] Devrimci Işçi Sendikaları Konfederasyonu, 13 February 1967.
[248] Law No. 274 and 275 were published in the Official Gazette on 15 July 1963.

poster in the same year: *"Absent" of democracy, construction material, ink, calcium, tires, bows, notebooks, coffee, cheese, meat, and penicillin* (Figure 4.2).

The economic aid and dependency on foreign capital,[249] as well as the empowerment of labor movements, offered fragile ground to the industrial bourgeoisie at the end of the 1970s. Thus, the bourgeoisie and the state appealed to international finance organizations before 1980 (Atılgan 2015, 529). While the bourgeois class was in solidarity on the international scale, the working class was, as well. The strike of the Berec Battery Factory in 1965[250] is a preeminent example of the latter as international labor institutions were in solidarity with aid for the strikers for the first time in the history of Turkey (Atılgan 2015, 538). The flow of workers from Turkey to European countries was also seen in this period, with nearly half a million migrating between 1961 and 1973 (Atılgan 2015, 541). The urban reconstructions had interactions with Western countries. In this regard, Akpınar (2003, 143) explains that, in 1960, the Union of Municipalities of the European Council awarded the Le Prix de L'Europe of 1959 to İstanbul, praising the post-WWII reconstruction. It can be said that both credits and awards from foreign capital and institutions, as well as organizations of worker solidarity, were widespread at this moment in Turkey. The years between 1950 and 1980 in Turkey were defined by Tekeli as the "Populist Modernity" period.

In short, the visions and projections of the DP government period created and strengthened a bourgeois class with a consumer culture and **automobile environment** befitting the general world context. **The emergence of a motorized urban metabolism set the stage for modern class relations of the industrial**

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[249] The foreign capital-state cooperation institutions involved in providing support to the industrial bourgeoisie in the 1960s included the Agency for International Development (AID), International Development Association (IDA), International Bank for Reconstruction and Development (IBRD), and European Investment Bank (EIB). See Gökhan Atılgan, "1960-1971 Sanayi Kapitalizminin Şafağında," in *Osmanlı'dan Günümüze Türkiye'de Siyasal Hayat,* ed. by Gökhan Atılgan, Cenk Saraçoğlu, and Ateş Uslu, 521-651 (Yordam Kitap, 2015), 530.

[250] The factory was located in Gaziosmanpaşa (Taşlıtarla) in İstanbul, a famous squatter settlement area. The strike was pioneering on several accounts. For example, the spokesperson for the strike of the Berec Battery Factory was a woman between December 1964 and January 1965.

bourgeoisie and the working class as well as their socio-natural agendas for space. Modern class relations are among the most significant metabolic relationalities for the spatial reproduction of İstanbul throughout the waterfronts between 1950 and 1980. Another one is the signaling of **withdrawal from the waterfronts**, which began to lose their dominance concerning trade, transportation, movement, and recreation in the daily life of İstanbulites for the first time in history. Since this era, the waterfronts have been addressed as the "periphery" of İstanbul for celebrations of movement and the deepening of the uneven production of nature embedded in the metabolic flows of oil and coal reshaping the waterfronts. Next, we will focus on the metabolic flows of oil and coal through the waterfronts of İstanbul in detail.

Table 4.1 Population of İstanbul. *John Freely, 303, 1996.*
Converted to a table by the author, 2019.

Population	**Year**
1.466.000	1960
2.312.000	1970
4.433.000	1980

Table 4.2 Numbers of motor vehicles through years.
Akpınar 119, 2003; Kuban 426, 1996; Tekeli 40, 1992.
Converted to a table by the author, 2019.

Years	**Motor Vehicles**
1945	3000
1960	35.000
1970	100.000

Figure 4.1 “Roads instead of mountains, wine yards instead of ruins”: Propaganda Poster of the Democratic Party in 1957 Elections.

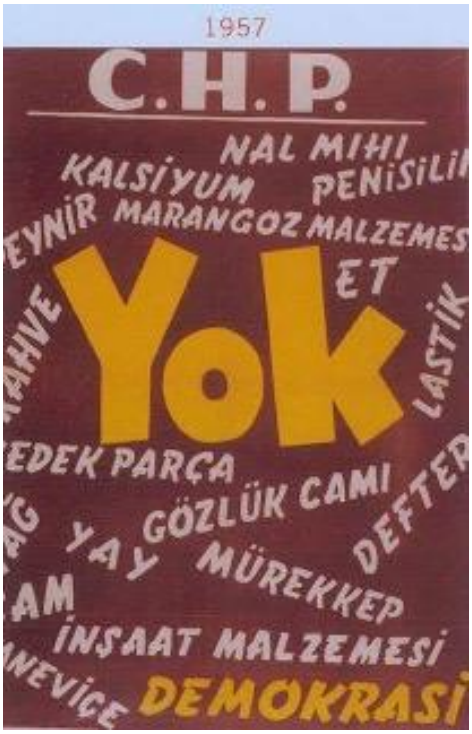

Figure 4.2 “Absent” regarding construction Materials, Ink, Calcium, Tires, Bows, Notebooks, Coffee, Cheese, Meat, Penicillin, and Democracy: Propaganda Poster of the Republican People’s Party in 1957 Elections.

4.2 Metabolic Flows of Oil and Coal as Space through the Waterfronts of İstanbul

> *"... The high energy densities of fossil fuels enabled centralized mass manufacturing, but the shift of rural labor to cities could get under way only as field machinery and fertilizers began displacing animate power…This profound transformation—from an overwhelmingly rural, decentralized, parochial, low-energy society to a predominantly urban, centralized, globalized, high-energy culture—has run its course in rich nations but is still accelerating in modernizing countries."* [251]

Energy and motion are the forerunners of the modern urban metabolism and fossil-fueled civilization. Petroleum products have been both the cause and the result of a motorized era, along with time acceleration via transportation (land, water, air), automatization of industry, and dwelling in an urbanized environment. As Vaclav Smil (2008, 308) states, this "century of fossil-fueled industrialization, urbanization, and subsidized farming changed both the extent and the rates of environmental intervention." Why does capital need energy and motion? And how is energy shaped and unlocked by the social use of energy under industrial capitalism? In this section, to explore the production of waterfronts through urban metabolism, we focus on the metabolic flows of oil and coal in light of these questions. The metabolic flows of oil and coal are accepted in this study as counterparts of each other through the socio-natural production of waterfronts in İstanbul between 1950 and 1980. The production and reproduction of infrastructures, landscapes, and dwellings have been an issue for the changing urban metabolism. According to a study in 1978, oils, diesel, asphalt, and paraffins were being used as petroleum products in Turkey in extensive areas such as transportation, illumination, industry, agriculture, and heating (Esin 1973,

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[251] Vaclav Smil, *Energy in Nature and Society: General Energetics Complex Systems* (MIT Press, 2008), 309.

68-69). The metabolic flows of oil and coal through the waterfronts of İstanbul not only symbolize the national ideal of oil and roads for the sake of "development"; they also emphasize the connection between East and West in the context of the material connection of the two sides of the Bosporus. Urry (2013, 51) mentions that "production, consumption, speculation as well as property development" based on carbon society increased dramatically around 1970 as a result of uncovering vast areas of oil and gas in the 1960s.

İlhan Tekeli (2011) further states that the first construction of a Bosporus bridge in 1973 and ring roads had a tremendous effect on the reproduction of urban space by opening it to speculative actions and creating new central work areas (*merkezi iş alanları* or MİA) (Tekeli 2011, 271-295). Organized industrial zones, the first efforts at mass housing, bus stations, vegetable markets, transportation options, and so on were collectively settled in these new areas. At the same time, protecting the ecological value of the Bosporus would become a serious problem. The harbors of İstanbul, indissociably connected with transportation links as well as warehouses and shelters, depended on metabolic relations of energy and motion (Figure 4.3). Therefore, this chapter focuses more on the space-making agenda and vision throughout waterfronts in terms of urban metabolism rather than carbon calculations.[252] First, we will focus on the flows of oil, and then the flows of coal though the waterfronts of İstanbul will be examined.

[252] In global carbon emissions reports, considering oil-based carbon emission data for Turkey, values grew from 0.2 tCO_2/person in 1960 to 1 tCO_2/person in 1980 and 1.4 tCO_2/person in 2018. On the other hand, coal-based carbon emission data show 0.4 tCO_2/person in 1960, 0.6 tCO_2/person in 1980, 1.3 tCO_2/person in 1990, and 2.1 tCO_2/person in 2018 (see details in Table 6.1). In the context of fossil-fueled society, the carbon emissions data are composed of energy production (electricity and heating), other industry (metal production, chemical, manufacturing), land transport, shipping, aviation, building, agriculture, and fishing. Turkey was 31st in 1960 and it moved to 21st place concerning the share of CO_2. However, these emission grades could be a mere matter of the two-faced carbon trade at the international scale, which has no focus on decreasing the carbon emissions levels or radical change in fossil fuel society.

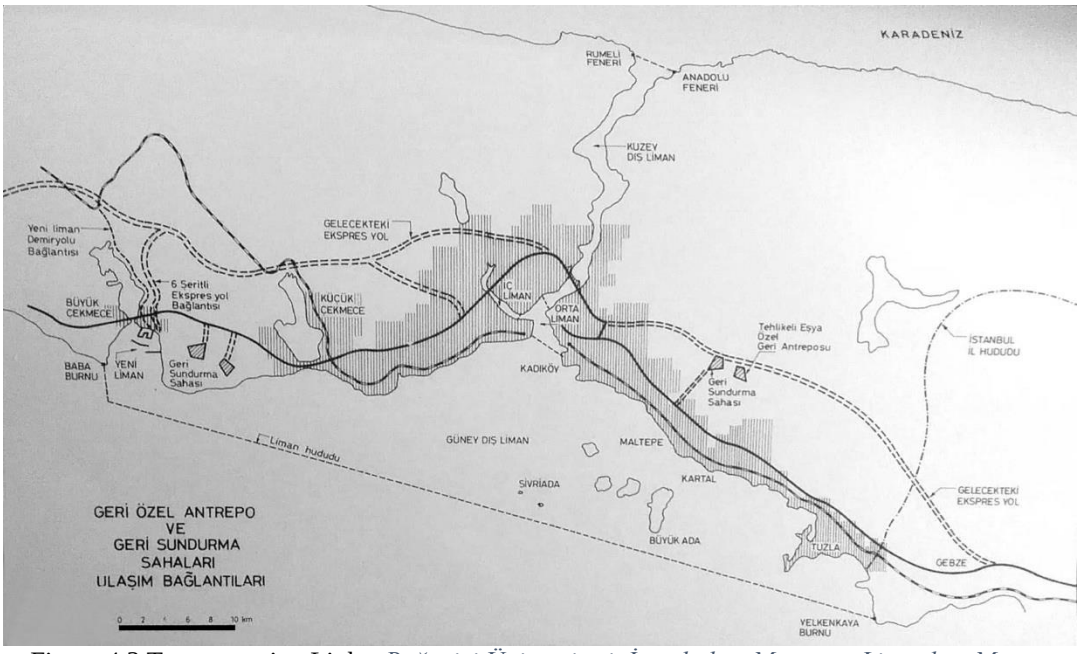

Figure 4.3 Transportation Links. *Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu Vol. 2, p.12.8, 1976.*

4.2.1 Oil

> *"As oil gushed to the surface, so it helped to generate an exceptional 'modern, mobile' civilization. This enabled the West to consolidate its power and influence in the world over the 'modern' period."*[253]

> *"It smells of gas at this time of night. It smells of gas at dusk*
> *In a minibus in Suadiye…"*[254]

Throughout the 20th century, the usage areas of oil were expanded and varied through a shift towards "mobile life" in terms of the unique motions of people, materials, foods, goods, and shelters, as well as energy for waterworks like drainage and irrigation for agriculture. "Automotive emotions" (Sheller, 2004) were created

[253] John Urry, *Societies Beyond Oil: Oil Dregs and Social Futures* (Zed Books, 2013), 10.
[254] Bedri Rahmi Eyüboğlu, "Dolmuş" In Dol Karabakır Dol Bütün Şiirleri [1974], 2008, 211 Translated into English by the author.

by cars under these mobile life conditions. İstanbul is a distinct context of Middle Eastern geography in terms of this modern mobile civilization to be explored via the metabolic flows of oil as a spatial process throughout waterfronts. The irreversible entry of oil into the daily lives of İstanbulites has completely changed the urban metabolism of İstanbul. Metabolic relations through oil have also created a collective memory for İstanbulites. One of the fields for this collective memory of oil is poetry. Oil was a subject of poems in the 1970s, like in the above quotation. Petroleum ship accidents and sea fires became another part of the collective memory of İstanbul's water landscape in this period.[255] In 1979, a sea fire started and lasted 27 days, and thousands of tons of oil were spilled into the sea. The ashes and smoke of the sea fire remained in İstanbul for days. Besides these memories from daily life, this chapter claims that the metabolic flows of oil as space in the period between 1950 and 1980 can also be explored through road constructions, such as coastal roads, ring roads, the first bridge over the Bosporus (Figure 4.4) (known as *Boğaziçi Köprüsü* or the Bosporus Bridge), and special quays for fuel oil (Serviburnu, Çubuklu, Kartal, etc.). All of them symbolized the motorized urban metabolism of İstanbul; in other words, the waterfronts became the address for this motorized urban metabolism of İstanbul.

Professor Luigi Piccinato's[256] report in 1967 on the Great Master Plan of İstanbul, prepared by the Bureau of the Master Plan of İstanbul, illustrates the truth of this claim (Piccinato 1970, 54). The Bosporus and the Ring Road of İstanbul put pressure on the ecosystem. The creation of new landscapes along traffic islands (refuges) instead of the former landscapes has been an issue since the 1970s in İstanbul. As reported by a study in 1973,[257] oil was used in transportation by automobiles, buses, motorcycles, and planes; in agriculture for tractors and agricultural instruments; and in industry, as a melting agent and in small engines (see

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[255] It was particularly stressed that, without a special protection regime being put into place, incidences such as fires and tanker accidents would continue in parallel with the increase in traffic. For more details, see Çelik Gülersoy, "Korunması Gereken Boğaziçi," *Mimarlık* 10, no. 6 (1972): 15-25.
[256] Luigi Piccinato (1899-1983), Italian architect and urban planner.
[257] A. Alptekin Esin, *Türkiye'de Petrol Üretim ve Tüketimi* (Ankara İktisadi ve Ticari İlimler Akademisi Yayınları, No. 63, 1973), 68-69.

Table 4.3). Burning oil was used for the illumination of places that had no electricity, in transportation, in agriculture, and in industry. Diesel was used in power plants for industry and illumination, for heating in residential areas, in irrigation machines and tractors for agriculture, and in buses, trucks, trains, and means of transportation on the seas. Fuel oil was used for railroads and in illumination for heating residential areas. Asphalt was used in road construction for transportation, in insulating materials for the construction sector, and in some products for industry. Paraffin was used in papers and textiles for industry and in candles for illumination. Oil-powered ships were very common after 1950 and oil was conveyed by tankers. Thus, oil was second after water for meeting Turkey's needs for energy in the 1970s (Esin 1973, 70). Oil consumption was increasing among other energy sources equivalent to oil (pit coal, petroleum products, hydraulic energy, wood, and dried dung) from the 1960s to 1970s (Esin 1973, 71).

In short, the visions and projections in this period, which materialized with the Bosporus Bridge, coastal roads (Emirgan, Sarıyer, etc.), a ring road system for motor vehicles, and dock areas belonging to international oil companies, resulted in the significant transformation and radical expansion of the city. This transformation in turn gave rise to the beginning of the loss of the waterfronts' significance with withdrawal from the waterfronts, which had been very important for trade, transportation, recreation, and daily life throughout history. Particularly, instead of being the main transportation line for sea travel, since this era the waterfronts have been the address for maintaining the motorized urban metabolism by land transportation.

Figure 4.4 First Bridge over the Bosporus. *Yapı Kredi Archive.*

Table 4.3 Petroleum products and their usage area in 1978. *A. Alptekin Esin, 1973*
the information is turned into table by the author, 2019

petroleum products (1978)	**transportation**	**industry**	**heating**	**illumination**	**agriculture**
oil	Automobiles, buses, motorcycles, and planes	Melting agents and in small engines	-	-	Tractors and agricultural instruments
burning oil	Tractors	Melting agents	-	Places that had no electricity	Tractors and in some agricultural instruments
diesel	Buses, trucks, trains, means of transportation on sea	Power plants	Residential areas	Power plants	Irrigation machines and tractors

fuel-oil	Rail roads and sea transportation	-	Residential areas	-	-
asphalt	Road constructions	Insulating materials for construction sector and in some products	-	-	-
paraffin	-	Papers and textiles etc.	-	Candles	-

Table 4.3 (Continued)

4.2.1.1 Road Constructions

In this subsection we explore the waterfronts of İstanbul as a basic medium concerning İstanbul becoming an automobile-driven city associated with the road-making agenda through the metabolic flow of oil between 1950 and 1980. The discourse of creative destruction here primarily stresses both land clearance and filling for the new road network and place-making agenda throughout the waterfronts of İstanbul. The crossover roads, tunnels, viaducts (Figure 4.5), and elevated roads projected along the Ring Road (Figure 4.6) particularly characterize the changing metabolism of İstanbul towards a mobile character in this section. It is important to underline that the journal *Arkitekt* claimed that the number of motor vehicles was increasing much more than the increasing population from the 1950s to 1970s.[258] In 1955, there was 1 motor vehicle per 71 people, and in 1968, 1 motor vehicle per 32 people. At the same time, oil (Figure 4.7), water, and road (Figure 4.8) as "national" facts emerged as agitprop tools in 1965 elections.

The first study on the projection of the Ring Road (*Çevre Yolu*) of İstanbul started in 1953. In the second five-year development plan, the İstanbul Ring Road and Bosporus Bridge were accepted and included (1967). The projections of ring

[258] Arkitekt. "İstanbul Çevre Yolu ve Boğaziçi Köprüsü Projesinin Tarihçesi ve Gelişmesi." *Arkitekt* 1975-01, no. 357 (1975): 22-27.

roads and the bridge emphasized both the "abstraction" of Howard's Garden City theory for the developments of a 20th century decentralization agenda worldwide (Al-Nakib 2016)[259] and "creative destruction" (Harvey 2003, 2005)[260] for an efficient road system of a motorized urban metabolism. Road constructions can put pressure on hydrology, geomorphology, and ecosystem processes (Switalski et al. 2004, 21), as well as raising CO_2 emissions. While building constructions are recycled or renovated for various rationales, road removal is extremely rare; roads have a perpetual and non-recyclable character and are generally fixed over and over again.[261] The installation of new infrastructures such as signalization, illumination, telecommunication, and wire fences (for preventing road access by animals and pedestrians) as well as land clearance of green areas were mentioned in *Arkitekt* in 1975 in a related issue.[262]

Traffic islands became the new vegetated landscapes of a modern İstanbul, replacing former landscapes that had been cleared out in favor of cleansing the land to create the new infrastructure of a motorized urban metabolism. Ekinci (1994, 26) states that during the construction of Vatan Boulevard, three thousand trees were cut down (Figure 4.9). Petroleum products were used in extensive road constructions of İstanbul in 1960s (Figure 4.10 and Figure 4.11). While widening the road between Tophane and Dolmabahçe, constructing the Sirkeci-Florya coastal road, and connecting Beyazıt to Aksaray, many historical buildings were also destroyed (Ekinci 1994, 26). For example, the Sinan Paşa Public Bath that stood across from

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[259] Farah Al-Nakib's study states that we can see the very same vision throughout modern British, American, and European cities and in decolonized countries like Kuwait. Farah Al-Nakib (2016), *Kuwait Transformed: A History of Oil and Urban Life*, Stanford University Press.

[260] Harvey discusses the discourse of "creative destruction" in his two important books in detail. See David Harvey *Paris, Capital of Modernity* (Routledge, 2003), 1 and David Harvey *A Brief History of Neoliberalism* (Oxford University Press, 2005), 3.

[261] In the 21st century, however, road removal for mitigating the impacts of roads as well as for restoring ecosystem processes can be seen. For a detailed explanation about the benefits and impacts of road removal projections, see TA Switalski, JA Bissonette, TH DeLuca, CH Luce, and MA Madej "Benefits and impacts of road removal," *Frontiers in Ecology and the Environment* 2, (2004): 21-28.

[262] Arkitekt. "İstanbul Çevre Yolu ve Boğaziçi Köprüsü Projesinin Tarihçesi ve Gelişmesi." *Arkitekt* 1975-01, no. 357 (1975): 25.

the mosque was demolished during urban demolitions in the 1950s (Deleon 1999, 36).

The construction of another new bridge and the associated asphalt road system[263] for motor vehicles over the Haliç (Figure 4.12) is the other preeminent example for the motorized and high-carbon urban metabolism of İstanbul. Some problems occurred during the construction of the Golden Horn Bridge regarding the soil grain properties of the Golden Horn, which is covered with mud on the bottom, as well as chemical materials in the water problematic for the structural system.[264] The project was designed by a Japanese firm. The bridge was located between the military school in Halıcıoğlu on the southern side of the Haliç and the Altınyıldız Factory in Ayvansaray on the northern side (Figure 4.13). Some parts of the military school had to be expropriated for the construction of the new bridge.[265] In addition to the regularization of Kabataş Pier Square and Dolmabahçe Square, the coastal roads of Beşiktaş-Dolmabahçe and Bebek-İstinye were also widened and asphalted in this period. The Ring Road of İstanbul is a road system that was formed by connecting the Ankara Asphalt in the east and London Asphalt in the west (Üngür 2017, 23), as well as the Bosporus, via the Bosporus Bridge between Ortaköy and Beylerbeyi.

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[263] Efforts were made to increase the amounts of asphalt-paved roads between 1960 and 1970, with the length of such paved state roads reaching 17,124 km at the beginning of 1970. The 1970s brought new dimensions with highway policies and multi-lane express roads, and the asphalt industry is described as having made its first major breakthroughs in the 1970s. For more details, see *Türkiye Asfalt Endüstrisi 2006 Raporu, Tarihçe Kısmı*.

[264] Suat Türker "Haliç'e İkinci Köprü Yapılıyor." *Milliyet*, 24 May 1970. "170 milyona çıkacak köprünün ihalesi dört ay sonra yapılacak ve inşaat 1971 Ocak'ında başlayacak..."

[265]Ibid.

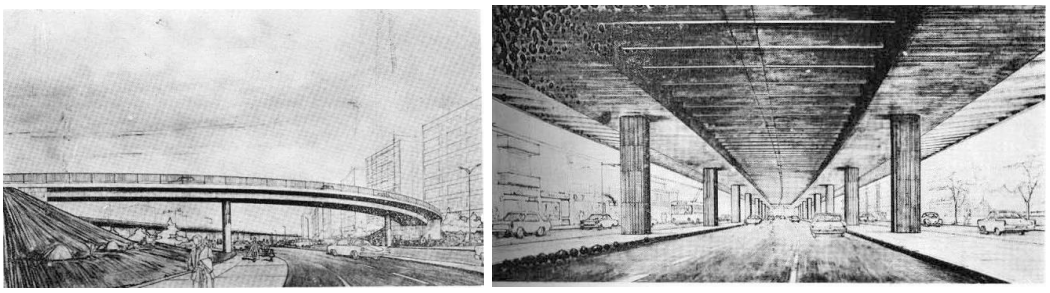

Figure 4.5 (Left) Anonymous sketch (Right) Sketch of *Büyükdere* Viaduct. *Viaduct sketches along the ring road of İstanbul in 1975 by Tekser Company.*

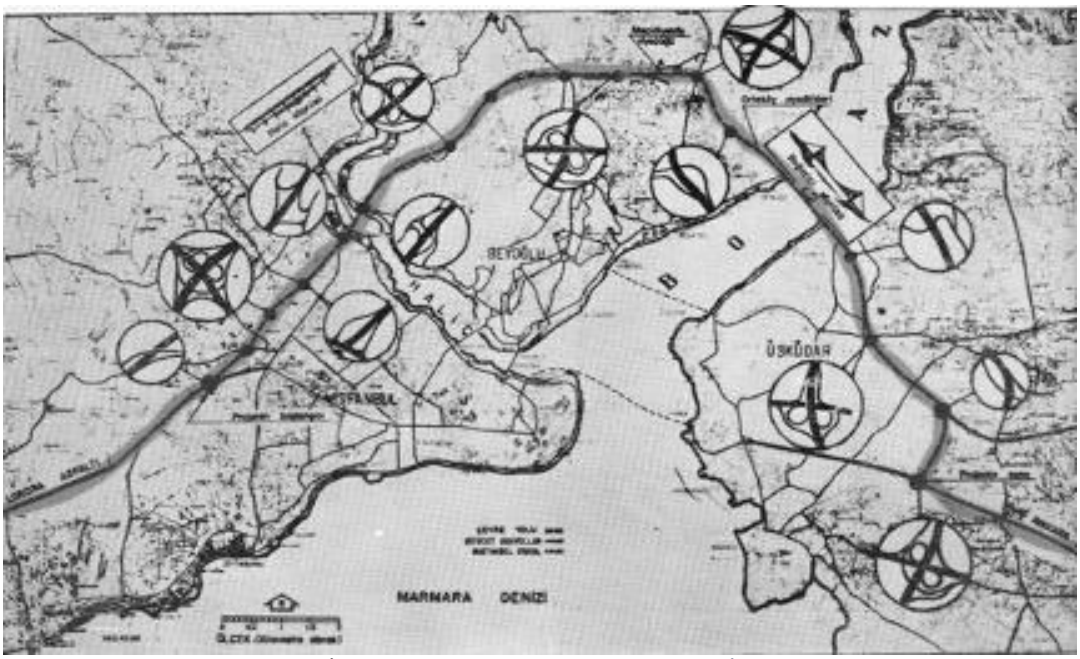

Figure 4.6 The Ring Road of İstanbul, 1975. *Journal of Arkitekt. "İstanbul Çevre Yolu ve Boğaziçi Köprüsü Projesinin Tarihçesi ve Gelişmesi", No. 1975-01 (357), 22, 1975.*

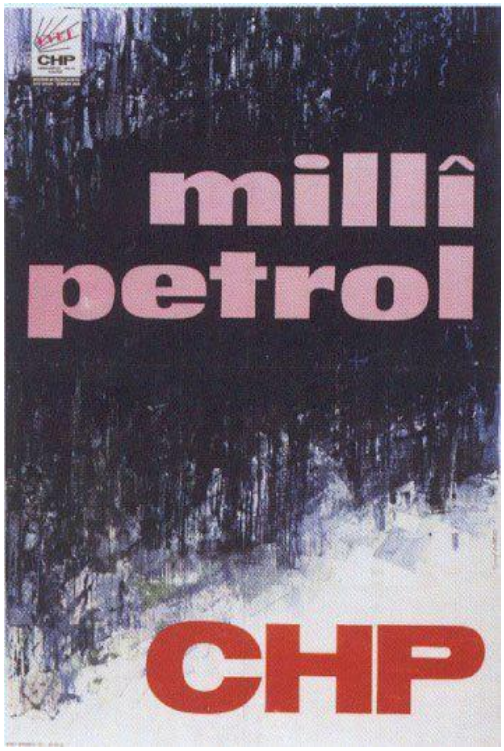

Figure 4.7 CHP (Republican People's Party) 1965 Elections
Came with a Promise of "National Oil"

Figure 4.8 AP (Justice Party) Poster in 1965 Elections:
Promises of "Water and Roads" as a Main Issue.

Figure 4.9 During the Construction of Vatan Boulevard, Three Thousand Trees Were Cut Down.
Hilmi Şahenk, 1960.Alman Arkeoloji Enstitüsü, D-DAI-IST-R 32.782.

Figure 4.10 Petroleum products were used in extensive road constructions of İstanbul, 1960, Aksaray, Yenikapı. *Vatan-Ordu-Millet Turing Archive*

Figure 4.11 Coastal Roads of Unkapanı, Eminönü, 1960. *Hilmi Şahenk, 1960*
Alman Arkeoloji Enstitüsü, D-DAI-IST-R 32.769

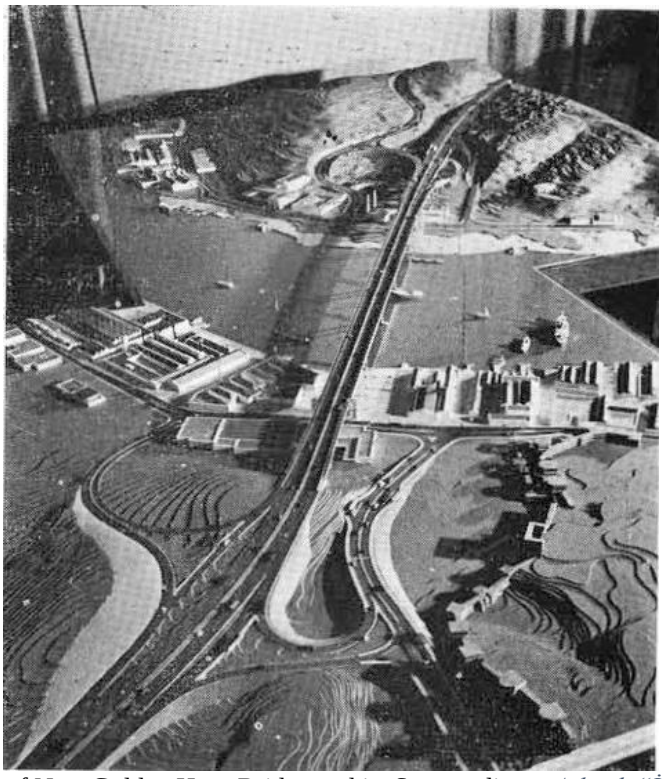

Figure 4.12 Model of New Golden Horn Bridge and its Surroundings. *Arkitekt"İstanbul Çevre Yolu ve Boğaziçi Köprüsü Projesinin Tarihçesi ve Gelişmesi", Vol.1975 No. 1975-01 (357), 26-27, 1975.*

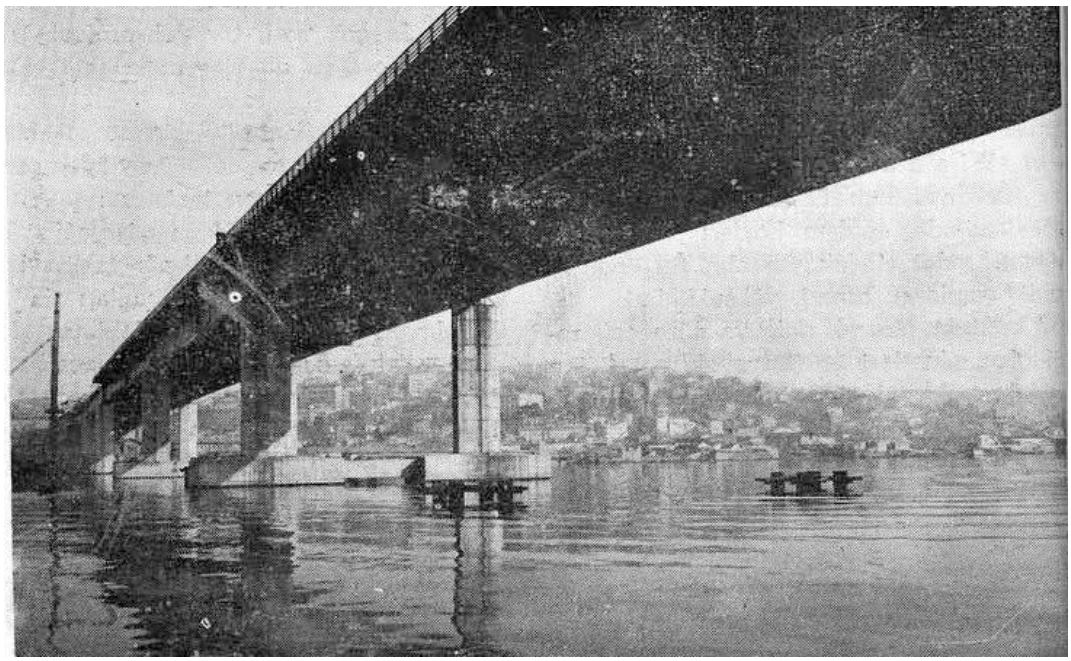

Figure 4.13 New Bridge of the Golden Horn in 1975. *Arkitekt. "İstanbul Çevre Yolu ve Boğaziçi Köprüsü Projesinin Tarihçesi ve Gelişmesi", Vol.1975 No. 1975-01 (357), 26-27, 1975.*

4.2.1.2 First Bridge over the Bosporus

For the projection and vision of highway constructions, in 1956, Professor Högg was invited to İstanbul for the projection of the Bosporus Bridge. In 1958, the "Project of Bosporus Bridge and Belt Highways" was designed by the American Steel Company and approved by the Ministry of Public Works. The Chamber of Architects set up a special commission and published a report about this projected bridge. The report mainly warned about possible results such as increasing land speculation, unfair expropriations, environmental and aesthetic hazards, economic shortages, and its inconsistency with the state plan, and the commission found the project to be old-fashioned.[266] This first bridge of the Bosporus, connecting two continents as a "highway bridge" for automobiles and other motor vehicles, was completed in 1973 (Figure 4.14). Connecting the urban center to the suburbs via the Bosporus Bridge was described as an important benefit for İstanbul in *Arkitekt*,[267] supporting the above argument that confirmed and reinforced the possibility of decentralization. Before the construction of the Bosporus Bridge, motor vehicles were transferred by ferry boats for crossing the sea between the two continents. In spite of the opposition to construction of the bridge, it was used as a propaganda tool for the elections in İstanbul via posters (Figure 4.15).

In the construction of the Bosporus Bridge, 65,000 m^3 of land was excavated.[268] In the flows of the construction process, 71,000 m^3 of concrete, 6,100 tons of steel cable, 4,600 tons of steel towers, and 9,000 tons of bridge deck slab were used,[269] as well as material and immaterial labor. The seventy thousand graveyards expropriated for the construction of the bridge and the Ring Road were also mentioned in the journal *Mimarlık* in 1970.[270]

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[266] "Boğaz Köprüsü Üzerine Mimarlar Odası Görüşü," Mimarlar Odası Yayınevi.
[267] Arkitekt. "İstanbul Çevre Yolu ve Boğaziçi Köprüsü Projesinin Tarihçesi ve Gelişmesi." *Arkitekt* 1975-01, no. 357 (1975): 26.
[268] Ibid., 26.
[269] Ibid., 26.
[270] *Mimarlık Dergisi*, Year: 8, No: 5 (1970), 16.

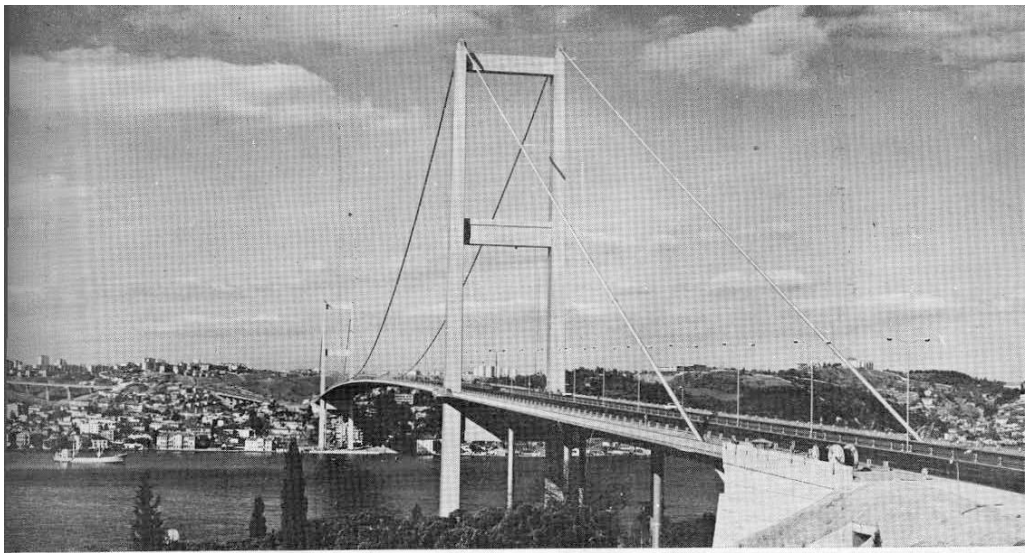

Figure 4.14 The View of the Bosporus Bridge from Beylerbeyi in 1975.
Arkitekt. "Boğaziçi Köprüsü", Vol.1975 No. 1975-01 (357), 7, 1975.

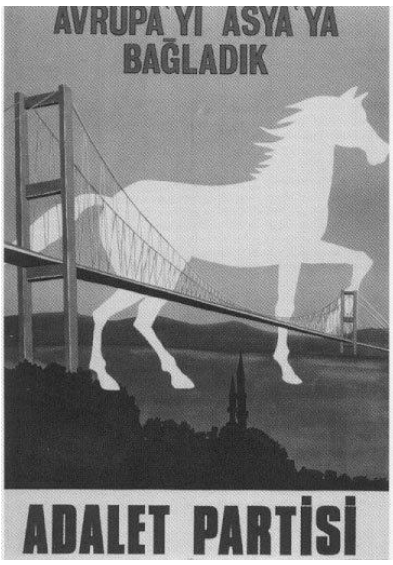

Figure 4.15 "*We connected Europe to Asia*":
Propaganda Poster of the Justice Party (AP) in 1973.

4.2.1.3 Quays for Fuel Oil

The docks under the supervision of the İstanbul Port Management served foreign oil companies, too. In 1958, the construction of the Pendik Pier and Paşabahçe Quay was started, and in 1959 the Kartal and Sinanköy Quays.[271] According to records in 1976,[272] the Servi Burnu Dock, a reinforced concrete dock located beyond the outer north field of the harbor, belonged to Mobil Oil Company. The Çubuklu Dock, also reinforced concrete, belonged to Petrol Ofis Company. The Haramidere Ambarlı Docks, of reinforced concrete and located in the outer harbor's south field waterfronts at Rumeli, belonged to Mobil Oil Company and BP, as well as being used for bulk fuel discharge. The Kartal BP Dock, located beyond the harbor's outer south field on the Anatolian side, which was on concrete piles, poured fuel oil with a pipeline system while large tonnage ships landed. The amount of fuel in total import tonnage was relatively high between 1950 and 1980 (Figure 4.16). Waterfronts were the addresses not only for the road-making agenda but also for the tonnage ships for importing oil.

Two major oil crises in 1974 and 1978 altered the entire economy of Turkey. In 1978, an oil crisis tripled oil prices, urban centers experienced prolonged queues for oil and gas, and the economic crisis worsened (Mumcu 2004, 31). All these problems, connected to the entire urban metabolism, signaled the end of the RPP government led by Bülent Ecevit (1925-2006). Petter Nore and Terisa Turner (1980, 1) underline the importance of considering "oil as a commodity produced and marketed within capitalist relations." Henry Ford briefly summarized the complex relations between the automobile industry and cities by saying "an automobile is a city in itself" and "contains samples of nearly all raw materials, all arts, all crafts and

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[271] 1950-1957 Nafia Vekaleti Çalışmaları, İstanbul (1957): 259-272.
[272] Boğaziçi University, İstanbul ve Marmara Limanları Master Plan Raporu Cilt 1, Bölüm 1, T.C. Bayındırlık ve İskan Bakanlığı Demiryollar, Limanlar ve Hava Meydanları İnşaatı Genel Müdürlüğü, Proje Direktörü Semih Tezcan, Nisan 1976, Bebek, İstanbul, 1976.

trades" as quoted in *New York Times Magazine* on 29 May 1932.[273] Next, we shall move on to explore the metabolic flows of coal through the waterfronts of İstanbul.

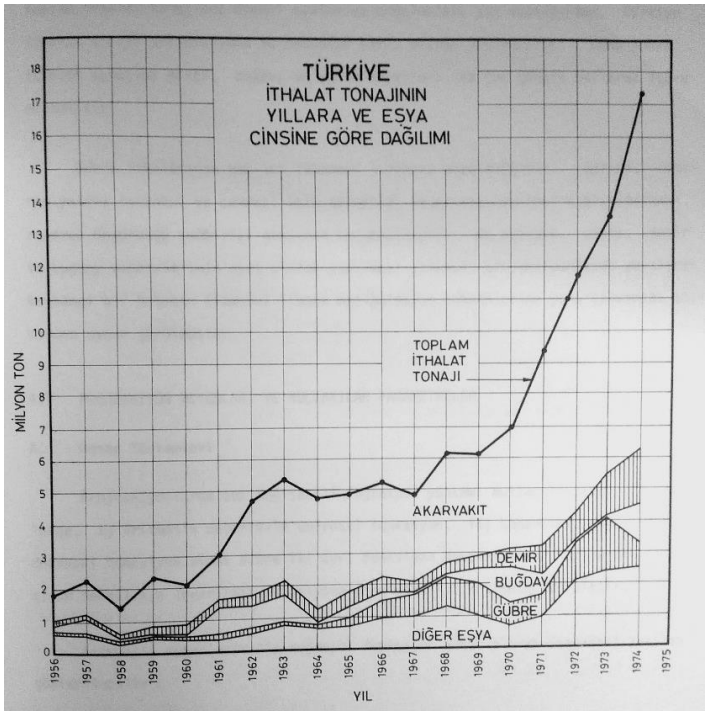

Figure 4.16 Fuel Amount in Total Import Tonnage between 1950 and 1980 in Turkey.
Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu, Vol. 2, 4.2, 1976.

4.2.2 Coal

Coal is referred to as being among "the earliest modern fuels" (Smil 2008, 206) as it was known since ancient times, although it did not have developmental effects on societies, cultures, and technologies until the 17th century. Coal was used as fuel from then on, not only to make construction materials such as glass, bricks, and tiles but also to extract salt and to make foods like sugar (Smil 2008, 207). Machine-based movements, railways, and urbanized areas relied on the fossil fuel of coal, obtained

[273] From Christopher W. Wells (2004, 280), quoted by Anne O'Hare McCormick in *New York Times Magazine* on 29 May 1932.

from coal mines in the earth. This subsection aims to capture the metabolic flow of coal along the waterfronts of İstanbul through special quays for coal depots and the Silahtarağa Power Plant, as well as through unique settlements for workers known as *gecekondu*s via coal-tar felt (*katranlı muşamba*), coal stores, and briquette for building materials, heating, and organization.

4.2.2.1 Coal Discharge, Storage, and Transportation

Concerning the waterfronts of İstanbul in the 20th century, the very first attempt to acquire an area to store coal on reclaimed land can be seen in Beykoz in 1914. That demand was refused for the protection of a favorite spot used as a *mesire* area.[274] The first coal yard construction was successfully fulfilled along the waterfront of Serviburnu and Sütlüce. This event had its roots in Article 26 of the 1890 Contract (see Chapter 2.2.2). In addition, in a record in the Ottoman Archives,[275] it is noted that a foreign company, American Standard Oil, had permission in the form of a license for creating a land reclamation area for the coal yard area near Serviburnu and Sütlüce. Between 1950 and 1980, the fuels for electricity production were based on metabolic flows of coal along the waterfronts of İstanbul. Coal has been the main factor for the air pollution of cities and threats for ecosystems. The fuel cycle of coal, comprising production, coal preparation, coal transportation, coal storage, and utilization, has various effects on water, land, and air (Güney 1994, 432). Especially in İstanbul, coal storage could create dust, surface water run-off (disrupting the aquatic ecology), and spontaneous combustion (with toxic gases and fires) (Güney 1994, 434) along the waterfronts, all of which had great impacts on the socio-natural system.

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[274] Muhyiddin Bey Garden on the waterfronts of Beykoz was requested by Müller, who was rejected by the İstanbul Council. BOA. DH. İD.161-1/31, H-05-05-1332.
[275] 1920, Ottoman Archive - BOA (*Başbakanlık Osmanlı Arşivi*) Dahiliye, DH. UMVM. 102, 5, H-25-01-1339.

The coal plant of Kuruçeşme (Figure 4.17) was put into service in 1950. Henri Prost was the first one to sign the Protocol of the Kuruçeşme Coal Port. This plant, near Ortaköy along the waterfronts of the Bosporus, became a modern loading point in the 1950s. It was located on reclaimed area of 7.5 × 370 meters within a total area of 34,209 square meters (Figure 4.18). More than half of the coal came from the coal mines of Zonguldak and Ereğli, transported first to Kuruçeşme and then to the fossil-fueled power plant of Silahtarağa along the waterfronts of the Haliç.[276] The fossil fuel plant of Silahtarağa had been receiving coal with LASH ships via water transportation (these belonged to Denizcilik Bankası T.A.O.). The reclaimed land of the coal depot along the waterfronts of Kuruçeşme (Figure 4.19) was later transferred to Halıcıoğlu, and after that the fill area was proposed to be a park. Apart from the coal plant of Kuruçeşme, the Haydarpaşa Port was extended in 1978 for extra coal loading (200 m) as well as for general loads (600 m) and containers (Tekeli 2013, 159).

Figure 4.17 The Coal Plant of Kuruçeşme. *Högg, 1959 Alman Arkeoloji Enstiüsü, D-DAI-IST-KB 11.443*

[276] Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu Cilt 1, Bölüm 1, T.C. Bayındırlık ve İskan Bakanlığı Demiryollar, Limanlar ve Hava Meydanları İnşaatı Genel Müdürlüğü, Proje Direktörü Semih Tezcan, Nisan 1976, Bebek, İstanbul, 3-5, 1976.

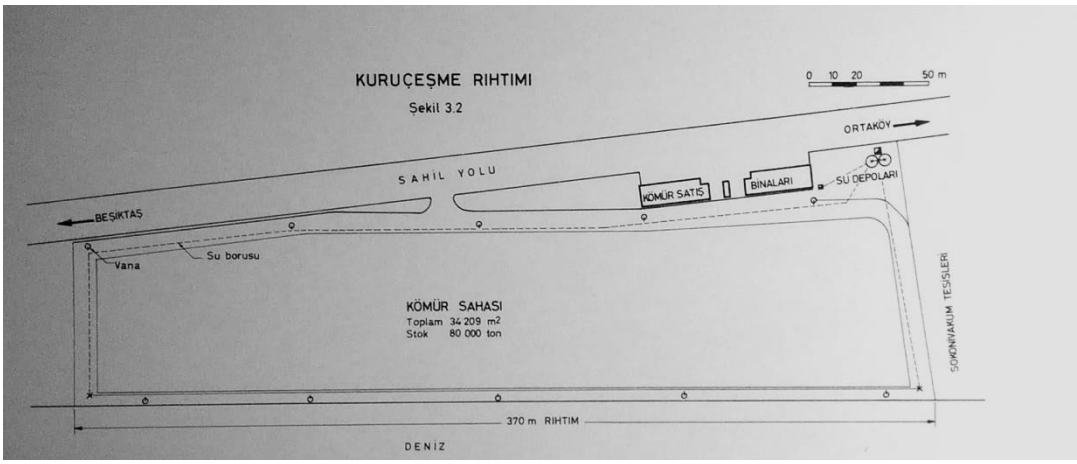

Figure 4.18 Kuruçeşme Coal Storage and Plant Area Plan view located on reclaimed land. *Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu. Vol. 1, 3.6, 1976.*

Figure 4.19 The coal storage area along the Waterfronts of Kuruçeşme. *eskiistanbul.net.*

4.2.2.2 Coal-powered electric power plant: Silahtarağa along the Waterfronts of the Haliç

The Silahtarağa complex was established as a coal-powered plant for producing electricity in 1913 along the waterfronts of the Haliç (Figure 4.20). It was a vital plant, being the only source for İstanbul's electricity needs until 1952 (Akman and Köksal 2007, 35). After that, it became part of the interconnected electric power plants of Turkey until it was shut down in 1983 (see also Chapter 5.1.1).[277] Its capacity was developed from 1913 to 1956. This power plant used the coal from Zonguldak transported by ships and stored at the waterfronts of the Kuruçeşme coal storage area (Figure 4.21). After storage, the coal was transported to the waterfronts of the coal park area of Silahtarağa Power Plant by barges (Figure 4.22 and Figure 4.23).

The sea had been heavily used for the waste disposal of industrial plants located along the waterfronts of the Haliç and domestic sewage in this period. Contaminated mud was accumulated through the shallow part of the Golden Horn, and these contradictory socio-natural conditions of the waterfronts in the 1970s acted upon the transportation of coal from Kuruçeşme to Silahtarağa, along with the problems that they created.[278] On the other hand, before the 1970s, the lignite coal mines of Ağaçlı, located between Terkos Lake and Kilyos in İstanbul, were used as a source for Silahtarağa Power Plant during the First World War in context of emergency and for the security of the Bosporus Strait (Akman and Köksal 2007, 36-37) for the safe travel of coal on land by railway from its source to the power plant. Open-pit mining activities needed excavations 100-120 meters deep, and the excavated material was poured into the nearest stream valley or the next mine quarry (Kantarcı 2005, 174). The railway known as the "Golden Horn-Black Sea Sahara Line," following the

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[277] "Silahtarağa Elektrik Fabrikası" (1952), İETT Journal, Vol. 12, Akman and Köksal (2007, 35).
[278] Research Report of TEK Silahtarağa Power Plant (1978). Source: Information and Documentation Center of Silahtarağa Power Plant Archive cited by Akman and Köksal (2007, 36).

Kağıthane Stream and Kemerburgaz, reached the lignite coal mines of Ağaçlı-İstanbul and was used for transportation of coal to Silahtarağa from 1915 to the mid-1950s (Dölen and Sandalcı 2004, Akman and Köksal 2007).

The metabolic flows of coal produced the flow of a particular waste known as clinker (*cüruf* in Turkish) in the Silahtarağa Plant through production of electricity by burning coal. The clinker was mixed with cement and flowed into clinker brick, which was used for safety in the infrastructural cable network for the electricity of İstanbul beneath the urban landscape (Acar 1977 cited by Akman and Köksal 2007). As reported in related symposium proceedings, the clinker was recycled into brick and briquette in the brick plants along the waterfronts of İstanbul, mainly located along the Kağıthane Stream, such as the Arslan Brick and Tile Plant.[279] Clinker was used as a raw material for producing cement in İstanbul (see Chapter 5.2), but it was also used together with cement for the production of briquette, a typical constructional element for *gecekondu* settlements in İstanbul, as explained in detail in the next subsection.

Marmara Island was home to the oldest marble factory in Turkey (1912-1974) (Figure 4.24). The marbles obtained from Marmara Island were particularly used for architectural purposes with white and massive block compositions. None of the machines of the Marble Factory of Marmara Island were powered by electricity; all of them were coal-powered and steam-operated. The sand and coal used for the production of marble came from outside of the island; the coal was from the Kuruçeşme coal depot (Yücel 2015). The metabolic flows of coal from the waterfronts of Kuruçeşme reached the marble factory on Marmara Island and metabolized into the building industry through the production of marble there. In short, the flows of coal metabolized into the infrastructure network and *gecekondu*s through the industrial production cycle of electricity between 1950 and 1980 along the waterfronts of İstanbul. At the same time, marble in İstanbul's building sector

[279] Boğaziçi Üniversitesi, İstanbul ve Marmara Limanları Master Plan Raporu (1976), 47.

depended on the metabolic flows of coal through the waterfronts of the city. Next, we shall explore the new space-making agenda through the metabolic flows of coal embedded in *gecekondu*s along the waterfronts of İstanbul between 1950 and 1980.

Figure 4.20 Dock Crane, Barge, Coal Park, and Overhead Line of Silahtarağa Power Plant in 1970.
TEDAŞ Photo Film Center Archive in Asu Aksoy (edt) Silahtarağa Elektrik Santrali 1910-2004. İstanbul Bilgi Üniversitesi Yayınları, 38, 2007.

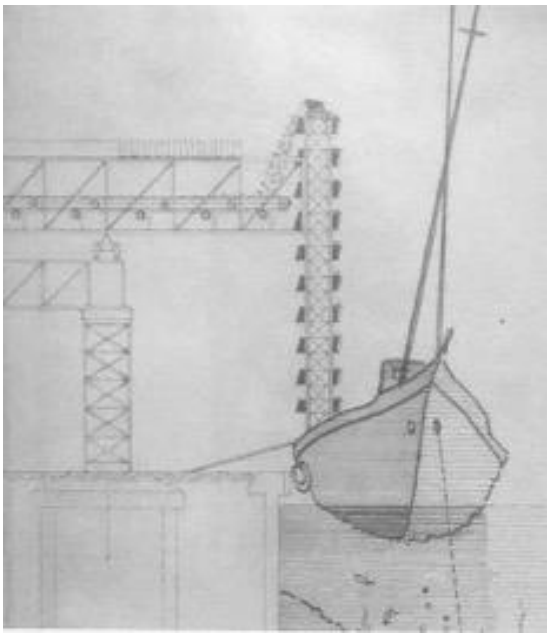

Figure 4.21 Section of Coal Discharge System at the Waterfronts of Silahtaraga Power Plant. *Information and Documentation Center of Silahtarağa Power Plant Archive in Asu Aksoy (edt)Silahtarağa Elektrik Santrali 1910-2004. İstanbul Bilgi Üniversitesi Yayınları, 39, 2007.*

Figure 4.22 Coal-Bearing Wagons in 1970. *TEDAŞ Photo Film Center Archive in Asu Aksoy (edt) Silahtarağa Elektrik Santrali 1910-2004. İstanbul Bilgi Üniversitesi Yayınları, 38, 2007.*

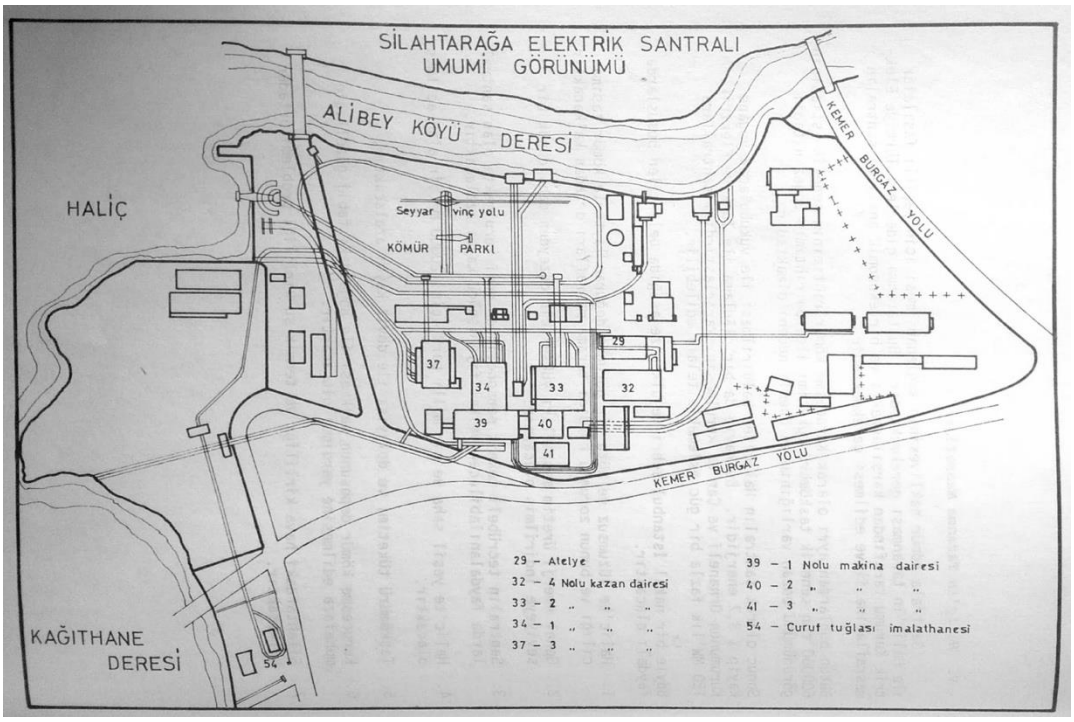

Figure 4.23 Plan of the Silahtarağa Power Plant. *Haliç Sorunları ve Çözüm Yolları Ulusal Sempozyumu Tebliğleri. Boğaziçi Üni., 330, 1976.*

Figure 4.24 Marble Factory Marble Factory on Marmara Island.
The Coal Came from Kuruçeşme.

4.2.2.3 *Gecekondu*s

> *Consider a house, and a street, for example. The house has six storeys and an air of stability about it. One might almost see it as the epitome of immovability, with its concrete and its stark, cold and rigid outlines. (Built around 1950: no metal or plate glass yet.) Now, a critical analysis would doubtless destroy the appearance of solidity of this house, stripping it, as it were, of its concrete slabs and its thin non-load-bearing walls, which are really glorified screens, and uncovering a very different picture. In the light of this imaginary analysis, our house would emerge as permeated from every direction by streams of energy which run in and out of it by every imaginable route: water, gas, electricity, telephone lines, radio and television signals, and so on. Its image of immobility would then be replaced by an image of a complex of mobilities, a nexus of in and out conduits.*[280]

Considering the space-making agenda of dwelling along the waterfronts of İstanbul, bachelors, unskilled laborers, and the working class could be seen as the leading metabolic catalyzers through the environmental history of the city. From the 18th century, bachelors lacking family support had been the major workforce of the late Ottoman period and settled along the waterfronts of İstanbul, such as in Üsküdar, Eyüp, Hasköy, and Kasımpaşa (Şenyapılı 1981, 176). These settlements were called "bachelor rooms" (*bekar odaları*), more or less an earlier version of *gecekondu*s. The waterfronts of the Bosporus, Haliç, and Marmara as well as the Bosporus hills were emphasized as perfect locations for industrial plants and g*ecekondu*s between 1950 and 1980. For the first time in history, the term "*gecekondu*" entered the official documents of Turkey via Gecekondu Law No. 775 in 1966. According to Tekeli et al. (1976, 17, 230), *gecekondu* means the construction of a house through time by living in it. In such a manner, *gecekondu* settlements were ever-changing organizations through time and socio-natural conditions in a dramatic manner between 1950 and 1980 in the socio-geographical context of Turkey. The Yarn Rope

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[280] Henri Lefebvre, *Production of Space.* Translated by Donald-Nicholson Smith (Oxford, Blackwell, 1991), 92-93.

Factory in Eyüp was established in 1828 along the waterfronts of the Haliç like the Beykoz Leather Factory in 1812, Defterdar Fez Factory in 1833, and Cibali Tobacco Factory in 1884.

Concerning industrial plants together with *gecekondu*s, the waterfronts of İstanbul were the symbol of the essential urban landscapes during the 1960s and 1970s. In particular, a wide range of factories along the waterfront line can be seen (Kavel Cable Plant, Silahtarağa Power Plant, Çeltik Buckshot Factory, etc.) (Figure 4.25). According to Salman and Kuban (2006, 106), the Master Plan of Beyoğlu in 1954 paved the way for establishing new industrial areas along the waterfronts of the Bosporus by addressing their unhealthy conditions and environmental hazards. Some of these industrial areas along the waterfronts of the Bosporus were a match factory (Kibrit Fabrikası), a weaving factory, and the Kavel Cable Plant. At the same, squatter settlement areas like the Pınar and Derbent neighborhoods emerged in the hills of İstinye and Büyükdere. Besides these, small manufacturers such as textiles, cement, bricks, clothing, paper, rubber, metal wares, and engines were located along the waterfronts of the Haliç in the 1940s. Zeytinburnu and Beykoz offered ideal conditions for industrial organizations producing leather (Akçay 1974). The leather industry needs waterfronts, water, and sun like many other types of industry (Şenyapılı 1981, 179). The first *gecekondu* settlements emerged at Zeytinburnu-Kazlıçeşme (Figure 4.26) among the sunflower fields along the European side of the Sea of Marmara around 1946-1947.[281] On the Anatolian side, Beykoz was the first hub for *gecekondu* settlements. *Gecekondu* areas were settled without infrastructure (Figure 4.27). According to Tansı Şenyapılı (1981, 180), the first *gecekondu* developed as one room and one sofa on a stone foundation in Zeytinburnu. In the first *gecekondu*s while the walls were constructed with mud bricks (*kerpiç*), the roof was made of tin or packing board with coal-tar felt (*katranlı muşamba*) on top (Figure 4.28). Spatial analysis of photos of *gecekondu*s that emerged with briquette

[281] According to İlhan Tekeli's studies this was in 1946 (2009,73), while according to the works of Tansı Şenyapılı it was 1947 (1981,179).

along the waterfronts of Bahariye (Figure 4.29) and Çeltik (Figure 4.30) in Haliç and Zeytinburnu reveals another clue about the metabolic flows of coal in İstanbul. The previous subsection, which showed the metabolic flows of coal from the coal mines of Zonguldak to Kuruçeşme to Silahtarağa, and in the form of a particular waste, clinker (*cüruf*), into briquette, helps us here in following the metabolic journey of coal embedded in *gecekondu*s in this period along the waterfronts.

In 1948, a neighborhood union called *Gecekondu Güzelleştirme ve Teşkilatlandırma Derneği* (*Gecekondu* Beautification and Organization Association) was established in Zeytinburnu-Kazlıçeşme (Tekeli 2009, 74). State authorities gave rights to these shelters as a kind of legal status with Law No. 5431 for those living in Zeytinburnu in 1949, and the squatters got electricity for the first time in the same year. Zeytinburnu, with the first *gecekondu* areas of İstanbul (1946-1947), is located along the waterfronts of the Sea of Marmara and became an official district in 1957. With Law No. 6188 (*Bina Yapımını Teşvik ve İzinsiz Binalar Hakkındaki Yasa - 24/7/1953*), squatters whose houses were previously destroyed or found unhealthy had the right to buy "affordable houses."[282] These new "affordable houses" could be bought by the dwellers on lands of the municipality, but first they should demolish their unhealthy houses and remove the debris of the structures themselves within 15 days. If not, demolition could be unavoidable by municipal order[283] (Tercan 2018, 21). Thus, it is obvious that this was not a certain solution for those dwellers who could not afford to buy a new house, as newcomers had low incomes. Besides, it seemed as if they could have their own squatter settlement without any cost.

In short, when we reach the 1950s, both the population growth via migrant groups and the changing economy via the Marshall Plan set the stage for *gecekondu* settlements along the waterfronts of İstanbul.[284] Kağıthane and Boyacıköy-Emirgan (the Cemalettin Paşa *gecekondu* area) offered free land for new *gecekondu* areas via

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[282] https://www.resmigazete.gov.tr/arsiv/8470.pdf, Official Gazette, 29 July 1953, 6844.
[283] https://www.resmigazete.gov.tr/arsiv/8470.pdf, Official Gazette, 29 July 1953, 6844-6846.
[284] In 1949, 3218 of 5000 *gecekondu*s were in Zeytinburnu (Tekeli 2009, 73).

the Municipality of İstanbul after the demolitions of Menderes between 1956 and 1960 (Tekeli 2009, 77-78). The Nafibaba *gecekondu* area at Rumeli Hisarı, the *gecekondu* areas around a stone quarry at Baltalimanı, Sarıdağı-Koru between Büyükdere and Sarıyer, and the west side of Rumeli Kavağı, as well as Namazgah-Sulak Bostan between Rumeli Kavağı and Sarıyer, were the locations for squatter settlements in İstanbul in this period (Tekeli 2009, 78). Tekeli mentions that Üsküdar was a location for *gecekondu*s for the first time in 1947 (the Tabaklar neighborhood), while in 1957 Fikirtepe (from a mining quarry to a garbage area in the 19th century; see Chapter 2.3.3) was the first *gecekondu* area in Kadıköy. Furthermore, from Küçükyalı to Gebze large and small gecekondu areas had been settled by 1965. The shift from *gecekondu*s to multi-story-apartment squatters throughout the 1970s was also described by Tekeli (2009, 80). The *gecekondu* settlements increased dramatically between the 1950s and 1980s, particularly throughout the waterfronts of İstanbul (see Table 4.4).

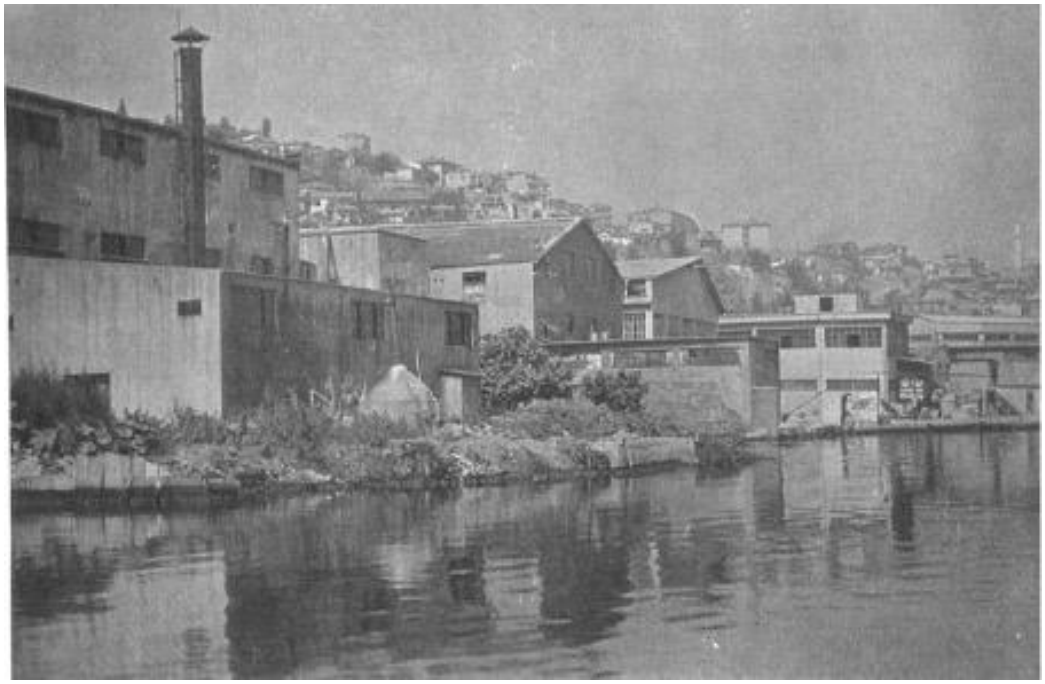

Figure 4.25 Çeltik Buckshot Factory along the Waterfronts of the Haliç.
Haliç Sorunları ve Çözüm Yolları Ulusal Sempozyumu Tebliğleri. Boğaziçi Üni., 492, 1976.

Table 4.4 G*ecekondu* Settlements between 1950s and 1980s. *Tekeli, 75-78, 2009.*

Year	**Number of *Gecekondu*s**
1950	8,239
1959	61,400
1963	120,000
1972	195,000
1982	208,000

Figure 4.26 Waterfronts of Kazlıçeşme in 1940s (Photo: Hilmi Şahenk)
Burçak Evren, Surların Öte Yanı. Zeytinburnu Belediyesi Kültür Yayınları, 73, 2003.

Figure 4.27 Photo of a *Gecekondu* Neighborhood in Zeytinburnu (Photo: Hilmi Şahenk)
Burçak Evren, Surların Öte Yanı. Zeytinburnu Belediyesi Kültür Yayınları, 184, 2003.

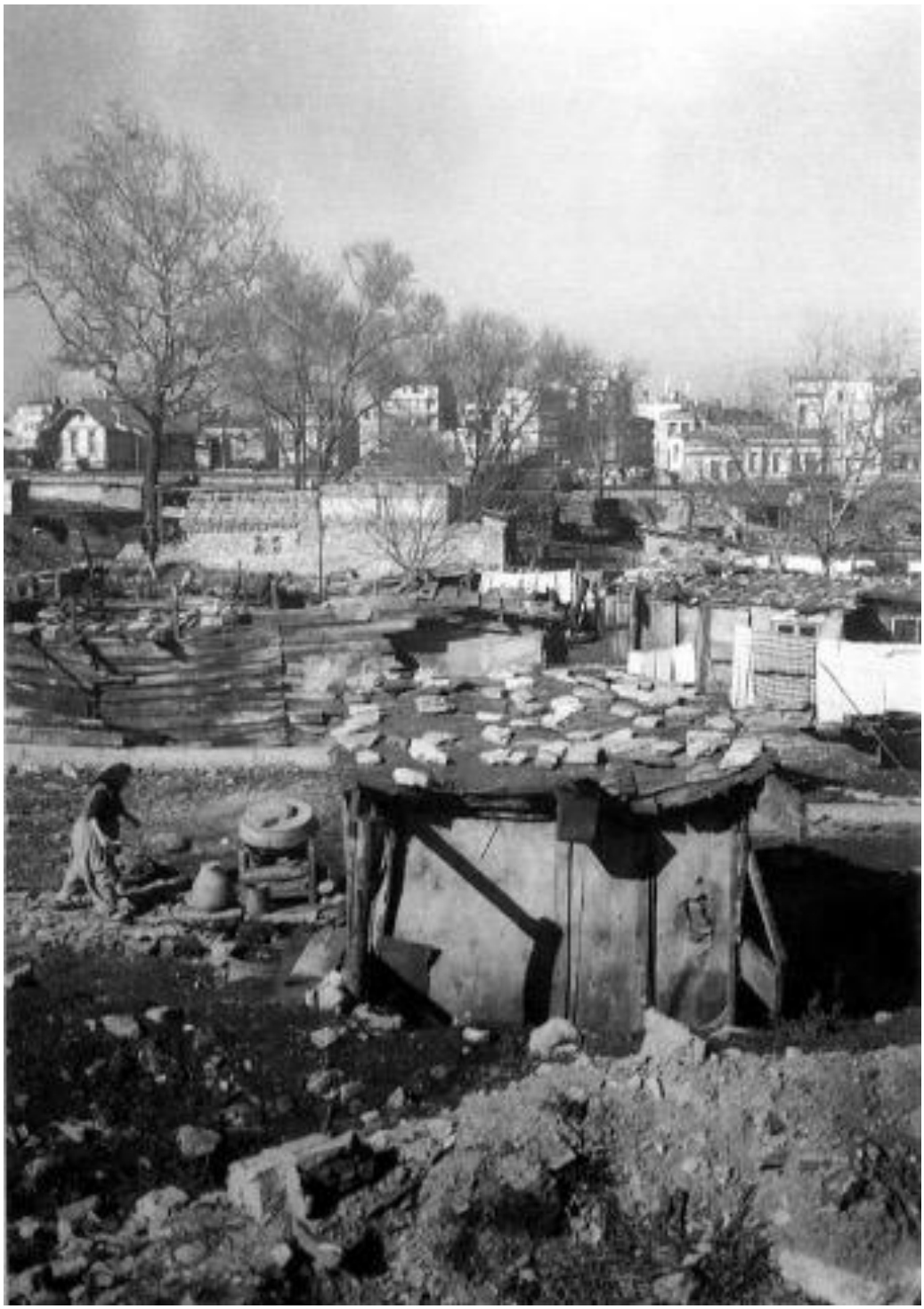

Figure 4.28 One Room and the Roof Made of Tin or Packing Board with Coal-Tar Felt (*katranlı muşamba*) on top in Zeytinburnu (Photo: Hilmi Şahenk) *Burçak Evren, Surların Öte Yanı. Zeytinburnu Belediyesi Kültür Yayınları, 183, 2003.*

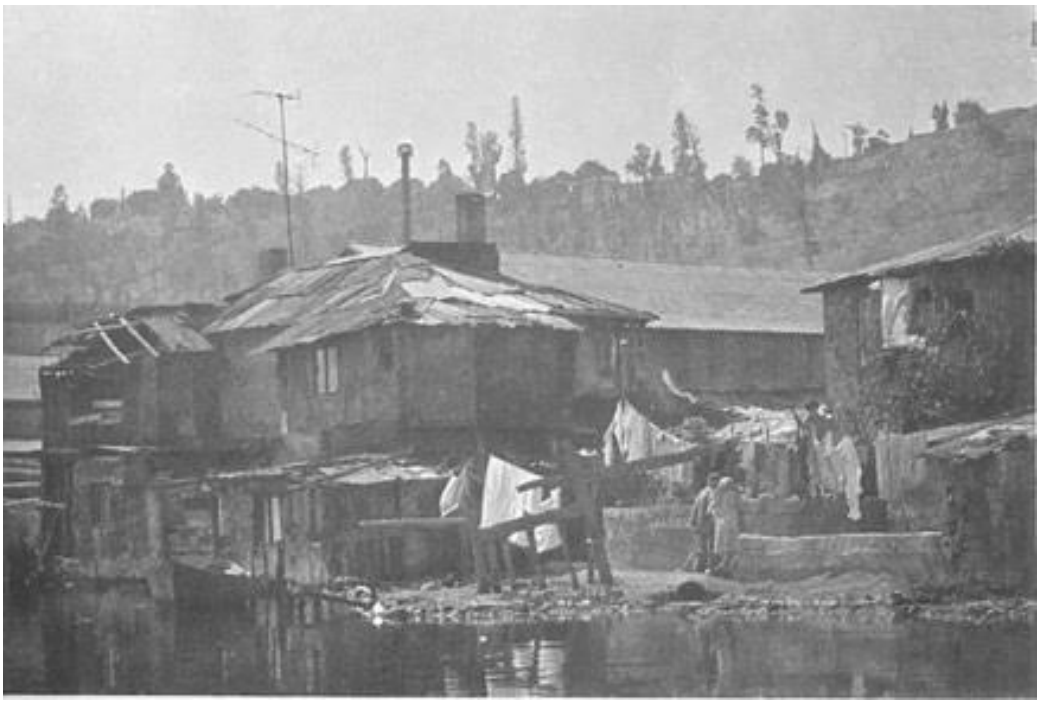

Figure 4.29 *Gecekondu* Settlements along the Waterfronts of Bahariye- Haliç.
Haliç Sorunları ve Çözüm Yolları Ulusal Sempozyumu Tebliğleri. Boğaziçi Üni., 497, 1976.

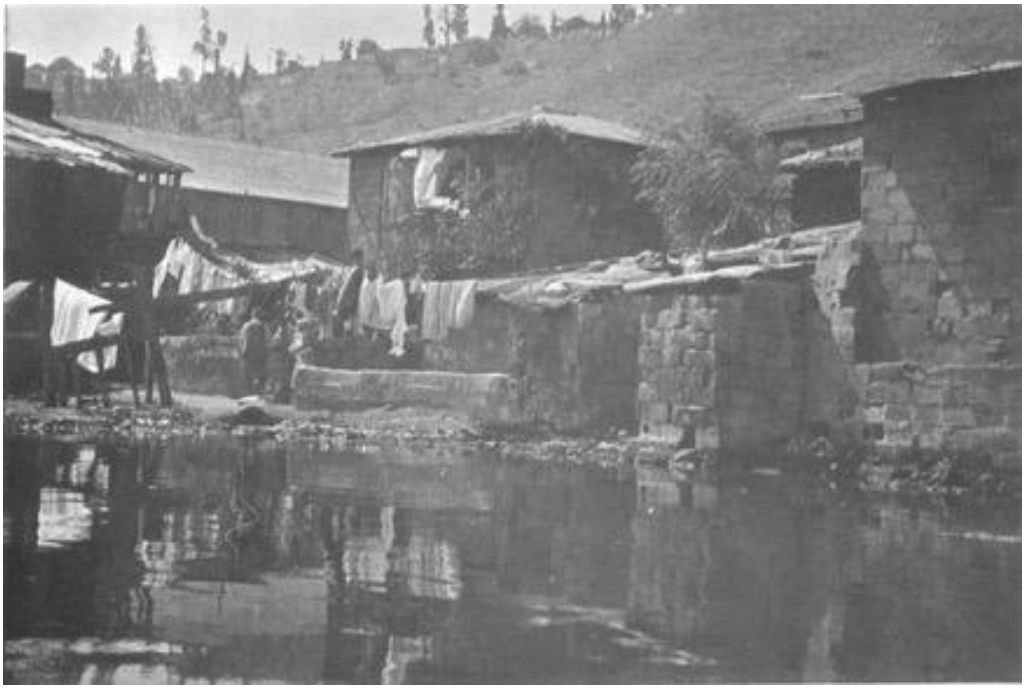

Figure 4.30 *Gecekondu* Settlements along the Waterfronts of Çeltik -Haliç.
Haliç Sorunları ve Çözüm Yolları Ulusal Sempozyumu Tebliğleri. Boğaziçi Üni., 493, 1976.

In Chapter 4, the period between 1950 and 1980 represents a critical juncture concerning the shift from the modern spirit of the Early Republic period, carrying more or less social goals, to the mobility-driven urban environment of Menderes's implementations, symbolizing the uneven socio-natural relations of the motorized urban metabolism on the waterfronts of İstanbul. On the one hand, garbage hills, water shortages, long lines for tap water, a cholera outbreak after many years without, industrial plants, small manufacturers, massive destructions, and deforestation and land clearance and, on the other, automobile-oriented landscapes, tourism attempts, high-carbon societies, consumer lifestyles, and the creation of millionaires show the uneven production of nature through the reshaping of waterfronts as the new periphery of İstanbul within the motorized urban metabolism. The emergence of a motorized urban metabolism set the stage for modern class relations between the industrial bourgeoisie and the working class as well as their socio-natural reflections as space.

Petroleum products have been both the cause and the result of the motorized era, with time acceleration via transportation (land, water, and air), automatization of industry, and dwelling in an urbanized environment. The Kuruçeşme coal depot and the Silahtarağa Power Plant together with *gecekondu*s along the waterfronts of İstanbul are symbols of the metabolic flows of coal as space. Traces of the metabolic flows embedded in the industrial agenda of the city heavily dependent on coal and oil vanished along the waterfronts of İstanbul throughout the 1980s. The new metabolic flows would be iron and cement between 1980 and 2000. They would rise above the sky along the waterfronts of İstanbul as detailed in Chapter 5.

CHAPTER 5

1980-2019: NEOLIBERAL PRODUCTION OF WATERFRONTS THROUGH METABOLIC FLOWS OF IRON AND CEMENT

5.1 Neoliberal production of waterfronts in İstanbul between 1980 and 2019

> "*…There was unquestionably a power shift away from production to the world of finance… While the slogan was often advanced in the 1960s that what was good for General Motors was good for the US, this had changed by the 1990s into the slogan that what is good for Wall Street is all that matters.*" [285]

In David Harvey's book *A Brief History of Neoliberalism*, neoliberalism is summarized as a blend of the restoration and justification of free capital accumulation with this sentence (2005, 19):

> … [Neoliberalism is] a political project to re-establish the conditions for capital accumulation and to restore the power of economic elites…worked as a system of justification and legitimation for whatever needed to be done to achieve this goal.

The goal explained here certainly needs urban waterfronts as a whole via the metabolic flows of iron and cement through massive urban renewals, interests of the finance sector, "cleaning" processes, mega projections, lawsuits, and struggles. In the neoliberal shift, of course, "deregulation of state control, privatization of public works, criminalization of the urban poor, and attacks on organized labor" (Brenner and Theodore 2002, 350) are commonly emphasized as things needed to be done. The dissolution of the Soviet Bloc between the second half of the 1980s and 1991 defines a turning point for altering urban metabolisms worldwide. This chapter claims that the capital-intensive urban metabolism is visioned and projected instead

[285] David Harvey, *A Brief History of Neoliberalism* (Oxford University Press, 2005), 33.

of labor power for the sake of freeing the production of nature as space from human content, scientific ideology, and the nation-state apparatus. At this point, "the contextual embeddedness of neoliberal restructuring projects" asserted by Brenner and Theodore (2002, 349) in their study for grasping contextually specific landscapes in the period of neoliberal restructuring is relevant in İstanbul's context considering the last forty years. Declining income distribution and increasing unemployment concomitant with the new deregulation of the residential property market is the sine qua non for the political project of neoliberalism, as well as the basis for practicing urban populism in this period in İstanbul (Boratav 1991; Keyder and Öncü 1994, 399). Harvey (2005, 33) argues the "financialization of everything" for grasping the shifting political project from the national developmental era to the neoliberal era. On the other hand, Tekeli defines this period through which modernity is about the fade (the Fading Modernity from 1980 to today) concerning the role and tradition of urban planning in Turkey. Concerning this vision, the ideology of nature is also under restoration considering financialization, fitting to late capitalism.

After the 1980s, notions of "subjectivity" became a popular discourse in the "postmodern ecology" debate. Chaos and randomness were the fundamental concepts of ecology in the 1980s (Ryan 2008, 361). Furthermore, humans would not be able to understand or decide about this unstable and random ecosystem.[286] In this context, the postmodern understanding of ecology deepens the risks of the "lessening of minimum impact standards or even an increase in resource extraction" (Ryan 2008, 390) and the loss of biodiversity. In brief, the postmodern understandings of ecology emphasize a disengagement from the human content of the ecosystem (Tarter 1996, 70). If the ecosystem does not refer to stability and balance, we do not need to protect the balance, seek the minimum impact, or worry about the decrease

[286] "If ecological systems are chaotic, random, patterned, ordered, stable, unstable, that is to say, paradoxical, then a puzzling dilemma arises: how does one choose what management decision to support when the stability of an ecological systems depends on, how one looks at it?" (Ryan 2008, 387).

in resource extractions for healthy and socially just ecosystems. Standards and precautions will not apply.

The disappearing industrial city and the unique habitations of the laboring class throughout the waterfronts were legalized with the postmodern understanding of nature under the cover of "environmental" concerns, in full agreement with the melting away of its human content and simultaneously its labor context along the waterfronts of İstanbul. The neoliberal vision and projection attacked and directed the "scientific production" of nature as space between 1980 and 2019, which had more or less been specific to the first three-quarters of the 20th century through the waterfronts of İstanbul. It also imposed upon the "financial production" of nature as space for capitalist accumulation. While the bourgeois ideology of nature separates humans and nature, embedded in countless efforts by nation-states to combine them, the neoliberal ideology of nature deepens this duality with the declaration of freeing nature from human and labor contents. The human content is replaced by capital in this moment. Various examples like the Haliç Yacht Port and Complex Project (namely Haliç Port) (Figure 5.1), first announced in December 2010, emphasize the shift from industrial production to commerce and tourism. Moreover, the transformation project of Haydarpaşa Port (Figure 5.2) and Train Station in 2011 indicates a turn from a transportation hub into a culture, tourism, and commerce center.[287] Concerning transformational attempts on the waterfronts, strong debates and struggles are still being led by urban solidarity groups such as *Haydarpaşa Dayanışması* and *Haliç Dayanışması*, established in 2005 and 2013, respectively.

The arrangements for finance freeing the capital accumulation in and through each geographical entity, including metropolitan cities and their waterfronts, are emblematic for this period. These mediums are the results of the new socio-natural agenda through metabolic flows of iron and cement embedded in urban solids as

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[287] https://megaprojeleristanbul.com/#haydarpasa-gari-ve-liman-donusum-projesi. Accessed: May 15, 2020.
http://www.objektifhaber.com/haydarpasa-koruma-planina-onay-100701-haber/. Accessed: May 15, 2020.

villas and towers, and in urban voids as *fill*, especially in this moment of the neoliberal vision and projection along the waterfronts and skyline of İstanbul. We will explore what kinds of relations and spatialities were produced through the waterfronts of İstanbul regarding the urban political ecology of the urban metabolism between 1980 and 2019. The metabolic flows of iron and cement (together reinforced concrete) will be traced through urban solids and urban voids in detail. This chapter asserts that while high-carbon society and the first bridge over the Bosporus imply the first break from the waterfronts, the neoliberal production of nature for the sake of capital renders the concretization of the withdrawal. It is no coincidence that this moment of İstanbul (1980-2019) is characterized by the estrangement between land and water. The historical development of modern cities, which have relations from fire precautions to massive cheap labor and massive urban renewals, outlines the essential catalysts of how socio-natural conditions act upon the metabolic flows of iron and cement through villas, towers, and fill projections. The postmodern ideology of nature is ready for the materialization process, too. We will explore how this ideology uses the apparatus of "protecting and cleaning" for financialization through the waterfronts of İstanbul. While "financialization" and "privatization" come together for the materialization of the fantasy of global capital, accelerating urban struggles (comparable to the environmental movements of the 1960s) seek, on the other hand, socio-naturally just and livable urban environments.

The metabolic flows of minerals and metals such as iron ore, limestone, clay, marl, and sand, as well as fossil fuels such as coal and oil (for fossil fuels, see Chapter 4), have had great importance in the production of nature as space worldwide. The modern construction industry and contraction business emerged thanks to waterfronts cities in the 19th century. The neoliberal socio-economic process requires large scales and quantities along with the complexity of these resources, upon which our daily lives are based in the 21st century. Industrial monopolies and privatization agendas have immense effects on global war economies, local populations, public health, and the health of laboring populations. As a recent example from 2011, the lithium reserves of Bolivia, mentioned as the "green gold"

of the energy sector, have become the scene of a war among industrial groups (Kula et al. 2014, 352). Here we will look at the local context of Turkey.

Tekeli describes 1984 as the beginning of a turn concerning the previous period in terms of urban landscapes. Tekeli (2011) takes the period between 1965 and 1984 as a planned period more or less within the same developmental projections by the hands of the central state and scientific production of nature. The Motherland Party (ANAP), the winner of the local elections in 1984, increased the power of local governments by giving them the authority to make master plans, as well as construction power for the sake of the financial production of nature as space. The financial production of nature as waterfronts defines a heroic moment for understanding the radical shift in terms of urban metabolism from labor-intensive to capital-intensive regarding modern İstanbul.

The decade between 1983 and 1993 was referred to as "The Ten Years that Shook İstanbul" in a daily newspaper.[288] After the military coup in 1980 and the three years of direct military rule between 1980 and 1983, the ANAP and its coalition (the liberal center-right, the religious right, and the nationalist right) were elected. Concerning the waterfronts and skyline of İstanbul, the spirit of the year heralded the "legal" preparation for the neoliberal production of nature through massive constructions and re-constructions as urban solids and voids through projections of villas, towers, and fill. The new modes of "green lives" through villas as gated communities in the forests of the Bosporus, thanks to the motorized urban metabolism of İstanbul explained in the previous chapter, are emblematic in this moment. The housing sector became a powerful actor with the accelerating construction of office towers and hotels through the massive metabolic flows of iron and cement, and the overall impact on the urban metabolism has been dramatic. "Luxury constructions" of towers along the waterfronts took place extensively after

[288] Oktay Ekinci (1952-2013) was a Turkish architect, columnist for the daily newspaper *Cumhuriyet*, writer, and previous director of the Chamber of Architects-İstanbul Branch (1998-2002 and 2004-2006). Oktay Ekinci, *İstanbul'u Sarsan On Yıl 1983-1993* (Anahtar Kitaplar Yayınevi, 1994).

the second bridge (1986). At this point, Keyder and Öncü (1994, 404-405) argue about how this new agenda materialized in İstanbul with its influential figures and their capabilities:

> The mayor of Istanbul had always been a powerful political figure, directly elected for four-year term and, hence, with more popular votes behind than any parliamentarian. However, he lacked authority over the complicated network of agencies which were directly controlled the central government from Ankara. Now, under the new system, the political prominence of the office was coupled with the scope for administrative action, as well as new financial resources, to render the mayor of Istanbul a very powerful figure indeed, who could act in the tradition of entrepreneurial public servants such as Baron Haussmann and Robert Moses.

The proportion of total tax revenues allocated to municipal administrations increased in this moment of Turkey (in 1983: 6.4%; in 1990: 13.3%) (Keyder and Öncü 1994, 400). In addition, it is important here to call attention to the unique context of İstanbul concerning the mayor's influential role and capabilities in certain conditions. Bedrettin Dalan, the first Metropolitan Mayor of İstanbul (1984-1989), seems to have filled this dominant position and the executor role only under the condition of agreement with the state agenda. Influence held by the mayor does not mean that the state is losing its power. With the neoliberal doctrine, Harvey (2007) argues that state power has not been lost by any means, but has been rearranged. "The developmental state sets the national priorities on behalf of the capitalist class, guiding the markets for the realization of these objectives" (Yalman 2009, 13). The period of Nurettin Sözen as mayor of İstanbul (1989-1994) can be given in explaining the efforts mentioned above for rearrangement. Sözen was the mayor of İstanbul after Dalan, and an intense debate was being waged between the state and local municipality. The conflict mainly regarded the question of whether the state or the municipality should have the master plan authority of İstanbul throughout Sözen's mayoralty years (Ekinci 1994, 102). In the years of Dalan, that was not a problem, as the state and municipality worked together and agreed about everything.

In short, the waterfronts of the Haliç and its unique landscapes, as well as the Bosporus line, were radically transformed through the neoliberal vision and projection in this period. At the same time, the Gölcük-İzmit earthquake (1999) had long-reaching results regarding the urban metabolism of İstanbul in the context of massive urban renewals in the city. Between 1980 and 2019, the neoliberal ideology of nature, labor processes, hazardous effects of earthquakes, massive urban renewals, technology, privatization processes, and environmental concerns on both local and global scales whirled along the waterfronts of İstanbul. Public-private partnerships, the financing of specific projects, and credits from international finance organizations directly to the metropolitan governments were essential for this period and its urban agenda. Next we try to summarize the neoliberal production of nature as waterfronts embedded in urban solids such as villas and towers and urban voids such as fill projections through the metabolic flows of iron and cement within two subsections of this introductory part: the period between 1980 and 2002 and the period between 2002 and 2019 will be detailed, respectively.

Figure 5.1 Haliçport Project. *https://www.skyscrapercity.com/threads/tersane-İstanbul-haliç-urban-redevelopment-haliçport-prep.1708407/*

Figure 5.2 Haydarpaşa Port Project. *https://dosya.megaprojeleristanbul.com/hydrps-prt/102.jpg.*

5.1.1 The Period Between 1980 and 2002

In this period, industrial plants shut down, the waterfronts of the Haliç would be "cleaned," the idea of privatization became important, and investments for infrastructural projects and urban renewals would materialize through a commercial banking system and international credit markets. The earthquake of 1999 marked a turning point concerning the urban vision and agenda of İstanbul through massive and radical urban renewals. Additionally, in postmodern rhetoric, it is necessary to push above discourse to make real service- and capital-based organizations of space, international finance investments, and foreign credit market dependency instead of the previous mode of production and its space-making characteristics. The discourse of "environmental pollution" and the desire for "green" environments with roots in the socio-natural conditions of the industrial past are grasped with the demolitions and vanishing industrial plants along waterfronts in the city center.

While Bedrettin Dalan (Figure 5.3) was claiming "I will make the Golden Horn as blue as my eyes"[289] in the second half of the 1980s, in the same period, 30,000 buildings were demolished and more than 600 small manufactories were evicted under his rule along the waterfronts of the Haliç.[290] This rendered the so-called efforts to make the Haliç "Breath Again"[291] via constructions of expanded coastal roads concomitant to various vast "green spaces" along the waterfronts (Bezmez 2008, 130; Keyder and Öncü 1994, 408; Erden 2003, 147; Yenen and Yücetürk 2003, 601). According to Keyder and Öncü (1994, 401), all of these developments, credits, and increases in revenues did not help the accelerating demands for infrastructure and the basic needs of İstanbulites. Public transportation, garbage collection, water, roads, sewage systems, and electricity were far from meeting the population's needs in İstanbul.

Concerning the context of the 1980s in other waterfront cities, the situation was the same. The waterfronts of Vancouver could be a meaningful example, having changed from railway lines and industrial complexes to places for recreation and dwelling (Marshall 2001, 9). At the same time, mixed-used complexes and large-scale relational visions emerged on the waterfronts of Vancouver. Meanwhile, the industrial plants belonging to the state and located on the waterfronts of İstanbul were shut down after 1980.

The dockyard of İstinye, Silahtarağa Power Plant, Cibali Tobacco Factory, and the cotton mill of Bakırköy were shut down in this period. The most critical part of the Beykoz Leather and Shoe Factory was shut down in the 1980s, and in 2002, it was completely closed (Köksal 2005, 32). In place of these, deluxe five-star hotels, museums, international business centers, and mixed-used buildings were constructed

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[289] CNNTÜRK, "Haliç gözlerimin rengi gibi olacak," [The Haliç Will Be Like the Color of my Eyes]," November 22, 2012, November 22, 2012, https://www.cnnturk.com/2012/turkiye/10/22/halic.gozlerimin.rengi.gibi.olacak/681627.0/index.html. Accessed: May 20, 2020.

[290] Daily newspaper *Cumhuriyet*, "142 Yıllık Fabrikaya Ölüm Fermanı [Death Warrant for a Factory of 142 Years]," May 17, 1985.

[291] Daily newspaper *Cumhuriyet*, "Haliç'e Nefes Aldırma Çalışmaları [Efforts to Make the Haliç Breath Again]," May 22, 1985.

through massive metabolic flows of iron and cement along the waterfronts of İstanbul. According to Law No. 2985, the Mass Housing Administration of Turkey (TOKİ)[292] was established with the creation of "Mass Housing Funds" for subsidizing lower-middle-income housing after 1983, but it was mainly used as a private enterprise in the construction of dwellings (Keyder and Öncü 1994, 403). After the massive earthquake of 1999, which had clear effects on İstanbul, TOKİ took a central stage concerning massive urban transformation attempts and socio-natural upheaval in İstanbul, which continues to this day. Insistence on the vision for İstanbul as a chain of mega projects is not a new context invented in the 21st century; on the contrary, this "mega" vision was used in the last quarter of the 20th century (Keyder and Öncü 1993, 30). This mega vision was mainly sought to be realized by infrastructural projects like the vision of İSKİ[293] (İstanbul Water and Sewerage Administration) and transformation via master plans of İstanbul under the STFA[294] (Engineer Company).

In 1984 the ANAP enacted a law about bureaus such as Master Plan and Water Supply and Sewerage connected with central ministries of the state and directed under the municipality (Keyder and Öncü 1994, 404). In 1981, the sewerage system of İstanbul was renamed as the İstanbul Water and Sewerage Administration (İSKİ: *İstanbul Su ve Kanalizasyon İdaresi*) and the waterworks of İstanbul were privatized. The İstanbul Metropolitan Municipality Marine Services Directorate

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[292] TOKİ. http://www.toki.gov.tr. Accessed: May 20, 2020.

[293] Explanation from the website of İSKİ: "Founded in 1981 with the launch of İSKİ Law no. 2560, İSKİ is a public utility of Istanbul Metropolitan Municipality with an independent budget. The managerial board of the administration where the Mayor of Istanbul is the Board Chairman is the Metropolitan Municipality Council. The General Director of İSKİ is elected upon the proposal of the Metropolitan Municipality Mayor and approved by the Minister of Interior Affairs." https://www.iski.istanbul/web/en-US/kurumsal/iski-hakkinda. Accessed: April 10, 2020.

[294] Explanation from the website of the company: "STFA had its beginnings in 1938. Two young engineers, Sezai Türkes and Feyzi Akkaya, saw the need, in the new Turkish Republic's growing economy, for facilities for bridge construction and piling operations in the country... This vision became fully-realized at the beginning of the 1970s when STFA, having established itself in Turkey, broke into the international market, first in Libya and then in many other countries – one of very few pioneer Turkish contractors to do so." https://www.stfa.com/en/partners/stfa-construction-group/. Accessed: April 20, 2020.

(İSTAC) was founded in 1994. Investments for infrastructural developments and urban transformation projects through a commercial banking system and foreign credit markets occurred for the first time after the 1950s (Keyder and Öncü 1994, 401).

The Fourth Five-Year (1979-1983), Fifth Five-Year (1985-1989), Sixth Five-Year (1990-1994), and Seventh Five-Year (1996-2000) Development Plans of the state are explored here concerning the iron and steel sector as well as the construction sector in terms of metabolic flows of iron and cement embedded in urban solids and voids. Construction emerges as a subheading under the heading of "infrastructure and tourism" in the Fourth Plan,[295] while it disappears in the Fifth Plan (1985-1989). In the Sixth Plan (1990-1994), under the heading "services," the subtitle of "construction" emerges again.[296] It disappears again in the Seventh Plan, while a subheading entitled "privatization" emerges between 1996 and 2000.[297] According to the Fourth Five-Year Development Plan, thanks to the advance in construction and the investment goods sector, iron consumption per person would be increased in the years between 1979 and 1983.[298] Concerning long iron and steel products as the primary input of the construction and housing sectors, domestic demand was expected to increase by 11.4% annually on average, reaching 3.9 million tons in 1983.[299] As stated in the Fifth Five-Year Development Plan (1985-1989), the iron and steel sector would keep up with the developments on the global scale and open up to international competition as the main political agenda.[300] The necessary

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[295] Fourth Five-Year Development Plan (1979-1983), DPT, p. 421. http://ekutup.dpt.gov.tn/plan4.pdf.
[296] Sixth Five-Year Development Plan (1990-1994), DPT, p. 281. http://ekutup.dpt.gov.tr/plan/plan6.pdf.
[297] Seventh Five-Year Development Plan (1996-2000), DPT, p. 164. http://ekutup.dpt.gov.tr/plan/vii/plan7.pdf.
[298] Fourth Five-Year Development Plan (1979-1983), DPT, p. 584. http://ekutup.dpt.gov.tn/plan4.pdf.
[299] Fourth Five-Year Development Plan (1979-1983), DPT, p. 584. http://ekutup.dpt.gov.tn/plan4.pdf.
[300] Fifth Five-Year Development Plan (1985-1989), DPT, p. 94. http://ekutup.dpt.gov.tr/plan/plan5.pdf.

arrangements for the conversion of round flat steel products used in reinforced concrete structures into ribbed or mesh steel would be made for the first time in the Sixth Five-Year Development Plan (1990-1994).[301] Iron and steel constructions used in urban infrastructures were important in this plan, too. Under the "construction" subtitle, the initial vision was for international relations within the construction market through the Sixth Plan (1990-1994). The state-supported Turkish Contractors Association was utilized for improving relations in the international realm. According to the plan, in consideration of transferring prefabricated building elements and prefabricated technology from outside the country, the state would encourage the necessary conditions.[302] This vision, giving priority to the raw materials of the construction sector concerning the design of models, was central in the years between 1990 and 1994.[303] Next, we will focus on the ecologically sound discourse of "cleaning" as an apparatus for investments inviting vision and projection in the context of the waterfronts of the Golden Horn between 1980 and 2002.

Befitting the days of the "neoliberal turn," free market conditions enabled the decisiveness of capital (basically via World Bank loans) through the waterfronts of the Golden Horn by massive destructions and the discourse of "cleaning." Private fund investments, both national and international, including institutions such as museums and private universities were ready for it. For an investment related to a projection of "cleaning" the Golden Horn (Haliç), a World Bank loan was used (Keyder and Öncü 1994, 400). Köksal (2005, 29) states that the massive destruction through the waterfronts of the Haliç concerning the industrial heritage of İstanbul occurred without any documentation between 1984 and 1989. Köksal further adds that these industrial areas were turned into green spaces. At this point, İstanbul's

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[301] Sixth Five-Year Development Plan (1990-1994), DPT, p. 199. http://ekutup.dpt.gov.tr/plan/plan6.pdf.
[302] Sixth Five-Year Development Plan (1990-1994), DPT, p. 281. http://ekutup.dpt.gov.tr/plan/plan6.pdf.
[303] Sixth Five-Year Development Plan (1990-1994), DPT, p. 66. http://ekutup.dpt.gov.tr/plan/plan6.pdf.

inclusion in the UNESCO Convention in 1985 for the protection of the world's cultural and natural heritage and in the Habitat II conference in 1996, held in İstanbul, were essential developments. Between 1950 and 1980, nearly 700 manufacturing plants and more than 2,000 small workshops were opened along the waterfronts of the Haliç (Bezmez 2008, 180). This development carried extreme pollution to the waters of the Haliç (Bezmez 2008, 180; Erden 2003, 148, Ünal 1996, 25) as well as to the squatter settlements in the area (Bezmez 2008, 180; Somay 2004, 499; Yücetürk 2001, 92).

The Haliç comprises two types of water: freshwater from streams and salty seawater from the Bosporus. During the construction period of the Alibeyköy Dam (1975-1983), the fresh waters flowing into the Haliç from the streams of Alibeyköy and Kağıthane were dramatically decreased (Yüksel et al. 1999, 249). This was one of the main reasons for the contamination of these waters. The other main reason was the industrial structures along the waterfronts of the streams (Alibeyköy, Kağıthane) and the Haliç, which had no purifying systems for wastewaters. Canal and collector systems have always been a partial solution for water contamination and related problems, often reduced to a technical detail, and these were frequently mentioned for the vision and projection in the days of "cleaning" the waters of the Golden Horn. For a brief example, we can look at the transformational attempts along the waterfronts of the Golden Horn.

The Silahtarağa Power Plant (see Chapter 4.2.2.2) ceased functioning in 1983. Eight years after the shutdown of the factory, and after the Council of Preservation of Cultural and Natural Properties declared the complex a site of cultural heritage, in 2007, the Silahtarağa Power Plant was turned into a museum complex by Bilgi University (Aksoy 2007, 29; Zeybekoğlu 2007, 171). The Cibali Tobacco Factory, meanwhile, had been opened in the 19th century. After the founding of the Turkish Republic, it became a part of the state's TEKEL monopoly (Işın and Akbayar 1994, 429; Zeybekoğlu 2007, 175). It was then shut down in 1990 and is currently used by Kadir Has University. The Feshane, a kind of textile factory established in 1833, was located on the waterfronts of the Haliç and was shut down in 1986. One zone of this

factory could escape demolition. The Lengerhane-i Amire Building of the Hasköy Shipyard was turned into the Rahmi Koç Museum. The Hasköy Shipyard had been established in 1861 by Şirket-i Hayriye for maintenance and repair. The slaughterhouse of Sütlüce (*mezbahane*) was turned into the Haliç Congress Center. All of these facilities ceased functioning in the 1980s because they were accused of being sources of the pollution and environmental degradation of the waterfronts of the Haliç (Bezmez 2008, 180). In 1986, Dalan gave news that the fruit market complex of Eminönü, constructed between 1933 and 1935 and located on the waterfronts of the Haliç, would move to Bayrampaşa. The coastal road between Eyüp and Bahariye was placed on 640 piles and opened in October 1988.[304] The period between 1956 and 1959 (see Chapter 4) was important for the clearance of the Bosporus hills for structures of dwelling (Salman and Kuban 2006, 105). Apart from being a symbolic moment of massive demolitions, the emergence of new dwellings across an extensive area along the Bosporus would also be possible in these four years.

In short, the Fourth, Fifth, Sixth, and Seventh Five-Year Development Plans of the state gave importance to the raw materials of the construction sector, privatization, prefabricated technology, and international competition, which became essential themes in this period. New metabolic flows had just begun and would have a particular role in the socio-natural transformation of waterfronts concerning the shifting metabolism of the city in a tourism-driven context between 1980 and 2002. Furthermore, as described above, industrial buildings such as the Beykoz Leather and Shoe Factory and the Silahtarağa Power Plant, founded in the 19th century and functioning into the 20th century on the waterfronts of the Bosporus and Haliç, respectively, began to be shut down in the 1980s. Building along the waterfronts was not accomplished by the Menderes government; it had to wait until the waterfront landscapes of İstanbul were declared as "tourism" areas for the

[304] For more details about this situation, please see Chapter 4.2.2.3 on the *gecekondu* settlements along the waterfronts of Bahariye.

interests of the finance sector through the metabolic flows of iron and cement in the 1980s. The free movement of capital through global and privatized institutions was then ready to fulfill the needs of the capital-intensive metabolism of İstanbul between 1980 and 2019.

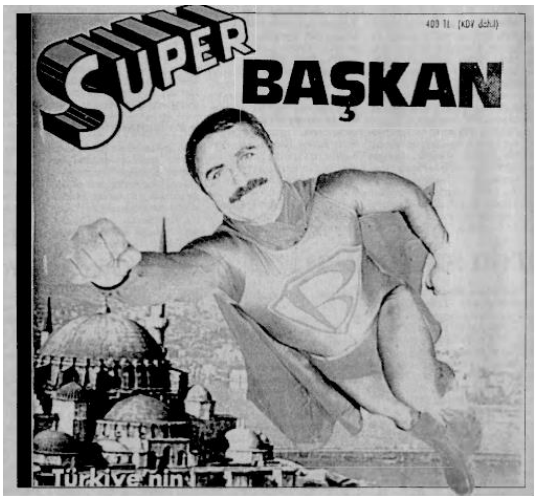

Figure 5.3 Bedrettin Dalan, Mayor of İstanbul between 1983 and 1989, Described as "Super Leader" for Some. *Cumhuriyet (16 January 1994), Taha Toros Archive, İstanbul Şehir University Library.*

5.1.2 The Period Between 2002 and 2019

On the one hand, the period between 2002 and 2019 has seen sweeping institutional and juridical arrangements, along with increasing inequalities, gentrification projects, massive urban transformation projects, privatization of public-owned lands and displacement of the urban poor, mega-scale projects including coastal land reclamations, increases in allergic diseases and pandemics, and the loss of lives of construction workers. On the other hand, emerging urban solidarity groups, urban rights movements, neighborhood groups, NGOs, professional chambers, and uprisings that stand against these visions and projections (the most critical one is the Gezi Park Protest of 2013) have also constituted typical characteristics of the period between 2002 and 2019. The state apparatus has taken on an entrepreneurial role considering the shifting urban agenda blended with mega projections and visions

along with the neoliberal era in the ruling period of the Justice and Development Party (AKP).[305] In this period, the urban agenda of the AKP has been at the center due to various concerns and criticisms. The earthquake of 1999 in Gölcük was a turning point for the radical mega-scale socio-natural transformation of İstanbul, accelerating the speed and amount of construction projects. It had serious impacts considering regularizations that prioritized earthquake risks and resilient buildings and legitimized the property-led redevelopment strategy (Enlil and Dinçer 2020, 178). Urban land became a scarce commodity (Enlil and Dinçer 2020, 177).

Renewal Law No. 5366 in 2005[306] and Law No. 6306 on the Transformation of Areas Under Disaster Risk in the Official Gazette[307] in 2012 are the essential ones among these legal regularizations, by which the Ministry of Environment and Urban Planning (*Çevre ve Şehircilik Bakanlığı*) became the ultimate authority to acknowledge locations as "risky." They paved the way for massive transformation attempts. At this point, in these "risky" areas, TOKİ was not taking part. On the contrary, the private construction sector emerged as an actor and materialized the massive urban renewal projections (Enlil and Dinçer 2020, 181). The Ministry of Environment and Urban Planning was established in this period, too, in 2011.

The 3rd Bridge and the 3rd Airport were realized as two essential mega projects in this period in İstanbul. At the same time, the civil organization known as the Northern Forest Defense (KOS, *Kuzey Ormanları Savunması*) was established for protecting the ecosystem of İstanbul in July 2013.[308] The 3rd Bosporus Bridge project (Figure 5.4) was located between the waterfronts of Garipçe and Poyrazköy to the north of the Bosporus. The deforestation of the hills along the waterfront where

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[305] The Justice and Development Party (Turkish: *Adalet ve Kalkınma Partisi*), officially abbreviated as AK Parti in Turkish, is a conservative populist Islamic political party in Turkey. As of 2020 the party has been in power almost continuously since 2003, with its leader, Recep Tayyip Erdoğan, being prime minister or president for most of this time. Wikipedia. Accessed: September 1, 2020.

[306] Official Gazette. https://www.resmigazete.gov.tr/eskiler/2005/07/20050705-1.htm.

[307] Official Gazette. https://www.resmigazete.gov.tr/eskiler/2012/12/20121215-1.htm.

[308] Kuzey Ormanları Savunması. https://kuzeyormanlari.org/hakkinda/. Accessed: August 4, 2020.

the feet of the bridge would be built and the construction of the necessary fillings started in March 2013.[309] The 8th Administrative Court canceled the master plan for the crossings of the 3rd Bridge's connection roads in Beykoz and Sarıyer-Rumelifeneri along the back view of the Bosporus and the impact zone. In the lawsuit filed by the Chamber of Architects and the Chamber of City Planners in 2015, the court found that the planned renovation violated environmental regulations and the ecology would be negatively affected. Moreover, the plan made by the Ministry was illegal concerning the Bosporus Law.[310] In spite of all this, the 3rd Bridge of the Bosporus (*Yavuz Sultan Selim*) was opened on August 26, 2016.

The Prime Minister of the time, R. T. Erdoğan (2003-2014), asserted in October 2010 that the existing two airports (Yeşilköy and Sabiha Gökçen) could not meet the needs and that the 3rd Airport would be built.[311] While making an election statement in October 2010, the Prime Minister declared that two new cities would be built on the Asian and European sides in the region where the 3rd Airport was to be located.[312] The 3rd Airport opened on April 5, 2019, along the Black Sea waterfronts in the company of massive infill and coastal land reclamation areas. Thus, the 3rd Bridge of the Bosporus and the 3rd Airport are essential in the historical agenda concerning the massive metabolic flows of iron and cement together with land and water. In addition to them, the İstanbul Canal project, also known as the "Crazy Project of İstanbul" and projected in the location between the Black Sea and the Sea of Marmara, was first announced in April 2011.[313]

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[309] Yalçın Bayer, March 28, 2013. *Hürriyet*. https://www.hurriyet.com.tr/iste-3-uncu-koprunun-ayak-izleri-22914425. Accessed: August 4, 2020.
[310] Olgu Kundakçı, June 10, 2015. *Birgün*. https://www.birgun.net/haber/mahkeme-3-kopru-nun-yollarini-kesti-82568. Accessed: August 4, 2020.
[311]İstanbul'un Mega Projeleri. http://megaprojeleristanbul.com/#3-havalimani. Accessed: August 4, 2020.
[312] İstanbul'un Mega Projeleri. http://megaprojeleristanbul.com/#3-havalimani. Accessed: August 4, 2020.
[313] "Kanal İstanbul'da Yeni Gelişme," December 22, 2017. http://www.yapi.com.tr/haberler/kanal-istanbulda-yeni-gelisme_162464.html. Accessed: August 4, 2020.

In short, in the 2000s, the waterfronts have symbolized some of İstanbul's most critical litmus lands, revealing both socio-natural conditions and mega visions in the context of real estate value, tourism, history, election manifestos, public recreation, coastal ecosystem, and, additionally, for the entire ecosystem health of the city, livable environments. The coastal land reclamations (i.e., fill) as part of the mega-scale projections in İstanbul have been the subject of news and scholarly debates. At the same time, coastal land expansion is not a new phenomenon. In the current context, the coastal land reclamations heavily depend on complex material and labor processes that generate the secondary transformation of urban debris derived from mega urban renewals. The metabolic flows of iron and cement between 1980 and 2019 will be discussed in the next part of this chapter, which are channeled through circulatory networks of capital depending on the construction industry, in which complex material and energy processes take place throughout the waterfronts.

Figure 5.4. The 3rd Bosporus Bridge Project (Yavuz Sultan Selim Bridge).
https://dosya.megaprojeleristanbul.com/3-bgz-kprs/2.jpg

5.2 Metabolic Flows of Iron and Cement

The construction industry and tourism apparatus, befitting the neoliberal shift, have shaped the urbanization of capital[314] through the waterfronts of İstanbul and set the stage for the capital-intensive urban metabolism of the city between 1980 and 2019. It is essential to underline that in the 19th century concrete was advocated instead of stone constructions for two significant reasons. One was its cheapness, with the employment of unskilled labor, and the other was its fireproof qualities in the centuries of frequent great fires (for details about great fires, see Chapter 2.2.4) (Collins 2004).[315] This represents the first significant evidence of how socio-natural conditions act upon the metabolic flows of iron and cement and produce particular urban environments. The second one is the vision and projection of "tourism" and the "private sector" for reshaping the waterfronts to meet the needs of global capital. The third is environmental concern and how this ideology appeared with the "protecting and cleaning" apparatus throughout the waterfronts of İstanbul.

Cast iron and steel are the essential components of the construction sector, together with cement. Steel is a historically loaded material. It contributes to electricity just like coal and is essential for electric motors, assembly lines, and mass production and labor.[316] According to the Ministry of Industry and Trade's Iron and

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[314] David Harvey analyzes the circulation of capital and its urbanization as *perpetuum mobile* channeled through a myriad of ever-changing production, communication, and consumption networks. The development of circulating money as the basis of material life and the relations of domination and exclusion through which the circulation of money is organized and maintained have together shaped this "urbanization of capital." See David Harvey, *The Urbanization of Capital* (Blackwell, Oxford, 1985).

[315] "Such motives occurred and first became apparent when the fireproof qualities of concrete were exploited in a search for safe theatre design. The end of the 1880's was the boom period of theatre construction in London." Peter Collins, *Concrete: The Vision of a New Architecture* (McGill-Queen's University Press, 2004), 53.

[316] To quote from the book entitled *Materiology: The Creative Industry's Guide to Materials and Technologies* by Kula et al.: "…steel represents the mechanical and is the material of precision. As the medium of electricity and magnetism, it is also the precursor to the arrival of the electric motor. Foreshadowing the modern world, it proves to be the ideal material for the systematic compartmentalisation of work and the organised assembly lines of mass production. Not a simple material but undisputedly a historical and social phenomenon" (Kula et al. 2013, 41).

Steel Industry Report of 2011,[317] growing economies worldwide have caused increasing demands for housing, automobiles, and domestic appliances, which are directly related to iron and steel production, consumption, and processing. Iron and steel production together with cement via labor as space has accelerated throughout the waterfronts, too. The construction and automotive industries consume 80% of the iron and steel produced in Turkey, while in developed countries they use 57% (Kayır 2016, 891). Cast iron was first used for everyday purposes in England such as coffins and columns in 1780 (Giedion 2013, 55). Giedion (2013) mentions in his influential book, *Mechanization Takes Command*, that the first mobile fireproof chest, "Herring's Fireproof Safe" was constructed with two iron plates and a heat-resistant material in 1820 in Europe. The investigation of fossil fuel deposits of coal, used for producing heat in furnaces for the first time in the 18th century (Batur 2004), was an important turning point for the history of iron and steel. On the other hand, if we look at the context of İstanbul, the brick and cement factory established by the *Islahat-ı Turuk Komisyonu*[318] after the Hocapaşa Fire (1865) sold brick and cement without taxes to those who needed to remake their homes in an entirely new and modern manner for fire prevention (Çelik 2015, 76). The search for fire resistance and the phenomenon of great fires (see Chapter 2.2.4) together with the discovery of coal deposits were influential concerning the metabolic flows of iron. The Paris International Exhibition Report in 1867 stated that smiths as highly skilled labor had abandoned the city centers and big cities (Giedion 2013, 50). The shift from hand craftwork to the mechanical production of cast-iron grilles, balconies, and ornaments by large companies was an important issue by the time of Haussmann's Paris (Giedion 2013).

Concerning İstanbul in the 19th century, the *lökünсü*, a specialized craftsman performing luting for the traditional handcrafted water infrastructure, disappeared

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[317] T.C. Sanayi ve Ticaret Bakanlığı, Demir Çelik Sektörü Raporu - 2011/Ministry of Industry and Trade, Iron and Steel Industry Report (2011), 7.
[318] The committee (*Islahat-ı Turuk Komisyonu*) for regularization of roads in the city was established in 1866.

from the city's scene due to the cast iron pipes that began to be used for fixing the water conduits in a mechanized and modern way (see Chapter 2.3.1). In İstanbul, the first cast iron building, designed as a prefabricated building by William Fairbairn and transported to the city via sea transportation in 1840, was a flour mill (Batur 2004, 3). While cast iron is one method for iron and steel metallurgy, scraping metal is another. In the first method, iron ore blended with carbon at high temperatures produces cast iron and then steel. The coal in blast furnaces helps to create iron and carbon alloys as cast iron, and then in an oxygen converter, cast iron is turned into steel. In the scrap metal method, recycling and reworking of iron and steel elements via an electric furnace are the means of producing steel. Long iron and steel products like sheet metals, beams, and steel wire for the construction sector are the final products of this method. Iron manufacturing consumes enormous amounts of energy and produces CO_2 along with mining operations among the main concerns of environmental movements regarding working conditions and ecosystem hazards.

Cement has a long history, dating back to Neolithic times around 7000 BC. In that period, lime-based concrete material was used as an extensive floor material in Israel (Gani 1997). Gypsum, meanwhile, is thought to be the first organic binding material to combine stones, used in the famous Pyramid of Cheops around mid-2000 BC in Egypt. Gypsum, produced by heating, mixing with sand, and adding water, was used instead of lime because of the scarcity of fuel power in Egypt (Gani 1997, 2). The Romans, on the other hand, are known to have been masters of cement.[319] Water-resistant cement was created by the Greeks and Romans. The structures created with Roman concrete (*opus caementicium*) are made of broken brick aggregate or volcanic tuff (due to the weight of buildings), lime, and pozzolana. The Pantheon in Rome (AD 120) was built with this kind of concrete and still stands today (Kohlhaas 1983, 103). At this point, Harries (1995) emphasizes that vast

[319] The term "Roman cement" comes from the hydraulic cement produced from pozzolanic material (volcanic ash) with slaked lime and sand. This cement was used in the Colosseum in Rome, too (Gani 1997, 3).

numbers of unskilled laborers could be used in concrete construction works instead of the craftsmen needed for masterful stone constructions in Roman times. This implies the metabolic relation of the urban metabolism in terms of the metabolic flows of materials, technology, and labor. The cement technology of the 18th century defined a turning point in terms of being used beyond the waterfronts and was accepted as the "chief pillar" of modern structures (Draffin 1976; Gani 1997, 5) and as the very first modern concrete. John Smeaton (1724-1792), who defined himself as the first civil engineer in history, discovered the value of clay mixed with lime and pozzolana in the development of modern concrete. He used this cement in the construction of a lighthouse in 1759 (Figure 5.5) on dangerous rocks in the south of England, which stood for 123 years (Kohlhaas 1983; Gani 1997, 5). Waterfront cities have been essential considering the construction industry and contraction business since the 19th century. Port cities and trade via merchants were also important for the circulation of capital.[320]

According to the Report of the Cement Industry in Turkey by the OAİB (2000, 60), the cement industry was the first sector taking "action" to protect the environment against air pollution after the regulation of air quality protection on November 2, 1986. Furthermore, the Cement Industry Environmental Declaration was signed by the Ministry of the Environment of the Turkish Republic and the Turkish Cement Manufacturers' Association in 1993 to comply with European Union standards following the spirit of the period. The first idea of a union of contractors in the Ottoman period, called the Ottoman Engineering Economic Society, is mentioned in a book about the history of the Turkish Contractors Association (Batmaz et al. 2006, 34). The first efforts to implement concrete technology along the waterfronts of İstanbul in warehouses and offices by Marius

[320] At this point, Keyder, Özveren, and Quatert state that (1994, 121): "…The peripheral port cities are privileged places in connection with the world capitalist economy… Trade was the primary mechanism of involvement in the capitalist cycles; the commercial commodity was able to overcome political boundaries only by channeling it to these cities via merchants living in port cities" (translated by the author).

Michel in the late 19th century caused a debate as to whether the buildings throughout the Port of İstanbul were to be built of stone and bricks or *ciment arme* (Turkish: *demir donatılı çimento*) (Batmaz et al. 2006, 35). In 1907, reinforced concrete was accepted for warehouses and offices along the waterfronts (Batmaz et al. 2006). The arrangement of İstanbul's docks was taken up as a media focus (Batur 2004, 4). The building known as the *Seyr-ü Sefain Acentası* (Maritime Agency, 1913-1914), designed by M. Vedad Tek in Karaköy, was constructed of reinforced concrete; it was demolished in the demolitions of Menderes (Batur 2004, 7). The Eyüp Silahtarağa Power Plant was another reinforced concrete building along the waterfronts of the Haliç in the early 20th century (1914). The massive usage of reinforced concrete along the waterfronts particularly marked the last twenty years of the 20th century in İstanbul.

Coal and oil as essential metabolic flows (1950-1980) and water as the crucial metabolic flow (1839-1923) throughout the waterfronts, explored in detail in the previous chapters,[321] now come to constitute the critical inputs of the cement industry. In other words, the shift from a labor-intensive (direct and simple) to a capital-intensive (complex) metabolism in İstanbul can be exercised through the demands for fuel, electricity, and raw materials of the metabolic flows of cement shaped through the political vision in this chapter (see Table 5.1). In 2018, the cement industry was the producer of 8% of global CO_2 emissions (12% was due to the agriculture industry), and cement was the second main resource extensively used in the world (Mittelman 2018). The Marmara waterfronts have been a location for cement factories throughout history. The first cement factory in the 20th century was built in Darıca-İstanbul[322] (20,000 tons/year), and another was built in Eskihisar[323] in 1911. Tile, brick, hydraulic lime, floor tile, and white Portland cement were produced in these factories for usage in İstanbul (Cantürk and Özgüven 2018, 16).

[321] See Chapter 2.3 on metabolic flows of water and Chapter 4.2 on metabolic flows of oil and coal.
[322] Memalik-i Osmaniye'de Sun'i Çimento ve Hidrolik Kireç İmalına Mahsus Arslan Anonim Şirketi.
[323] Eskihisar Suni Portland Çimentoları ve Su Kireci Anonim Şirketi.

Concerning the Republican Period, in 1926 the Kurt Cement Factory in İstanbul and the Ankara Cement Factory were essential factories (Cantürk and Özgüven 2018, 18). Before the 1950s, in Zeytinburnu (1929) and Kartal (Çimento Yunus Factory-1929), two more cement factories were added. The five cement factories that had public ownership were privatized and sold to private French companies in 1989. In the Turkish context, the first ready mixed concrete production was performed in Ankara in 1976. After privatizing the cement sector in the second half of the 1980s, ready mixed concrete applications were accelerated, and the Ready Mixed Concrete Association (HBB: *Hazır Beton Birliği*) was established in 1988. In 1995, the association took the name Turkish Ready Mixed Concrete Association (THBB) by the decision of the council of ministers. Open-pit mining activities close to the waterfronts of İstanbul were also accelerated after the 1970s (Özelkan et al. 2011, Uça Avcı 2019), related to the metabolic flows of cement. Limestone, clay, and marl are the essential raw materials of cement production.

In the context of İstanbul in the 1970s, the metabolic flow of cement, as an essential part of the construction market, shifted dramatically from public property to private property ownerships (Figure 5.6). Cement production has exceeded its consumption since 1970 (*Çimento Sektörü Raporu*, OAİB 2000, 34). Besides, in some cases (quality preferences or economic conditions), cement may also be imported. The importing of cement from outside the country was much cheaper than supplying it from inside the country concerning distances. For instance, meeting the intensive demand for cement in İstanbul via Bulgaria was cheaper than bringing cement from Mardin-Aşkale (*Mimarlık* 1979, 26).[324] In 1998, Turkey was the second in Europe and eighth in the worldwide concerning cement consumption rates. Solid wastes were used in cement production and recycling in the cement industry in Turkey, such as coal ash from power plants, clinker, silica fume, and fertilizer (İncesu 2000, 62). Concerning the construction industry, however, the relationship

[324] *Mimarlık*, 1979-03 (160) (1979): 26.

between asbestos and public health was a relatively new scholarly issue in Turkey. In the report of the Second Congress of Economics in Turkey in 1981, asbestos was only addressed in terms of its investment potential, and precious asbestos resources and the increasing demands of the cement industry for asbestos were mentioned.[325] However, asbestos is a health hazard and threatens public health. In other words, the asbestos fiber in cement constructions is a highly risky material regarding a specific type of cancer: mesothelioma. In this chapter, we have two contexts of urban solids and urban voids for exploring the metabolic flows of iron and cement through the waterfronts of İstanbul. In the next section, we will explore the urban solids embedded in villa and tower projections.

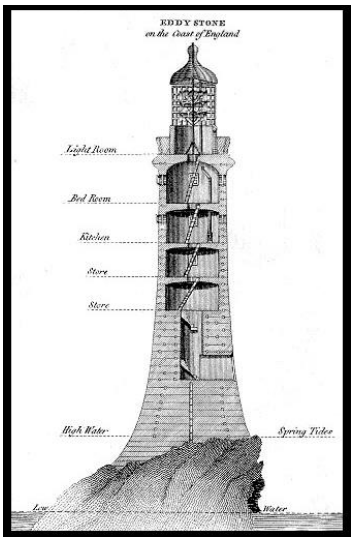

Figure 5.5 Smeaton's Lighthouse on the Eddystone Rock in England.
Wikipedia

[325] The Second Economic Congress of Turkey (*İkinci İktisat Kongresi*) (1981), Politics of Development Study Group Report Vol. VI. Turkish Republic Prime Ministry of State Planning Organization, pp. 290-291.

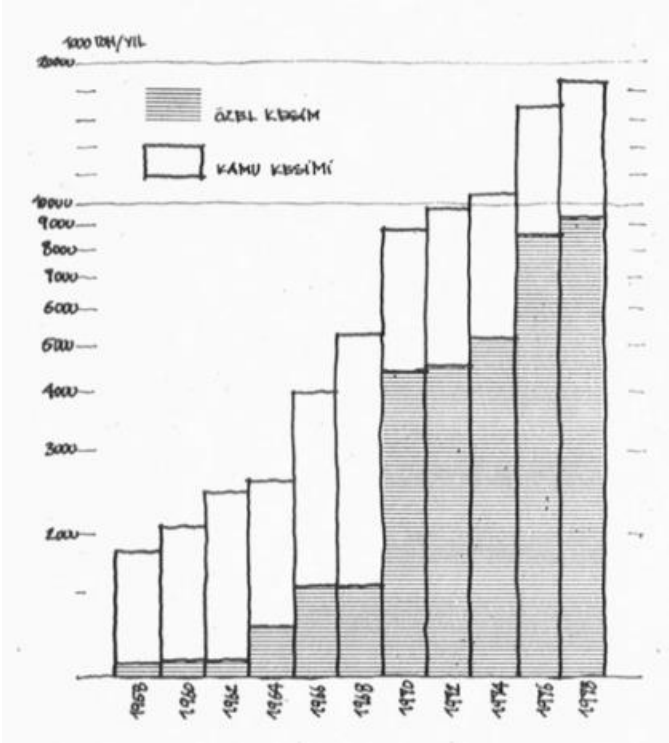

Figure 5.6 Production Capacity of Cement According to Property Relations in Turkey between 1958 and 1978. Grey=Private, White=State. *Mimarlık, 1979-03 (160), 26, 1979.*

Table 5.1 Turkish Cement Industry Overall Cost Structure
T.Ç.M.B in Yakup İncesu edt. Çimento Sektörü Raporu, OAİB, Araştırma Raporları Dizisi no 15, 40, 2000.

Industrial cost inputs	**Average cost %**
Raw materials	9.5
Electricity	23.5
Fuel	20.0
Packing and packing workmanship	11.5
Materials	6.5
Labor	14.0
Outsourced Services	10.1
Amortization	3.0
Other	2.0
Overall	100.0

5.2.1 Urban Solids

5.2.1.1 Villas

In the 19th century, imported cement was expensive and was seen as a luxury in the USA. At this point, until the late 19th century, it was more common to use cement in the reshaping process of Europe than in the US context. Concerning the socio-geographical context of Europe in the 19th century, France held particular importance. François Coignet (1814-1888) was a pioneer in experimenting with iron for reinforced concrete construction designs, and also the creator of the heating system (pottery kilns) later modified to the calorifier for domestic use. His method of reinforced concrete flooring was patented in 1855. Coignet experimented on concrete structures in marine constructions, sewers, cemetery walls, a six-story apartment block (1867), a lighthouse, and an aqueduct in Paris (Collins 2004, 31-34). According to Collins (2004, 29), the fireproof flooring with iron[326] rods and cement had been recommended in an article in *Loudon's Encyclopedia*[327] for villa architecture in 1846. An early example of a concrete residence constructed at the entrance of the New York Harbor in 1837 is worthy of note (Collins 2004, 56). Apartment blocks, residences, and villas as urban solids carry importance considering the metabolic flows of iron and cement (together reinforced concrete) until the 19th century.

Looking at the 20th century in İstanbul, the period after 1980 emphasizes massive flows of iron and cement through the waterfronts. Luxury dwelling

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[326] "Presenting itself to man, iron erupted from the sky in the form of the meteorite. Which is where the word 'siderite' comes from, meaning 'meteoritic iron' closely linked to the French term 'sidérurgie' meaning 'iron and steel metallurgy', which has connotations of watching the substance arriving from sidereal space. Before undergoing enormous transformations, iron contributed to promoting the myth of this fascinating material, alien to man by nature, hard, cold, resistant. To master metal has always been the holy grail to allow societies to assert themselves in taking up arms, minting coins or self-defence." Kula et al. (2013, 41).

[327] *Encyclopedia of Cottage, Farm and Villa Architecture* (1846).

constructions, as well as the service sector and tourism centers, have been major factors regarding the metabolic flow of iron and cement as urban solids that both operate mostly on the waterfronts after 1980. On the one hand, high-rise apartment blocks in which the metabolic flows of iron and cement are embedded took the places of squatter settlements via cooperatives, retirees, developer firms, and employees (Keyder and Öncü 1994, 410). On the other hand, luxury residences and "villas" of the Bosporus took the place of woods and forests with the help of the motorized urban metabolism of İstanbul (see Chapter 4). The new upper-class, international financial credits, and regularizations made constructions in forest landscapes possible between 1980 and 2002. "Villas" are a context envisioned in this study as a "natural," "safe," and "luxurious" form of housing for the new capitalist class within the forests along the hills of the Bosporus with a view of the sea after the 1980s. This context materialized thanks to the proper conditions of mobile life via highways, bridges, and coastal roads in metropolitan İstanbul, as was explained in the previous chapter. "Villa" does not define a single housing unit, like *yalı*s and summer houses in the 19th century (see Chapter 2.2.1). On the contrary, it emphasizes a style of collective housing for the new upper-class İstanbulites in this period. This new class consists of technical and executive professionals of the finance and tourism sectors (Enlil, 2011).

The Beykoz Konakları (Figure 5.7), Acarkent (Figure 5.8), Avrupa Konakları, and Etiler Maya Sitesi (Figure 5.9) are typical villa housing complexes on the hills of the Bosporus embedded in the metabolic flows of iron and cement through the construction sector. The very first debates around the "concretion of the Bosporus" occurred in the local architectural journal *Architecture* in the early 1970s, begun by Çelik Gülersoy (1972, 16) with these words: "After industrial plants at the Bosporus, the most negative progress is concrete blocks instead of tin shelters." Ekinci (1994, 34) criticizes the Tourism Promotion Law[328] and claims that it means "privileged

[328] Published in the Official Gazette on March 16, 1982, Law No. 2634 (*Turizmi Teşvik Kanunu* in Turkish), Number: 17635, Distribution: 5, Vol: 21, p. 262.

zoning and construction rights" as well as being "adjacent to master plan rules." He also gives information via a map about 1461 "villa" units along the Bosporus line (Figure 5.10). They are located on the European side on the waterfronts of Rumeli Feneri, Rumeli Kavağı, Büyükdere, Kireçburnu, Tarabya, Yeniköy, İstinye, Bebek, Arnavutköy, and Kuruçeşme and on the Anatolian side on the waterfronts of Çubuklu, Kanlıca, Anadolu Hisarı, Kandilli, Çengelköy, Beylerbeyi, and Vaniköy (Ekinci 1994, 65). Bosporus Law No. 2960 states that along the frontal view area of the Bosporus, for all empty spaces and woods, all construction attempts are forbidden regardless of who has authority for master plans and construction.

Concerning the history of İstanbul, the first reinforced concrete housing unit was built in the early 20th century (1919-1922) in Laleli as an apartment complex. The Tayyare Apartments (or *Harikzedegan*, referring to a person who has suffered from fire) was designed by Mimar Kemaleddin (1870-1927) to meet the shelter needs of those who had suffered from the great fires of İstanbul in 1918. This complex was used as an apartment between 1922 and 1985. After 1985 it was transferred to a private tourism company, and finally, in 2016, it was turned into a five-star hotel. Esra Akcan (2010) states that the new types of collective housing after the 1990s were produced for the sake of escaping the crowded metropolis and obtaining a sterile and homogeneous life. In the *Mimarlık* journal in 1989, writers criticized the repetition of the same prototype (villa) in the collective housing format as gated communities again and again in the 1980s. Such constructions were also criticized for the increasing destruction of trees, for altering the topography, and for blindness to former patterns and values considering material flows in the villa-making agenda (Yücel and Türkmen 1989). While 85,000 tons of aggregate are used in the construction of 1.61 km of a four-lane highway, 330 tons of aggregate are needed for a typical house of 150 m^2 (Uz et al. 2003).

According to a 2018 report on the building materials sector by the Ministry of Trade's Directorate General of Exportation, Department of Mining, Metal, and Forest Products, Turkey was third after China and Thailand, which were the most

prominent countries concerning the export budget. The main export markets were the USA, Israel, Syria, Ghana, and Colombia. [329]

In short, between 1950 and 1980, the waterfronts and hills of the Bosporus were the address for the working class with *gecekondu* settlements and factories. Between 1980 and 2002, they became a perfect location for the **postmodern "natural" fantasy of the bourgeoisie** through gated communities of encircled villas. In the 2000s, villa-like luxury residences with shopping malls and office complexes have taken their places in the skyline of the waterfronts of İstanbul, as will be explained in the next section within the contextual framework of "towers" in the context of urban solids.

[329] General Directorate of Export Mining, Metal and Forest Products Department (2018), The Report of Building Materials Sector, Republic of Turkey Ministry of Commerce, p. 3. https://www.torbalito.org.tr/wp-content/uploads/2019/12/İnşaat-Malzemeleri-Sektörü.pdf

Figure 5.7 Beykoz Konakları. *https://www.emlakeki.com/beykoz-konaklarinda-4-milyon-tlye-satilik-villa-haberi-178493*

Figure 5.8 Acarkent. *http://www.acarkent.org/acarkent-sitesi*

Figure 5.9 Maya Sitesi Is a Typical Villa Housing Complexes on the Hills of the Bosporus.
https://tr-tr.facebook.com/mayaresidencesetiler/

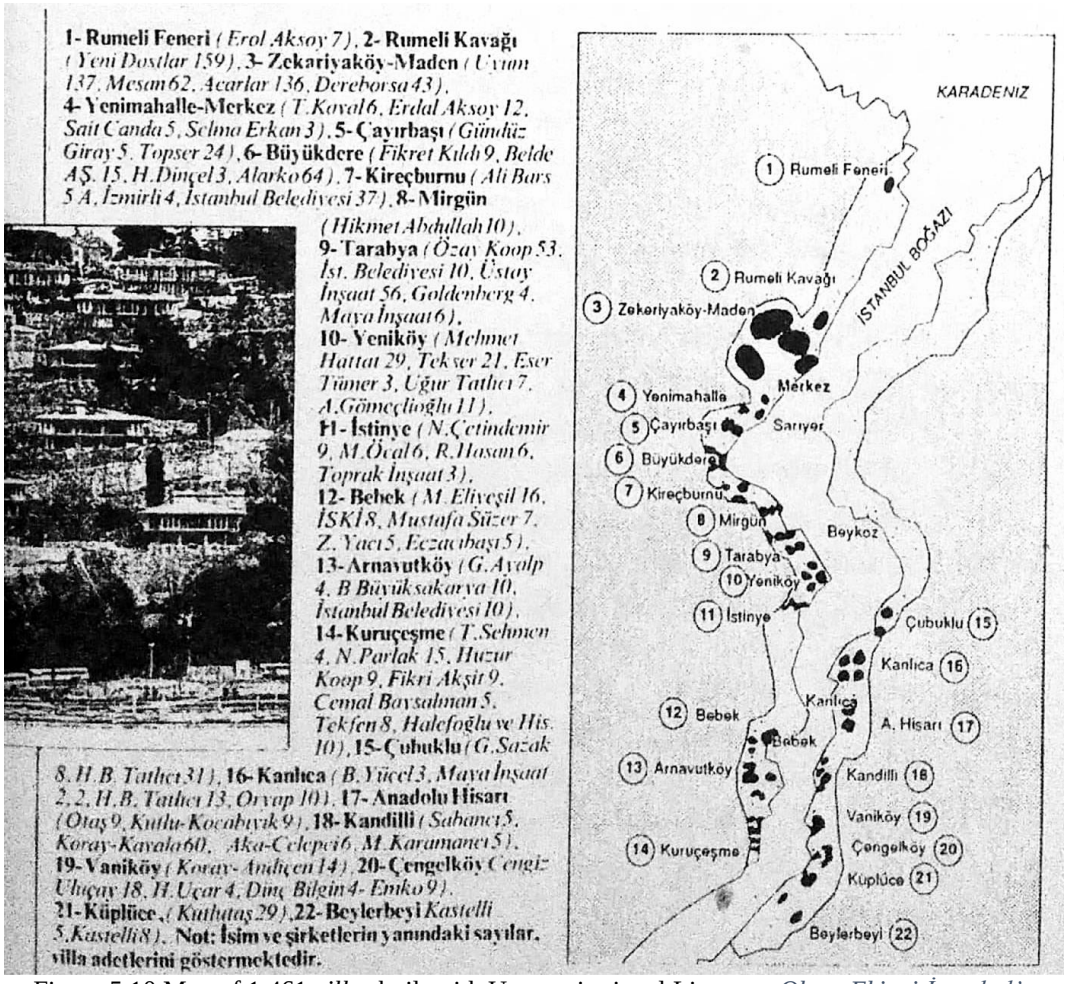

Figure 5.10 Map of 1,461 *villa*s built with Unconstitutional Licenses. *Oktay Ekinci İstanbul'u Sarsan On Yıl (1983-1993). Anahtar Kitaplar, 65, 1994.*

5.2.1.2 Towers

Towers along the waterfronts of İstanbul are the other essential conceptualization of urban solids in this chapter, particularly between 2002 and 2019. Luxury constructions like hotels and office buildings, as well as high-rise residences conceptualized as towers embedded in the massive metabolic flows of iron and cement, are embodied by international capital and the construction market in this

section. Tourism Promotion/Encouragement Law No. 2634[330] became valid in 1982 and gave way immediately to investments and constructions. The first two investments as a result of this law were the Park Hotel (Figure 5.11), known as a "concrete monster,"[331] and Süzer Plaza (Gökkafes) (1987-2001) (Figure 5.12) along the waterfronts of the Bosporus. They have become symbols of this neoliberal moment concerning the capital-intensive urban metabolism of İstanbul. The Park Hotel received strong objections from professionals as well as from the neighborhoods of the Ayaspaşa Environmental Beautification Association in 1993. Ten years later, it was resurrected in 2013 under the name of CVK Bosporus Hotel.

According to Enlil (2011,17) before 1980, only four towers had been constructed; in 1990, more than twenty new high-rise structures and by the 2000s more than forty towers had been added to the city of İstanbul. Namely, "deluxe and five-star hotels," such as the Swiss Hotel instead of the garden of Dolmabahçe Palace, the Conrad Hotel instead of the gardens of Yıldız Palace, the Çırağan Hotel instead of the garden of Çırağan Palace, the Holiday Inn instead of the waterfronts of Ataköy, and a hotel site instead of *Beykoz Hünkar Kasrı* took their places along the waterfronts of İstanbul. The Ritz-Carlton, Conrad Istanbul, Movenpick, and Hyatt Regency were other international hotel constructions rising in this period of İstanbul as towers.

The Four Winds (Figure 5.13), OnaltıDokuz İstanbul Towers (Figure 5.14), Ataköy Blumar (Figure 5.15), Sea Pearl Ataköy (Figure 5.16), Yalı Ataköy (Figure 5.17), Yedi Mavi (Figure 5.18), Büyükyalı (Figure 5.19), and Pruva 34 (Figure 5.20) are high-rise constructions as towers along the waterfronts of İstanbul. Apart from hotels, office buildings, and residences, the Çamlıca Hill TV Radio Tower, 2nd Bridge of the Bosporus, and 3rd Bridge of the Bosporus were also conceptualized as

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[330] Published in the Official Gazette on March 16, 1982, Law No. 2634, Number: 17635, Distribution: 5, Vol: 21, p. 262.
[331] Elif İnce, December 29, 2014. İstanbul BİA Haber Merkezi. https://m.bianet.org/bianet/kent/161151-kentin-direnisi-park-otel-in-17-kati-yikildi#_ftn10. Accessed: January 1, 2020.

towers. We will now explore three of the projects mentioned above in detail along the waterfronts of İstanbul throughout the 2000s.

The Sea Pearl Ataköy[332] project, announced to the public in September 2008, consists of residence, trade, and tourism facilities. The construction of the tower complex started in 2014. First, the trees in the field were destroyed, and then excavation works started. Regarding the constructions on the waterfronts of Ataköy, the residents of the Ataköy Mansions filed a lawsuit against the Bakırköy Municipality and İstanbul Metropolitan Municipality in the 10th Administrative Court after Simpaş started construction activities.[333] As a result of the lawsuit, the construction of the Sea Pearl Ataköy project was suspended in June 2015. In 2017, it was announced in the media that the deliveries in the first phase of the project would begin.[334]

The Yedi Mavi project, designed by the famous Tabanlıoğlu Mimarlık architectural office in Turkey along the waterfronts of Zeytinburnu, was announced to the public in January 2011.[335] The TMMOB Chamber of Urban Planners-İstanbul Branch filed a lawsuit against the master plans for this project prepared by the Ministry of Environment and Urban Planning in September 2014. It would damage the "silhouette" of İstanbul with its height of 70 meters.[336] The project was introduced in September 2016 and was put up for sale, but lawsuits continue. Advertisements about the project on its website[337] as "Turkey's best waterfront project" also continue.

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[332] For details see http://www.seapearlatakoy.com. Accessed: August 4, 2020.
[333] http://www.radikal.com.tr/turkiye/atakoy-sahilinde-sinpas-insaati-da-muhurlendi-1214715/. Accessed: August 4, 2020.
[334] https://www.sozcu.com.tr/2017/emlak/seapearl-atakoyde-geri-sayim-basladi-1845923/. Accessed: August 4, 2020.
[335] İstanbul'un Mega Projeleri, Yedi Mavi, https://megaprojeleristanbul.com/#yedi-mavi. Accessed: August 4, 2020.
[336] *Cumhuriyet*. https://www.cumhuriyet.com.tr/haber/yikamadilar-emsal-oldu-454146. Accessed: August 4, 2020.
[337] The Yedi Mavi Project. https://www.yedimavi.com. Accessed: August 4, 2020.

The OnaltıDokuz İstanbul Towers (16/9),[338] located on the waterfronts of Zeytinburnu along three blocks, was announced to the public in February 2011 for the first time. The project area was based on 27,791 square meters of land within the functions of residence and tourism. After the construction was completed, a polemic developed between the Prime Minister and the owner of the project about the towers being too high.[339] In the same period, the İstanbul 4th Administrative Court issued a demolition decision for the towers in 2013.[340]

If we consider the waterfronts of the Bosporus, there is a line between the front view and the back view of the Bosporus. Constructions of four-lane highways along the waterfronts of İstanbul with stakes and concrete paving were realized during the mayorship of Bedrettin Dalan. The TEM highway and the related 2nd bridge over the Bosporus (*Fatih Sultan Mehmet Köprüsü*) were projected by the English company Freeman, Fox and Partners and the local company BOTEK (*Boğaziçi Teknik Müşavirlik A.Ş.*). The 2nd bridge was constructed by a consortium of local engineering companies (STFA), Ishikawajima Harima Heavy Industries Co. Ltd., Mitsubishi Heavy Industries Ltd., and Nippon Kokan K. K. between 1986 and 1988. The first automobile that crossed the 2nd bridge was Turgut Özal's in 1988. Furthermore, projections of the 3rd bridge (realized in 2016), a new bridge over the Haliç (*Haliç Metro Köprüsü*, realized in 2014), and highway tunnels (*Avrasya Tüneli*, realized in 2016) also have their roots between 1980 and 2019.

All of these constructions conceptualized as "towers" consumed massive amounts of iron and steel, cement, and energy in the hands of the construction sector through the capital-intensive urban metabolism of İstanbul. The most prominent common feature of all tower projects along the Marmara waterfronts mentioned in this section is that they have been the subject of intense debates and

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[338] http://www.onaltidokuzistanbul.com. Accessed: August 4, 2020.

[339] *Hürriyet*. https://www.hurriyet.com.tr/ekonomi/tras-etmedi-ben-de-kustum-23071418. https://www.hurriyet.com.tr/ekonomi/bilmiyorum-hicbir-sey-bilmiyorum-23075308. Accessed: August 4, 2020.

[340] *Hürriyet*. https://www.hurriyet.com.tr/ekonomi/16-9-yikim-23363771. Accessed: August 4, 2020.

lawsuits by neighborhood residents, chambers of professionals, and architects in each case. All of them have caused massive excavations and at some points fills, as well as the destruction of vegetation through the metabolic flows of iron and cement between 2002 and 2019. Apart from politicians and people in business, on the one hand, star architects took their places in these highly controversial projects. In contrast, their colleagues who favored the public interest took their places in the filing of lawsuits and informed the public. The next section explores the urban voids embedded in the second cycle of the metabolic flows of iron and cement derived from urban renewals. Mega projections appeared in the form of coastal land reclamations.

Figure 5.11 Park Hotel. *https://unutmaistanbul.sehir.edu.tr/tr/park-otel*

Figure 5.12 Gökkafes at the Waterfronts of the Bosporus in Beşiktaş Has Become a Symbol of the Neoliberal Moment in the Environmental History of İstanbul, 2016. *www.mimdap.org*

Figure 5.13 Four Winds, Kadıköy. *https://dosya.megaprojeleristanbul.com/fr-wnds-gztp/Screen_Shot_2015-03-12_at_15.26.16.png*

Figure 5.14 OnaltıDokuz İstanbul Towers along the Waterfronts of Zeytinburnu.
https://dosya.megaprojeleristanbul.com/169-kllr/169-kllr.06.jpg

Figure 5.15Ataköy Blumar. *https://dosya.megaprojeleristanbul.com/bkrky-blmr/resimler_k_galeri_rs617864.jpg*

Figure 5.16 Sea Pearl Ataköy. *https://dosya.megaprojeleristanbul.com/s-prl-tky/01.jpg*

Figure 5.17 Yalı Ataköy. *http://www.yaliatakoy.com*

Figure 5.18 Yedi Mavi along the Waterfronts of Zeytinburnu (Tabanlıoğlu Mimarlık). *https://www.yedimavi.com.tr*

Figure 5.19 Büyükyalı along the Waterfronts of Zeytinburnu. *https://www.teknovinc.com/buyukyali-insaat-projesi/*

Figure 5.20 Pruva 34 along the Waterfronts of Bakırköy. *http://doga.com.tr/Pruva-34*

5.2.2 Urban Voids

The control and management of solid wastes in metropolitan areas has become one of the most important problems in the 21st century. Construction and excavation wastes, which constitute an important part of urban solid wastes by approximately 13-30%, cause significant environmental risks if not controlled (Küçükakça and Akkaya 2014, 425). Repair and renovation of constructions and the demolition of various structures such as residences, bridges, roads, and wastes caused by renewals, destructions, and natural disasters are sources of urban debris through the metabolic flows of iron and cement. The urban debris mentioned here plays a large part in the production of urban voids via mega coastal land reclamations.

Recent scholarly work on 16 coastal megacities shows that 9.23 km^2 of land was reclaimed seaward in İstanbul between the mid-1980s and March 2017 (Sengupta et al. 2018, 231). This section asserts that the coastal land reclamation projects in the 21st century emphasize the typical spatial reference for exploring the

capital-intensive urban metabolism of İstanbul through waterfronts, like in many other coastal megacities. The coastal land reclamations are conceptualized in this chapter as urban voids, addressing the so-called unimaginative **"cut-and-paste" urban projects** (Swyngedouw et al. 2002) derived from the second cycle of the metabolic flows of iron and cement in İstanbul. Furthermore, between the 1980s and 1990s there was a radical shift from manufacturing to the finance and service sector in İstanbul (Aksoy 1996,11; Enlil 2011, 15). These factors all reflect the complex relations of remaking the waterfronts throughout the 2000s.

The current context of coastal land reclamations heavily depends on the complex material and labor processes that render the secondary transformation of urban debris derived from mega urban projections mixed with urban renewals related to the finance sector, such as the Ataşehir Finance Center located in inner İstanbul (TBMM Archive, see Appendix 1)[341] in the context of the Maltepe coastal land reclamation project. In the past, on the other hand, coastal land reclamations depended heavily on primary sources of nature like the stone quarries of the Princes Islands, human labor, and nourishment like wheat for the workers, which came from the periphery of İstanbul in the 19th century (see Chapter 2). Moreover, it was easier to follow these metabolic interactions. Concerning the 19th century, it was much easier to intervene in the urban agenda as well as to boldly display concerns (Sert, 2019). The desire for the production and control of nature, people, and daily life through human labor, technology, and capital flows are occurring in the 21st century via complex material processes in contrast to the 19th century. The 19th century may help to explain the very first insights into the same desire, but it was still heavily dependent on direct human and animal labor and intervention rather than complex material processes like in the 21st century.

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[341] Appendix 1. T.C. İç İşleri Bakanlığı, Mahalli İdareler Genel Müdürlüğü, Sayı: 14399437-010.09-23139, Konu: 7/18755 Esas no.lu yazılı soru önergesi, 15/08/2013. https://www2.tbmm.gov.tr/d24/7/7-18755sgc.pdf (accessed: 10.02.2020).

At this point, the rise of the modern city as a search for improvement has mainly been about attempting to enhance living conditions in urban areas (which refer to the equalization tendency of capitalism) by using development as a financial strategy (which inevitably leads to differentiation within urban space and living). The equalization and differentiation tendencies between different scales, shifting from body to urban and from national to regional, embedded in uneven development, are essential for the capitalist mode of production. A study on reclamation in Bombay[342] (Riding 2018) explores shifting from the archipelago to one island in the context of geopolitical conditions as one of the crucial examples of early modern coastal land reclamation between the 17th and 18th centuries.

Currently, the metabolic flow of iron and cement in the form of urban debris through land reclamations along waterfronts and seaward shows a rapid, widespread, mega-scale, and vulnerable character. According to the UNEP in 2014,[343] nearly three billion people live within 200 km of waterfront lines, and in the year 2025, this rate will have doubled. Waterfront cities are addressed as risky for the societies that live there by various scholars (Nicholls et al. 2008, Balica et al. 2012, Sengupta et al. 2018). Sengupta et al. (2018) mention that urban extensions along the waterfronts are dramatically visible in Asian cities like Jakarta (Jones 2002), Manila (Murakami et al. 2005), Hong Kong (Loo and Chow 2008), Shanghai (Zhang et al. 2011), and Mumbai (Moghadam and Helbich 2015). Global touristic megacities located on the waterfronts were under the effects of rapid urbanization and real estate value through the 1980s. These effects cause rising sea levels (Brown et al. 2013)[344] and biodiversity loss related to the nitrogen cycle in marine environments (Galloway et al. 2004). At the same time, the "eco" version of coastal land reclamation is also being explored, such as the Eko Atlantic Project of Lagos in Nigeria (Figure 5.21).

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[342] Bombay was officially renamed Mumbai in 1995.
[343] UNEP (2014), Assessing Global Land Use: Balancing Consumption with Sustainable Supply. A Report of the Working Group on Land and Soils of the International Resource Panel.
[344] For a scholarly work considering rising sea levels in Turkey, see Mehmet Karaca and Robert J. Nicholls (2008).

Coastal land expansion is not a new phenomenon. Waterfronts have been accessible locations considering transportation compared to hills or rugged terrain throughout history. Real estate developments choose waterfronts for investments in ports, buildings, and airports. According to Sengupta et al. (2018), apart from their being accessible locations, socio-economic conditions, state and institutional power, technology, culture, and population rates have been the other crucial factors for the growing rates of coastal land reclamations in global megacities.

Considering the metabolic interactions between the waterfronts of İstanbul and the inner parts of the city landscape, as Cronon did for Chicago when he explored the web of networks that modeled city/country and nature/culture dualities and boundaries, we can reach the historical production of nature as space through the urbanization process of İstanbul. On this point, Lefebvre, Castells, Smith, Cronon, and Harvey offer the theory of the production of space by focusing on the reproduction of socio-natural relations, which constitute the hidden processes of capitalist society. The surface ecology of the globe,[345] or the geographic landscape, is where all these processes take place. Smith essentially claims that the capitalist mode of production follows a particular organization of space that needs *accumulation*. Smith's fundamental insights can be taken further in the context of waterfront cities regarding coastal land reclamations. We can ask how coastal land reclamation areas influence city life and connect to the urban metabolism of İstanbul embedded in the metabolic flows of iron and cement, particularly in 2000s. However, the process of coastal land reclamation is historically loaded.

Concerning İstanbul, recent discoveries have shown that the settlement at Yenikapı, in the historic core of the city, dates from as early as the Neolithic period (6400-5800 BC). The city's landscape, with its coastal settlements, is of a kind that has encouraged land expansion throughout its history. Land expansion, or the

[345] Harvey states that the idea that "we call 'natural', at least as far as the surface ecology of the globe and its atmosphere is concerned, has been significantly modified by human action" (Harvey 1996, 119) According to Marsh (2003), Thomas (1956), Goudie (2018), and Harvey (1996), nature is constructed and located in a particular time and place.

reproduction of nature as space along and beyond waterfronts, has always been a stage for a close relationship between the water and waste disposal. Waste disposal can take the form of debris and harbor dredging, industrial by-products, expropriations, and demolitions or domestic disposals to be changed through the urban metabolism of İstanbul. While Bury (1923, 69-70) explained İstanbul's land expansions in Roman times as a "temporary expedient of filling up to sea… Outside Constantinian Wall," like a planned and purposefully designed landscape, Nowland (1961, 68), Hudson (2010, 1), and Erkal (2011, 81) have captured land expansions or coastal land reclamations as occurring accidentally, without designed intents, describing the "continual dumping of refuse in the water," the "unintentional result of waste disposal," and "debris of fires and earthquakes," respectively. It is dubious whether the meaning of land expansion should be seen as design experience on purpose or not in the 21st century. Both of these are questionable if we merely look at the issue from the perspective of design. The phenomenon that started with the filling of coastal inlets, like harbors, has continued throughout history, with examples of ancient quays and embankments, as well the *Bostan* (Vlanga), Dolmabahçe and Çırağan Palaces, the Sirkeci Railroad Station, and more. İstanbul's urban transformation across the waterfronts symbolizes radical excavation and fill attempts, which are the current scale of the city's transformation in the last two decades. On the other hand, as Bezmez (2008) underlines, the effects of neoliberal economic change after the 1980s and of privatization processes can be observed in the actions of Bedreddin Dalan, mayor of İstanbul from 1984 to 1989, particularly in the coastal road project, with many highways and landfills constructed along İstanbul's waterfronts. Moreover, it is significant that these landfills have been defined as "empty green spaces on the coasts" by Bezmez (2008).

Burak and Kucukakca (2015) further describe the concerns about the coastal ecosystem under the current intensive land reclamation projections along the coast of the Sea of Marmara. These scholars explain that the area of reclaimed coastal land on the northern shoreline of the Sea of Marmara had reached 80% as of 2014. Apart from the Maltepe, Yenikapı, and Kadıköy Coastal Land Reclamations, the Çubuklu-

Kanlıca Coastal Road, Üsküdar Square Project, Emirgan Coastal Road Expansion Project, Kabataş Seagull Transportation Hub, Tuzla Coastal Land Reclamation Project, Tuzla Marin Project, Haydarpaşa Port, Ataport (Sea Port), and Beykoz Marin Project are essential fill projects along the waterfronts of İstanbul.

The recreational sites mainly address coastal land reclamation areas in the 2000s. Moreover, the functions of coastal land reclamation areas in the city and their future are debatable in terms of architectural projects, urban design, and ecosystem resilience. Furthermore, if we look at how they were built and which materials were used to create new lands in the 21st century, we find different processes in comparison to 19th century land reclamations (see Chapter 2.2.2). The following sections explore the coastal reclamation projects of Maltepe, Yenikapı, and Kadıköy, which have been outstanding parts of the metabolic flows of iron and cement in the form of urban debris through the 2000s.

Figure 5.21 The "Eco" Version of Coastal Land Reclamation in Lagos, Nigeria.
https://www.ekoatlantic.com

5.2.2.1 Maltepe coastal land reclamation project

The İstanbul Metropolitan Municipality exercised the Maltepe Coastal Land Reclamation Project (Figure 5.22) on 1,200,000 square meters of land along the northern waterfronts of the Sea of Marmara between 2011 and 2014. It cost 201,780,000 Turkish liras[346] and was operated by AKM Yapı and Cengiz Construction Company.[347] Kadir Topbaş, who was the mayor of the İstanbul Metropolitan Municipality, explained the project area as being 3.5 kilometers in length and four hundred widths seaward, mostly reserved for green areas. Furthermore, he added that the project would include car parks, tulip gardens, plentiful sports areas, playgrounds, fountains, cultural activity areas, observation areas, an amphitheater, picnic areas, a helicopter pad, a science park, and some commercial facilities for the arrangement of the most significant recreation area of Europe.[348] Meanwhile, there were debates and questions about the mega projection and vision of coastal land reclamation along the waterfronts of Maltepe, which had been previously filled for coastal road constructions (first according to Prost's 1939-1945 plan; see Chapter 3.2.1). On February 20, 2013, Dr. Celal Dinçer, who was the deputy of İstanbul (2011-2015), posed essential parliamentary questions to the Grand National Assembly of Turkey (TBMM) about the coastal land reclamation of Maltepe. In his fourth question, Dinçer asked:[349]

> What is the quality of the material filled in the coastal land reclamation area? Is this material suitable for filling areas? Is the claim that inappropriate excavation soil of the Financial Center in Ataşehir has been poured in this area?

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[346] İstanbul'un Mega Projeleri. https://megaprojeleristanbul.com/#maltepe-dolgu-alani-duzenleme-uygulama-projesi. Accessed: May 9, 2017. Arkitera. http://www.arkitera.com/haber/16659/avrupa-nin-en-buyuk-etkinlik-alani. Accessed: May 9, 2017.
[347] İstanbul'un Mega Projeleri. http://megaprojeleristanbul.com/#maltepe-dolgu-alani-duzenleme-uygulama-projesi. Accessed: May 9, 2017.
[348] Arkitera. http://www.arkitera.com/haber/16659/avrupa-nin-en-buyuk-etkinlik-alani. Accessed: May 9, 2017.
[349] Appendix 1. To the Chairman of the Grand National Assembly of Turkey, No: 10161, Subject: 7/18755 Docket No. of Written Question, 20.02.2013 by Dr. Celal Dinçer. https://www2.tbmm.gov.tr/d24/7/7-18755s.pdf (accessed 10.02.2020).

Apart from the concerns about the quality and strength of the excavation material in the above quotation, he also asked about the responsibilities concerning the hazardous conditions of a coastal land reclamation area in front of an earlier landfill in Maltepe in his ninth question:[350]

> Who will be responsible for future damages and losses in a project with high environmental, earthquake, and other natural and urban risks that may arise with the creation of a landfill of this size in front of a previously filled area?

The metabolic flows of iron and cement that appeared in the form of the excavation materials of the Ataşehir Finance Center[351] reveal the material flows for structuring the Maltepe fill area according to the response to the Chairman of the Grand National Assembly of Turkey by the Minister in the TBMM Archive (see Appendix 2).[352] The response puts forward the claim that excavation material obtained from Ataşehir met the criteria for landfill.[353] As supporting arguments about the quality of the fill material, we find explanations about the unqualified materials for landfill in the same response document:

> …clays and marly grounds saturated with swamp or water, materials such as coal, combustion [materials], including internal combustion, the soil with snow, debris, materials that will crumble easily with water, frosted and frozen soils, [and] more than 20% gypsum will not be found.

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[350] Ibid.

[351] On March 14, 2009, a decision was made to plan the residential area on the north of the Anatolian Highway as a financial center. Then the decision called the İstanbul International Financial Center Strategy and Action Plan was published in the Official Gazette on October 2, 2009, and entered into force. Source: Wikipedia. https://tr.wikipedia.org/wiki/İstanbul_Finans_Merkezi. Accessed: August 4, 2020. According to the statement made by the Ministry of Environment and Urban Planning, the goal of this project was to build a larger financial center than the existing financial centers in New York, London, and Dubai and to make İstanbul an international financial center. Source: Arkitera. https://www.arkitera.com/haber/turkiyenin-ilk-finans-merkezi-icin-start-verildi/. Accessed: August 4, 2020.

[352] Appendix 2: T.C. İç İşleri Bakanlığı, Mahalli İdareler Genel Müdürlüğü, Sayı: 14399437-010.09-23139, Konu: 7/18755 Esas no.lu yazılı soru önergesine ilişkin CEVAP, 15/08/2013. https://www2.tbmm.gov.tr/d24/7/7-18755sgc.pdf (accessed: 10.02.2020).

[353] T.C. İç İşleri Bakanlığı, Mahalli İdareler Genel Müdürlüğü, Sayı: 14399437-010.09-23139, Konu: 7/18755 Esas no.lu yazılı soru önergesine ilişkin CEVAP, 15/08/2013. https://www2.tbmm.gov.tr/d24/7/7-18755sgc.pdf (accessed: 10.02.2020).

Before the concerns and debates about the socio-natural agenda of material flows were reflected in the TBMM, the Chamber of Architects sued the Master and Implementation Plan of the Maltepe Coastal Land Reclamation Area on September 21, 2012, for failing to consider the urban scale, plans, particular laws and codes, and earthquakes. To summarize, the Chamber of Architects argued that:[354]

-the plan subject to the case was sloppy and hastily prepared,

-even though the area is in the first-degree earthquake zone, these features were not considered,

-as the green areas and parks in the region were opened to high-density construction, it was inconsistent to make the claim of green areas,

-the plan paved the way for construction in the filling area,

-the construction of an anchor started without obtaining opinions from the relevant institutions,

-the evacuation of people in the landfill area in the event of an earthquake had not been planned,

-an Environmental Impact Assessment Report was not received,

-the plan was contrary to the 1/100,000 scaled İstanbul Environmental Plan of 2009, Environmental Law No. 2872, Construction Law No. 3194, Law on Protection of Cultural and Natural Assets No. 2821, Coastal Law No. 3621, and the public good.

According to the explanations of the Ministry of Environment and Urban Planning, they had received the relevant approvals from the competent authority, which was the Ministry of Environment and Urban Planning.[355] It is stated in the report that the authority to make and approve the master plans was given to the metropolitan municipality and the relevant district municipalities. Furthermore, it was asserted that the earthquake hazards of the Sea of Marmara and risk analyses were considered in the project area. It was further noted that, according to Decision

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[354] Expert Report to the Ninth Administrative Court, Presidency of the Turkish Republic, File Number: 2012/1740 Source: Archive of the Chamber of Architects, pp. 1-4.

[355] Expert Report to the Ninth Administrative Court, Presidency of the Turkish Republic, File Number: 2012/1740. Source: Archive of the Chamber of Architects, pp. 4-6.

No. 1382, dated 04.08.2011, an Environmental Impact Assessment (ÇED - *Çevresel Etki Değerlendirmesi*) was not necessary for this project.[356] Against the argument that the opinions of the relevant institutions were not obtained, the report mentions some institutions. It is claimed that there are no internationally important wetlands within the planning area in the write-up of the General Directorate of Nature Conservation and National Parks (*Doğa Koruma ve Milli Parklar Genel Müdürlüğü*) affiliated with the Ministry of Forestry and Water Affairs (*Orman ve Su İşleri Bakanlığı*), so the master plan related to the Maltepe Coastal Land Reclamation Area is valid.

In short, despite all the discussions, lawsuits, debates, and concerns expressed by professionals and members of parliament, the Maltepe Coastal Land Reclamation Project was realized. The metabolic flows of iron and cement that appeared in the form of excavation materials of the Ataşehir Finance Center rendered the material flows for the construction of the Maltepe Coastal Land Reclamation Area. In the context of urban political ecology, criticisms about the potential risks and questions about responsibilities related to the metabolic relations of the projection along the waterfronts of Maltepe are essential for this section, as are the responses to these critical stances. Content analysis of the TBMM archives and the archive of the Chamber of Architects first shows that the complex material flows and labor processes embedded in the secondary transformation of urban debris were derived from mega urban projections and massive urban renewals. Secondly, the project was materialized regardless of the environmental impacts and hazardous conditions for earthquakes and the ecosystem. Moreover, the extent to which coastal land reclamation projections favor the public interest is debatable. All of these questions are related to the finance sector and render the capital-intensive urban metabolism, which emphasizes the announcement of freeing scientific principles, professional

[356] Expert Report to the Ninth Administrative Court, Presidency of the Turkish Republic, File Number: 2012/1740. Source: Archive of the Chamber of Architects, p. 6.

knowledge, and human and labor content from the production of nature as waterfronts of İstanbul in the 21st century.

Figure 5.22 Maltepe Coastal Land Reclamation Project, 2013.
http://www.radikal.com.tr/turkiye/maltepedeki-dolgu-tamamlanmak-uzere-1133949/

5.2.2.2 Yenikapı coastal land reclamation project

The Yenikapı Coastal Land Reclamation Project (Figure 5.23) was exercised by the Ministry of Environment and City Spatial Planning Head Office and the İstanbul Metropolitan Municipality on 518,000 square meters of land (total project area: 715,000) along the northern waterfronts of the Sea of Marmara between 2012 and 2015. It cost thirty-one million Turkish liras[357] and was operated by the Nuhoğlu and Nas Construction Company.[358] The project type was defined as an arrangement of

[357] Elif İnce, January 16, 2013, "Yenikapı'daki Dolguya Dava," http://www.radikal.com.tr/turkiye/yenikapidaki-dolguya-dava-1117069/. Accessed: May 9, 2018.
[358] İstanbul'un Mega Projeleri. http://megaprojeleristanbul.com/#yenikapi-dolgu-alani. Accessed: May 9, 2018.

“a square for one million people” and as a recreation area. Furthermore, the land reclamation area was excavated in November of 2015 for a biological water treatment facility.[359] Accordingly, it is essential to underline that moving the urban debris from Dolmabahçe (the European side) to the filling area in Yenikapı instead of the waste disposal area in Şile (Anatolian side) provided approximately 146,250,000 TL of rent. Moving the urban debris from the Ataşehir Finance Center instead of Şile to the Maltepe fill area provided 248,000,000 TL of rent (Küçükakça and Akkaya 2014, 427). Proper for the neoliberal era, the finance sector fills in for socio-natural relations.

Delegated legislations (KHK - *Kanun Hükmünde Kararnameler*) in Turkey are essential in various areas besides fundamentally concerning the metabolic flows of iron and cement embedded in coastal land reclamations during the 2000s. Delegated legislation No. 644 in 2012 was used for the materialization of the Yenikapı Coastal Land Reclamation Project. The 1/5000 scale Recreation and Square Master Plan and 1/1000 scale Recreation and Square Implementation Plan were prepared for İstanbul’s Fatih-Yenikapı region following the opinion of the relevant institutions and organizations under Article 7 of Law No. 3621[360] with

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[359] Yapı Sektörünün Haber Portalı, November 23, 2015, “Yenikapı’daki Dolgu Alan Yeniden Kazılıyor,” http://www.yapi.com.tr/haberler/yenikapidaki-dolgu-alan-yeniden-kaziliyor_138312.html. Accessed: May 9, 2018.

[360] Coastal Law No. 3621 of 1990, Article 7: “In cases where the public interest requires, land can be obtained by filling and drying by taking into account the geological features in the sea, lakes, and streams by the decision of the implementation master plan ... Infrastructure facilities for land, sea, and air transportation can only be made according to Article 7 of the Law. In this article, the structures and facilities specified in Article 13 of this Regulation decide the implementation master plan, due to the lack of more suitable alternatives or the coastal area’s shortage only when the public interest requires (RG-26/7 / 2014-29072). In the scope of places of worship, green area arrangements, 3% of the area reserved for the same purpose, constructed with removable elements not exceeding a height of 5.50 m, the land can be gained by coastal land reclamation and drying for organizing fairs, picnics, entertainment areas including restaurants, casinos, tea gardens, exhibition units, and administrative buildings.” Translated by the author.

delegated legislation No. 644, approved by the Ministry of Environment and Urban Planning, dated 27.09.2012 and numbered 95059.[361]

Other necessary data reveal that the Chamber of Architects, Chamber of City and Regional Planners, and Chamber of Civil Engineering sued the project known as "the square for one million people" in Yenikapı, which materialized via coastal land reclamation processes in 2013.[362] They claimed that the natural morphology of the historical peninsula was under danger, that coastal land reclamation would destroy the collective archeological and historical heritage, and that it would increase the traffic load of the historical peninsula, which should rather be purified of vehicle traffic. According to a monthly publication called *Mimarlara Mektup* in 2012, the İstanbul Metropolitan Municipality (İBB) tendered the filling operations without an approved project or even a plan along the waterfronts of Maltepe and Yenikapı.[363] Then, in 2016, the Master Plan of the Yenikapı Coastal Land Reclamation Project prepared by the Ministry of Environment and Urban Planning was canceled as a result of the case. The first significant meeting held in the Yenikapı Coastal Land Reclamation Area after an attempted coup in Turkey in July of 2016 was essential considering its function. The demonstration on August 7, 2016, called the "Democracy and Martyrs Meeting," was attended by five million people according to social media data and news.[364] The coastal land reclamation area of Yenikapı as a vast urban void has also been home to a wastewater treatment plant.

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[361] Report of the Reconstruction and Public Works Committee of the İstanbul Metropolitan Municipality Council dated 14/11/2018. https://www.ibb.istanbul/CouncilDecision/RefIdIndex?refId=52478. Accessed: August 4, 2020.

[362] Elif İnce, January 16, 2013, "Yenikapı'daki Dolguya Dava" http://www.radikal.com.tr/turkiye/yenikapidaki-dolguya-dava-1117069/. Accessed: May 9, 2018.

[363] *Mimarlara Mektup* 163, TMMOB Chamber of Architects-İstanbul Metropolitan City Branch Publication (September 2012), 1.

[364] *Hürriyet*, "Yenikapı'daki Mitinge Kaç Milyon Kişi Katıldı?" http://www.hurriyet.com.tr/buyuk-bulusma-haydi-yenikapi-mitingine-40183980. Accessed: May 9, 2018.

The report of the Reconstruction and Public Works Committee of the İstanbul Metropolitan Municipality Council dated 14/11/2018[365] asserts that the opinions of institutions like the General Staff (Directorate of Operations), Ministry of Finance (General Directorate of National Real Estate), Ministry of Culture and Tourism (General Directorate of Investment and Enterprises), Ministry of Transport, Maritime Affairs, and Communications (General Directorate of Infrastructure Investments), General Directorate of Protection of Natural Assets, İstanbul Governorship (Provincial Directorate of Food, Agriculture, and Livestock and Provincial Directorate of Environment and Urbanization), and the Fatih Municipality were obtained for the Yenikapı fill area. Additionally, as per Article 17 of the Environmental Impact Assessment Regulation, the decision that environmental impact assessment (ÇED) was not required was made on 09.08.2011.

In short, this blend of coastal roads, recreation facilities, water treatment plants, and square-making agenda has materialized as coastal land reclamations under social reinforcement. However, there are some economic and social reasons underlying the established filling applications, and there are some environmental, legal, and economic contradictions in the applications (Küçükakça 2014). Chambers have taken legal action and, together with scholarly works, have informed the public about the problems in reclaiming the coastal land of Yenikapı. In the Yenikapı example, it would not be wrong to say that excavation logistics (Küçükakça and Akkaya 2014, 427) together with political interests are the basic motivations.

[365] Report of the Reconstruction and Public Works Committee of the İstanbul Metropolitan Municipality Council dated 14/11/2018.
https://www.ibb.istanbul/CouncilDecision/RefIdIndex?refId=52478 Accessed: August 4, 2020.

Figure 5.23 The Yenikapı Coastal Land Reclamation Project (Photo: Doğukan Bilgin).
https://xxi.com.tr/i/tasarim-yonetiminde-sekulerlesme-sorunsali-kamusal-alanlar-ve-imamoglu

5.2.2.3 Kadıköy coastal land reclamation project

The İstanbul Metropolitan Municipality exercised the Kadıköy Coastal Land Reclamation Project (Figure 5.24) on 230,000 square meters of land (the first and second steps of the project area) along the northern part of the Sea of Marmara and explained this to the public in 2009 as the Kadıköy Square Project and Coastal Land Reclamation Area of Moda. Its proposal stage continues. The project owner is TÜMAŞ and the subcontractor is an urban and landscape design company named On Tasarım.[366] In 2013, the Chamber of Architects, Chamber of City and Regional Planners, and United Transportation Workers Union filed a case regarding the 1/5000 Master Plan of Kadıköy (1/5000 scale), which contained both the coastal land reclamation project and the transformation of Haydarpaşa Terminal. The Council of

[366] Facebook account of Kadıköy Kent Dayanışması. https://www.facebook.com/KadikoyKentDayanismasi/photos/pcb.1558593827742117/1558593194408847/?type=1&theater. Accessed: May 9, 2018.

the İstanbul Metropolitan Municipality changed some details in the 1/5000 Master Plan of Kadıköy in February 2014, but the main structure was preserved.[367]

A neighborhood solidarity group named *Kadıköy Kent Dayanışması*[368] explained to the public that they worried about any land reclamation projects along the waterfronts of Kadıköy that would destroy the ecological equilibrium of the neighborhood and that they were awaiting a detailed explanation from the İstanbul Metropolitan Municipality in 2015.[369] Moreover, they claimed that the third stage of the project would include commercial facilities and a marina project on the land reclamation area, and that filling exercises would pose vulnerability for the landscape. Kadir Topbaş introduced the Kadıköy Square Project, including the Kadıköy coastal and reclamation area, in March 2014.[370] "Public" spaces have power for creating spatial, economic, and ecological shifts while redefining the cultural values and daily routines of citizens and changing the ways they look at open areas and green spaces. We can ask how coastal land reclamation areas influence urban life and connect with the market, which is embedded in the transformation of the inner city in the context of urban renewals. Furthermore, in searching for the relationship between nature and society, these projects render a fruitful urban metabolism. The geographer and urbanist Mathew Gandy, for example, describes how the production of urban nature in New York was associated with the following in his book, *Concrete and Clay: Reworking Nature in New York City* (Gandy 2002, 5-6):

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[367] Kent ve Demiryolu, March 3, 2014. http://kentvedemiryolu.com/icerik.php?id=1031. Accessed: May 9, 2018.
[368] Facebook account of Kadıköy Kent Dayanışması. https://tr-tr.facebook.com/KadikoyKentDayanismasi/. Accessed: May 9, 2018.
[369]Facebook account of Kadıköy Kent Dayanışması. https://www.facebook.com/KadikoyKentDayanismasi/posts/1559389624329204. Accessed: May 9, 2017.
[370] Ecem Sariçayır, March 3, 2014, "Başkan Topbaş'tan Kadıköy'e Müjdeler Olsun," Arkitera, https://www.arkitera.com/haber/baskan-topbastan-kadikoye-mujdeler-olsun/. Accessed: August 4, 2020.

> …the transformation of capital, changing role of the state, metropolitan cultures of nature, and wider shifts in the social and political complexion of city life simultaneously.

Briefly, a coastal land reclamation project works similarly to a dam project, the urban transformation of a slum district, or an urban infrastructure system aimed at managing nature, people, and daily life through human labor, technology, and capital flows within historical, geographical, and material processes. The contexts of the Maltepe, Yenikapı, and Kadıköy waterfronts are considered in this dissertation. They represent examples of metabolized socio-natures through metabolic flows of iron and cement embedded in urban debris obtained from former urban solids in the 21st century in İstanbul. According to archival content analysis, these flows are embedded in the blend of massive urban renewals, the interests of the finance sector, delegated legislations, mega projections, and political interests in the form of coastal land reclamation areas in İstanbul, Turkey.

Figure 5.24 Kadıköy Coastal Land Reclamation Project.
https://www.facebook.com/KadikoyKentDayanismasi/posts/1559389624329204

It is seen in Chapter 5 that we have been facing various socio-natural problems that affect the urban ecosystem of İstanbul. On the one hand, the production and control of nature, people, daily life through human labor, technology, and capital flows within historical, geographical, and **complex material processes** can be seen in the 21st century. In contrast, the 19th century may help explain the very first insights into the same desire, but still heavily dependent on direct human and animal labor and intervention. In summary, between 1980 and 2019, the neoliberal ideology of

nature, changing labor processes, hazardous effects of earthquakes, massive urban renewals, technology, privatization, and environmental concerns on both local and global scales embedded in the metabolic flows of iron and cement were all essential.

Through the **financially driven metabolized socio-natures** and **unimaginative space-making agenda** with its mega visions and projections, increasing distrust among the public, uprisings, urban solidarity movements, short-term solutions, environmental degradations, uneven urban environments, outbreaks, respiratory allergic diseases, occupational accidents, and the loss of lives in the construction sector have been the central images of İstanbul throughout the last twenty years.

CHAPTER 6

CONCLUSION

6.1 Conclusion

The environmental crises of dense coastal urban areas in a socio-natural manner are rooted in the 19th century and accelerated in the 21st century. Searching the production of nature through waterfronts is growing in importance in terms of understanding the metabolisms of coastal cities. Cities in the 19th century were the main metabolic mediums for both widespread deaths among laboring populations within filthy environments and the enjoyment of the techno-managerial aspects of the modern capitalist urban landscapes. İstanbul is one of these cities.

Emergence:

In İstanbul, on the one hand, one could become lost in the marvels of its greatness, with the countless ships along the waterfronts, the crowds of a great city, the intense blue of the Bosporus, the many beautiful species of fish and birds along the waterfronts, walking along the Grande Rue de Pera or Büyükdere Promenade, enjoying tap water and gas lighting in the nights and sea baths in summer, with green environments on top of beautiful hills and days spent in recreational spots, with a developing economy with foreign relations and the first capitalist pioneers. On the other hand, one could also become lost in the chaotic and shocking environment of an overcrowded city with the city's first boom in the 1840s, frequent unavoidable great fires, dead-end streets, burned sites on every corner, the sewage of neighborhoods mingling with fresh water, dirty streets, declines in hygienic conditions, cholera epidemics with the loss of many lives, inadequate access to tap water, the decline of the economy with the result of de-industrialization, and the unfeeling isolation of the people of the palace and its environments from the rest of the city. These two sides of the same coin may be seen simultaneously in many other

cities throughout the world between 1839 and 1923. The latter socio-natural landscapes on one side of this coin are often forgotten in efforts to exercise urban theory regarding the period that this chapter tries to problematize and understand.

On the contrary, the "Westernized" developments have generally been emphasized to date, not the uneven geographies of the environment. At this point, the perspective of urban political ecology and its profound concern for who wins and who loses in the uneven landscapes of particular socio-natural relationships can help us. For instance, some fancy parts of the city enjoyed tap water, sea baths, street lighting at night, highway connections, clean environments, and public parks ("regularizations"), while other parts where more ordinary people lived had no such access. Some parts of the city were chosen for new attempts of "regularization" based on the imperial living locations (Dolmabahçe and Yıldız Palace). The privileged position of the people of the palace and bureaucrats in various regards and the efforts to sustain the power of the palace and its environment define the power relations that contributed to the metabolic flows and networks. We cannot talk here about a literal concern for "public good" and "right to the city" in the modern sense.

However, Çelik argues that the Tanzimat reforms with centralized control and regularization efforts were different from the previous decentralized Ottoman system. They distributed responsibility for public health and education into the hands of various autonomous communities, such as ethnic groups (Çelik 1984, 58). As shown in this study, regularizations of the waterfronts were neither totally for the sake of the public good nor for the obsession with Westernization. On the one hand, the İstanbul peninsula was under the constant pressure of great fires, but other areas enjoyed *kargir* buildings and wide streets. In the former case, the people who died of cholera could not be strictly explained as perishing in "epidemics" because the strict rules of the "regularization" mindset of the West and science would not reach the poor parts of the city until the pressure of health risks struck the luckier majority of the palace environment.

Being under the umbrella of the context of "Westernization" prevents us from the critical point of criticizing the real economic and socio-natural conditions of the

city and its citizens as well as their intricate relationships with the urban landscape and concomitant transformations of waterfronts.

At that particular moment in history, İstanbul was a stage for the emergence of a new urban metabolism. The conflict between labor-intensive metabolism and capital-intensive industrially disciplined metabolism has been explored. İstanbul has been the subject of many different studies concerning the late 19th century and early 20th century over the past fifty years in urban studies. Transformations of waterfronts are generally grasped in architectural analysis as a physical reshaping process. On the contrary, this thesis has aimed to explore the metabolic flows of land and water embedded in the urban waterfront transformation of İstanbul through an urban political ecology lens with a social extent in the 19th century. The city and its waterfront cannot be grasped as separate entities (culture versus nature). Their evolutions were influenced and shaped by each other. Furthermore, this thesis has aimed to contribute to and enhance the interdisciplinary approach of urban studies for the late Ottoman period of İstanbul.

Chapter 2 addressed the metabolic flows of land and water as the cause and effect of the very first insights of foreign capital investments. These insights encompassed privatization programs, health problems, and the population boom along the waterfronts with the growth of capitalism in the 19th century. Concerning the urban political ecology context, it can be said that the first production of nature as space by urbanizing nature in the capitalist mode of production under uneven conditions has been seen in this chapter. At the same time, despite many fruitful developments, İstanbul still depended on the labor-intensive, small-scale, and rural characteristics of its urban metabolism on a practical and daily level. Summer palaces and residences, sea baths, and water companies with their architectural programs were the first similar interventions of the 21st century along the waterfronts of İstanbul, as well as the following urban transformations via urban design throughout the inner city.

In summary, Chapter 2 concludes that the urban metabolism of İstanbul resembles the very early insights of the 21st century metabolism in that it could not

function properly, it created and supported an uneven geography and society, and the socio-natural conditions hurt some ecosystems within the city, with results including the acceleration of conditions of disease for some parts of the city and some people. Furthermore, the shifting socio-natural conditions in the 19th and early 20th centuries had a significant influence on the city's changing metabolism. The first environmental problems and environmental awareness can both be seen in İstanbul in this period. The visions of and projections on the urban landscape of İstanbul, particularly its waterfronts, were based on discourses of "public good" and premises of "public health" for the first time in the city's history, even if they were implemented unevenly. In this study, it has been argued that waterfronts, the re-distribution of natural resources, and cataclysmic events were subjects of the preliminary insights of the uneven production of nature as space and the shifting urban metabolism of İstanbul in the 19th century. We can conclude that the waterfront landscapes in İstanbul, and especially along the Bosporus, acted as significant catalysts for understanding the shifting urban metabolism of the city and defined a metabolic route, a deep structure, and an enduring context of the city for examining other periods, too. The imaginary projections and basic contradictory visions of capitalist Turkey between 1923 and 1950 were embodied in İstanbul's urban landscape via the metabolic flows of urban voids embedded in the agenda of Prost's plans and reports. Coastal roads and boulevards, woods-parks-gardens, public squares, and *plaj*s were the basic projections of this agenda in Chapter 3.

Republic:

> *… Changing the face of İstanbul, transforming the pearl of nature into a civilized, regular and beautiful shape by man's hand and science.* [371]

[371] Lütfi Kırdar. *Harp Yıllarında İstanbul'daki Faaliyetler*. İstanbul Belediye Matbaası, 1945. Translated into English by the author.

The Republican regime as a political project in its early period essentially formulated a vision trying to calm the class conflict, just as the atmosphere of industrial paternalism had tried to do in the European context, between 1920 and 1950. Tekeli (2001, 76) mentions that, contrary to the problems of the 19th century's growing population and the vivid transformation of the urban landscape in İstanbul, the early 20th century's problems entailed the shrinking context of the city until 1936. In this shrinking context, the years between 1936 and 1950 represent a different turn and a political project: the "Turkish Republic," with the help of the operations of Henri Prost and Lütfi Kırdar with a blend of technical expertise and scientific discipline concerning the city of İstanbul. This different turn is emphasized in this chapter as the scientific ideology of nature and the tension between public interest and the interests of the newly born bourgeois class.

In Chapter 3, we can also observe the developing industrial urban economy, as well as the creation of bourgeois and working classes in the city center, in contrast to the previous chapter's context, in which rural areas and agricultural economy were still important. We can examine the modern technology that is used as a modern will for controlling nature in this period, too. Unlike in the previous chapter, in which the idea of "regularization" of waterfronts was the basic motive, the vision of "designing" and the total "planning" of an urban landscape, including its waterfronts, via extensive expropriations and demolitions for the sake of creating "public spaces" like public terraces, urban parks, sports areas, and *plaj*s has emerged in this chapter as a totally new context for the citizens of the city of İstanbul.

We can argue that the idea of "zoning," like zoning for industry in Prost's plan, in the context of environmental problems and the "rational order" concomitant with the "scientific ideology" used in these new political projections more or less guaranteed the fragmentary character of future urban landscapes. We can also observe the legitimization of the division of human from nature via the efforts to combine them, and its materialization through road-, park-, square-, and *plaj*-making agendas along the waterfronts by Prost's plans and reports. The commodifying of nature (spring water) as space (private water-bottling plants) with the help of

developing transportation and technology resulted in uneven access to fresh water. With the increasing railways and motorways in the urban landscape of İstanbul, water transportation began to lose its dominance, and this situation accelerated the transformation of waterfronts. Expropriations, destructions, national solidarity, hygiene, sterilized urban landscapes, spatial fix, and beautification are the most essential contexts in Chapter 3.

Henri Prost has been seen as a significant architect-urbanist regarding the transformation of the city of İstanbul in the 20th century due to the subsequent imitations and inspirations for the urban landscape in the 21st century (Bilsel and Pinon 2010, Akpınar 2003). In spite of his existing fame, Akpınar (2003) claims that planners and architects in Turkey actually underestimate the importance of Prost in the context of the urbanization of İstanbul, generally focusing on Prime Minister Adnan Menderes's projects as well as his radically and socially unjust implementations. Bilsel (2010) and Akpınar (2003) further argue that Prost's plans and reports on İstanbul are still influencing the basic principles of the urban landscape of the Bosporus and the historical peninsula. In this section, our aim is to understand how these ecologically driven visions and socially advanced imaginaries of Henri Prost, materialized with the creation of urban voids as public spaces, could come to be remembered for socially unjust and ecologically frustrated characteristics for the future landscapes of İstanbul in the context of urban political ecology.

We will focus first on the bourgeois ideology of nature and then on the spatial fix through the metabolic flows of urban voids in İstanbul. If we consider the current conditions of İstanbul, Prost does seem to have influenced the urbanization processes of Menderes's projections and İstanbul's problematic future environment in many ways. However, he was also inspired by landscape projects, visions of park-cities and park-systems, and the arrangement of vegetation in cities such as Var in the French Riviera or small Moroccan towns (Cohen 2010, 49-73), which can be easily accepted as ecologically driven imaginations. It seems that he carried ecological and social sensitivity properly for his age's tendencies of modern urban planning visions. It was no coincidence that Prost joined the Urban and Rural Hygiene Division of the

Musee Social in France in 1908, and it seems that he was influenced by those ideas. Moreover, we can certainly observe the ecologically driven visions mentioned above for the urban landscape of İstanbul, too. The idea and context of "*spatial fix*"[372] is used in this dissertation for examining visions and projections of the capitalist nation-state, interrelated with uneven production of nature as space, as taken from Harvey (2001, 25):

> …capitalism has to fix space (in immoveable structures of transport and communication nets, as well as in built environments of factories, roads, houses, water supplies, and other physical infrastructures) in order to overcome space (achieve a liberty of movement through low transport and communication costs). This leads to one of the central contradictions of capital: that it has to build a fixed space (or "landscape") necessary for its own functioning at a certain point in its history only to have to destroy that space (and devalue much of the capital invested therein) at a later point in order to make way for a new "spatial fix" (openings for fresh accumulation in new spaces and territories) at a later point in its history.

Prost's plans, reports, and letters between 1936 and 1950 in this context in light of the above quotation deserve special attention. In keeping with the atmosphere of the 20th century, Prost's Master Plan for İstanbul (1937) was mainly concentrated on transportation, hygiene, and aesthetics. These concepts were significantly important for the transformation of the entire urban fabric of İstanbul as well as its waterfronts since the 20th century. The renewal of the city as planned and proposed by Prost between 1936 and 1950 was mainly focused on expropriation for the sake of public interest as well as "sterilized" and "hygienic" urban voids embedded in the road-, *plaj*-, square-, and park-making agendas in İstanbul. Moreover, Bilsel (2011, 107)

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[372] David Harvey, "Globalization and the 'Spatial Fix'," *Geographische revue* 2 (2001): 25. The term was first directly used in Harvey's article entitled "The Spatial Fix: Hegel, von Thunen and Marx" (1981). It was later deployed as a fundamental concept in *The Limits to Capital* (1982) and in a summary essay on "The Geopolitics of Capitalism" (1985). These earlier essays would all appear in a subsequent volume entitled *Spaces of Capital: Towards a Critical Geography* (2001), published by Edinburgh University Press and Routledge (USA).

states that the dominant concept was "*espaces libres*" (free space), used by Prost particularly for signifying public open spaces, including boulevards, parks, sports areas, and public terraces, for attempts of transformation within the Master Plan for İstanbul's urban landscape. Prost contended that the former urban pattern of the historical part of the city was not rational, but was rather based on random form, creating unhealthy urban landscapes. This argumentation paralleled that of administrative personnel, particularly Lütfi Kırdar, as we explained in this chapter with other examples. He proposed a "rational order" with expropriation by the government for structuring streets, lots, parks, squares, residential buildings, and parcels rather than something randomly formed through history based on massive human labor and cataclysmic events (fires, earthquakes, etc.). Moreover, the so-called rational order embedded in the scientific ideology of nature was not only about the physical form of the urban landscape; it was also connected to the capitalist production, technical expertise, and control embedded in the new synthesis of material and human flows.

This capitalist urban economy of the nation-state depended on the construction of new railroads, roads, and industries. This new intricate political project for urban economy was a stage for the creation of the Turkish bourgeoisie and its habitation and recreation agenda on the one hand, while, on the other hand, it also shaped the Turkish laboring class living and working in the urban center. A society of different economic classes with massive numbers and their socio-natural environments would be realized after the implementations of the Democrat Party (DP) government in İstanbul and more generally in Turkey, as explained in detail in Chapter 4. In 1951, the Revision Commission of Prost's plans and reports, composed of representatives from universities and various public agents, was established by the municipal council of the DP.[373] This commission was expected to clarify whether Prost's visions and

[373] Kemal Ahmet Aru (İTÜ), Mehmet Ali Handan (Güzel Sanatlar Akademisi), Behçet Ünsal (Teknik Okul), Mukbil Gökdoğan (Türk Yüksek Mühendisleri Birliği), Muhittin Güven (Türk Yüksek Mimarlar Birliği), Cevat Erbel, and Mithat Yenen (İller Bankası) were the members of the Revision

projections could be realized under the socio-economic circumstances of the time or not. Although Prost and the character of his plans could not be the only reasons for the delay, the Revision Commission was trying to make a decision about Prost himself and the future of İstanbul in light of his plans. Prost would describe himself as being accused of the failure of the implementations of the Master Plan for İstanbul by the DP government in a daily newspaper.[374] He seemed to attract attention to the absence of executive legislations and the unfair characteristics of the implementations through expropriations. The Revision Commission found Prost's plans fragmented, with the squares and boulevards being essentially impossible in consequence of itheir ignorance of the character of the topography of İstanbul (Suher 2001,16, Gül 2015, 169). However, the most essential imaginations and principles of the plan were those about the waterfronts of İstanbul. The Report on the Explanation of the Master Plan for İstanbul prepared by Henri Prost in 1937 and its direct projections for the waterfronts are summarized here (Özler 2007, 84-85):

*Extend the port of Galata to the Fine Arts Academy via a motorway connection.

*Construct an international modern station and a ferry dock in Yenikapı that would have created a connection between Atatürk Boulevard and the Europe-Asia trains at Haydarpaşa.

*Project coastal land reclamation related to the aforementioned international station.

*Propose a certain function for the Sirkeci station as being used only for a suburban train network with freight trains connected with the small port of Sarayburnu.

*Design an archeological park between Sarayburnu and Küçük Ayasofya at the shore of the Sea of Marmara.

Commission. For a detailed explanation of the commission, see Murat Gül, Modern İstanbul'un Doğuşu (Sel Yayıncılık, 2015), 168-169.

[374] "Changing the shape of a city like İstanbul is being discussed. However, the necessary law doesn't exist. It is necessary to respond to those whose houses and lands will be expropriated. This point has never been taken into account... The plan was made for 50 years, and the municipality wants it realized in 5 years. We are implementing the plan, we are opening a square, some green space, then you look and one day a building has been placed here…" Cumhuriyet, 19 December 1950. Translated into English by the author.

*Build many coastal roads on the Asian Side along both the waterfronts of the Bosporus (Üsküdar-Beykoz) and the Sea of Marmara (Kadıköy-Pendik).

With relevance to Prost's proposed projects for the hills on the two sides of the Bosporus, the urban models of "garden city," "park settlement," and "satellite settlements" were especially significant (Bilsel 2010, 139). In order to protect the waterfronts of the Bosporus from invasion by heavy industrial plants and settlements (warehouses, coal yards, fuel tanks), he proposed a new zone for industry on the west side of Yedikule (Bilsel 2010, 138-139). The Yenikapı area has been a significant geographical reference for centuries for the urban landscape of İstanbul. In the 21st century, a mega-scale coastal land reclamation area (discussed in detail in Chapter 5) and the Marmaray project, for a metro system under the Bosporus, are located at this point in İstanbul. However, in Prost's Master Plan for İstanbul, Yenikapı was proposed as part of a space-making agenda for a modern civilized society's imaginary vision, with which a large harbor complex, an international railway station, and the best reference point for Atatürk Boulevard could be materialized. For an industrial harbor Prost proposed the Haydarpaşa and Pendik-Tuzla region be substituted for the Haliç Harbor. Furthermore, he suggested that the development of railway stations on both sides (Asia and Europe) and a connection via a bridge over the Bosporus were "*a national issue*" (Akpınar 2003, 75). For other essential examples of "national issues" and the socio-natural transformation of cities, we quote Kaika (2006, 295):

> Swyngedouw (1999, 2005) gives an excellent analysis of the relationship between dam constructions and nation building in Franco's Spain. The dams built under Franco's national hydrological plan were expected to unify the country by solving its "national geographical problem." Along a similar vein, in his beautifully crafted *Concrete and Clay*, Gandy (2002) contends that the newly completed Kensico dam was designed to inspire "civic pride in the citizens of New York." The Marathon dam was also described as "a beautiful construction, unique world-wide" and an "achievement of which the Greek nation should be proud" (Koumparelis 1989, 75).

It is quite interesting to observe a similar vision holding that the construction of a dam, bridge, or railway helped to build a nation and motivate civic pride in contexts for various countries including Greece, Spain, and Turkey in the 20th century.

Concerning the urban political ecology perspective, the visions of Prost's plans and their order of implementation is significant here. The main focus was embodied with priority given to the creation of road networks both along waterfronts and on the historical peninsula. Road networks and their combination with open spaces as public green areas seem radically different from the former urban pattern, which was embodied as an organic whole with house and garden until the Republican Period of İstanbul.

The urban dwellers mainly had to feed themselves from *bostan*s and gardens, and those were expropriated with this new political projection and the shifting ideology of nature. On the other hand, technological progress like the installation of sewage pipes underground for waste disposal and fresh water carriage, needs previously met by toilets in the gardens and by *saka*s, respectively, allowed the implementation of multi-story modern apartments and large axes of roads for easy installation of pipes in the 1930s. Thus, concerning the urban metabolism of İstanbul, the modern house would not need a garden after this period for the metabolic flows of waste.

To summarize, we can explain that the former mutual relationship between house and garden embodied by organic, small-scale urban patterns and narrow, dead-end streets was radically changed after the implementation of big boulevards like Atatürk Boulevard, coastal roads, linear road axes, plot plans, and big open green areas. That is to say, the close relations with green were totally altered by the new political agenda of the Republican Period of Turkey with various shareholders. It needs to be emphasized here that Prost had been limited to being responsible and answerable only to the mayor or the president of the young developing capitalist country, in contrast to the public interest-driven visions of the modern movement in that moment. The rethinking of the notion of a modern society and relationship

between society and nature as if it would be without class conflict[375] in the historical-geographical context of Turkey and particularly for İstanbul in that period is essential here. Fredric Jameson's approach, which problematizes the paradigm of modernity regarding the usage of capitalism and modernity interchangeably, is remarkable (Jameson, 2008). Tekeli (2001, 71) further strengthens this argument by explaining that while the project of modernity has an egalitarian character with a universality argument for citizens, on the other hand, it is continuously developing inequality via the capitalist relations of economy. This situation, which we have questioned above, implies the basic contradictory vision of capitalism and its relational nation-state citizenship as well as human/nature duality for the context of İstanbul, too. These arguments clearly emphasize why Prost's socially and ecologically driven projects for İstanbul were connected to and remembered for the socially unjust and ecologically frustrated future landscapes of İstanbul. On the other hand, Goldbek (2001, 135) argues that Prost's plans can be seen as a kind of extension of the former plans of the 19th century, like Moltke's (1839) and Bouvard's (1908). At this point, as support for this argument, we want to mention that Prost certainly presented his projects "as a continuation of the urban operations of the Late Ottoman period" (Bilsel 2010, 128). "Human/nature" duality as well as "east/west" is important for understanding the period between 1923 and 1950.

In the context of this dissertation, we also try to evaluate the novel entitled *A Mind at Peace* (*Huzur* in Turkish)[376] in relation to metabolic interactions through the waterfronts of İstanbul. Whereas İstanbul and especially the Bosporus were previously a stage for a vivid ecosystem, the uneven landscapes of İstanbul can be observed in this novel. Conflicts and incongruences between the Bosporus and old İstanbul (or the inner city) are essential. In the novel, Mümtaz and Nuran spend their

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[375] Akpınar (2003, 25), citing Şerif Mardin, explained three ideological aims of the young republic focusing on "citizenship," "Turkish language," and "the notion of a modern society without class conflict" for the sake of the creation of a totally new society.
[376] Ahmet Hamdi Tanpınar, *A Mind at Peace*, 1949, trans. from the Turkish by Erdağ Göknar (Archipelago Books, 2008).

days mostly along the Bosporus. Boyacıköy, Büyükdere, Anadolu Hisarı, Kanlıca, Emirgan, Beylerbeyi, Arnavutköy, Yeniköy, and Beykoz are mentioned as locations in the book. In the novel, as examples of the lively metabolism of İstanbul, readers encounter a group of dolphins weaving their paths through the sea (p. 209), outings for bluefish (*lüfer*) as the most alluring amusements on the straits of the Bosporus (p. 226), rows of bluefish and rowboats (p. 244), Bosporus reveries at the Bebek inlet and the pleasure grounds of Göksu or the "Sweetwaters of Asia" (p. 227), a passing flock of swallows (p. 243), mastic and Judas trees (p. 243), pleasure trips by boat through the Bosporus, the Bosporus waters being clean and healthy enough in the 1930s for swimming (p. 155), and red mullet in the southern mouth of the Bosporus (p. 179). On the other hand, when Nuran's desire to explore İstanbul leads them to make a trip throughout Topkapı Palace and the Cerrahpaşa neighborhood of the historical peninsula, they come across the filthy environment of İstanbul.[377]

The author seems to tell readers that the automobile environment of the city or the "Westernized atmosphere" or projection is the reason for the filthy parts and the damaged environment of the city, which looks unreal or like a "motion picture set" to them. This is one of the typical ways of seeing the urban problems (and Westernization) of İstanbul and their causes as well as results in the first half of the 20th century.[378] The uneven urban landscapes of the 1930s can be explored through Mümtaz's mind in the novel regarding inadequate infrastructures for sewage and

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[377] "On this August day, these areas of İstanbul were worn down by filth, dust, and heat. The piquancy of ruins, the fatigue augmented by heat, an array of sick and exhausted faces and the physiological collapse overwhelmed them. The city's inhabitants bore an uncanny resemblance to the city itself. Tired glances or bodies complemented houses squeezed into an area of four or five square yards, their boards bruised purple, their terra-cotta shingles broken, and their corpuses listing alee; had Mümtaz and Nuran not recognized this as the city of their birth, they might have taken it for a motion picture set" (*A Mind at Peace*, Ahmet Hamdi Tanpınar, [1949] 2008, 216)

[378] "Like the private automobiles and luxury cars brushing and bumping the throngs on the street, occasionally an old white-and-sesame-hued manse appeared like an astonishing remnant of bygone wealth or of the luxury of life's bloom beside dilapidated, semicollapsed houses gnawed by neglect down to the window-box geraniums. Most houses were unpainted. From open, bare windows poked heads of desolation incongruent with these relics of the past" (ibid., 216).

limited access to fresh water in some parts of İstanbul.[379] Luxurious and beautiful environments belong to the Ottoman past and remind Mümtaz and Nuran of old days in the novel, while filthy parts of the city symbolize the "Westernized" attempt and its results.

In short, we argue that the legitimization of **the uneven production of nature** and the deepening of **the division between human and nature** are the typical characteristics of the **new political project** in the geographical context of the nation-state considering the urban political ecology context of İstanbul **between 1923 and 1950**. This political project saw urban and rural landscapes as well as human geographies as pristine and open environments to be designed and planned by the mechanisms of universalization and externalization of nature according to the needs of the young republic. This vision changed the human-nature relationship significantly. As an obvious and decided example of the *tabula rasa* or "clean slate" tendency of the young republic, the capital city of Ankara, as studied by Sargın and Savaş (2013, 81), could be given. İstanbul, with its historically loaded urban fabric, could not be selected as easily as Ankara for being designed and planned like a *tabula rasa* landscape in the beginning of the Republican era. At this point, we can argue that the historically loaded and socio-naturally intricate geography of İstanbul embodied the uneven production of nature as space much more easily and obviously than in other cities while exemplifying the basic contradictory vision of human/nature duality in capitalism with its historical co-operator: the nation-state. As wars attempted to design, control, discipline, and monitor people and capital, foreign capital investments and nation-state interventions in İstanbul also began to **authorize, purify, design, plan, and accelerate the division of human from non-human by commodifying nature as space**, which was embodied along the waterfronts of the city. Needless to say, all of these attempts had a continuity

[379] "…Mümtaz thought of the poor living in houses of mud brick and tin below Taksim Square, on one side of the hill that descended down to Fındıklı, around Unkapanı. Streets in which dirty water and sewage flowed openly, where children of blind chance grew and matured till they transferred their primary haunts to dry fountain basins, sidewalks, or underpasses" (ibid., 338).

throughout the historic-geographical context of İstanbul. The visions of the design, plan, and production of nature as space via technology and expertise for a healthy laboring population in the name of the nation were the primary motives for remaking the waterfronts of İstanbul in Prost's plans and reports in the 20th century. Kırdar (1945), the mayor and governor of the city, argued for the necessity of reshaping the urban landscape in this period. Concerning this transformation from the pearl of nature to a civilized one, this study argues that the capitalist urbanization praxis produced historically specific forms of uneven production of nature in the context of İstanbul through the "legitimization" of unevenness and division of human from nature via particular efforts to combine them through metabolic flows of urban voids as coastal roads and boulevards, parks, gardens, woods, public squares, and *plaj*s in the first half of the 20th century.

Motorized / Mobile:

> *"This old man possessed an undeniable tragic grandeur; but it is not so clear that he ever achieved the self-awareness that is supposed to go with that grandeur. Replying to The Power Broker, Moses appealed plaintively to us all: Am I not the man who blotted out the Valley of Ashes and gave mankind beauty in its place? It is true, and we owe him homage for it. And yet, he did not really wipe out the ashes, only moved them to another site. For the ashes are part of us, no matter how straight and smooth we make our beaches and freeways, no matter how fast we drive-or are driven-no matter how far out on Long Island we go."*[380]

The emergence of modern industrial capitalist strategy and its socio-natural agenda operating throughout the **motorized urban metabolism** of İstanbul—more or less within the borders of bourgeois democracy—are exercised between **1950 and 1980 in Chapter 4**. This chapter tried to exercise the urban metabolism of İstanbul and the formation of waterfronts both as a reason for and a consequence of the

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[380] Marshall Berman, *All That Is Solid Melts Into Air: The Experience of Modernity* (Penguin Books, 1982), 312.

industrial capitalist mode of production. The import substitution industrialization strategy (*ithal ikameci sanayileşme stratejisi*) was used as a model for articulating the world capitalist system for developing countries like Turkey between 1960 and 1980.

In January 1970, a newspaper[381] stated that, according to the Turkish Statistics Institute, one in 46 families lived in one room, about 13,000 families lived without a bath, more than 38,000 families lived without a kitchen, and about 85,000 families lived without water. While an apartment in the Maçka neighborhood could be sold for one million, as seen in an advertisement in the same newspaper on the very same date, about 8,000 families had shared bathrooms in İstanbul. Nearly twenty years before, in İstanbul in the 1950s, the desire to establish a middle class and consumer culture was institutionalized, pursued through the formula of making "one millionaire per neighborhood" as well as becoming a "Little America."[382] The outcomes of this desire brought about inadequate conditions in terms of access to basic urban infrastructures as well as the right of dwelling. This formula mainly derived from American and Western European town planning and urban landscaping models and it could be seen in Menderes's implementations. It created a shift in the former vision and projection between 1923 and 1950, as explained in the previous chapter, partially materialized with Prost's reports and plans. The vision of creating one millionaire per neighborhood meant the very creation of *gecekondu*s and uneven environmental conditions. After the 1950s, the *gecekondu*s were the basic motive for land expansion and the development of the city. The first such squatter settlements emerged along the area of the Kazlıçeşme-Zeytinburnu industrial district located at the waterfronts of the Sea of Marmara, while the first "legal" *gecekondu* settlements appeared after Menderes's demolitions via municipal order. In May 1970, the

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[381] From the newspaper *Yeni Gazete* on 3 January 1970, cited in the journal *Arkitekt* 8, no. 1 (1970): 17.

[382] Celal Bayar used this sentence in the electoral campaign of 1957: "Right now we are trying to follow the American developmental steps. We hope that this blessed country would be the little America after 30 years with its 50 million population." See: Feroz Ahmad, *Turkish Experiment in Democracy, 1950-1975*. C. Hurst for the Royal Institute of International Affairs, 1977.

newspaper *Cumhuriyet* published a speech by Vefa Poyraz, Governor of İstanbul between 1966 and 1973, about water shortages in summer times. Poyraz stated that "only sixty percent of water demand can be met" and that İstanbul could face water shortages in the summer like in previous periods. Work on the project of the Alibeyköy Dam[383] was offered as a solution for the short-term vision of water needs explained by Poyraz. It was not a coincidence that in October 1970, a cholera outbreak was seen in İstanbul after many years and took thirteen days to be controlled.[384] In the remainder of this section, we shall try to understand how these conditions described above became so intense via examples of content analysis.

New York with the implementations of Robert Moses—very similar to those in İstanbul in the 1950s—is the best example for that period in many ways, as Marshall Berman states in his important book entitled *All That Is Solid Melts into Air* (1982, 289): "If New York is a forest of symbols, it is a forest where axes and bulldozers are always at work, and great works constantly crashing down."[385] Particularly between 1950 and 1960, İstanbul showed similar characteristics with New York, such as massive urban demolitions (Berman 1982, 289),[386] the construction of new boulevards such as Vatan-Millet-Ordu,[387] coastal roads (Figure 6.1) and a new highway (E5), increasing real estate speculation with housing projects for the middle class, accelerating numbers of motor vehicles, and the great expansion of lands outside the municipal borders with Menderes's implementations. Comparing the urban landscapes of İstanbul and New York, different actors played

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[383] Alibeyköy Dam is located on the European side and Ömerli Dam on the Anatolian side. They became operational in 1972 and are still the most important water resources of İstanbul.
[384] Adalet Partisi Merkez Yayınları No: 50 (1972), "Millet Hizmetinde Adalet Partisi 1965-1971," p. 12.
[385] Throughout the book, Berman tries to show the dialectical interplay between the unfolding modernization of the environment, particularly the urban environment, and the development of modernist art and thought.
[386] Massive urban demolitions were started in 1956 and 7289 buildings were demolished—more than a tenth of the city and much more than in the period of Lütfi Kırdar's mayorship. Furthermore, this included historical buildings.
[387] Vatan was the largest avenue of Turkey in this period at 60 m wide. Vatan means "Motherland," Millet "Nation," and Ordu "Army."

the same roles in similar ways in different geographical contexts through the metabolic flows of oil. Much is known about Moses's metamorphoses from the late 1930s to 1950s. We can see in detail Moses's implementations of social goals during the 1930s, and how that same vision was abandoned in the 1950s.[388] It is particularly interesting here to see that while the roles were transforming from "public enterprise to private" in similar moments of history in different geographies, the actor changed in İstanbul (Menderes), while it did not change in New York (Moses).

For a brief example, while in the 1930s public works such as bridges, highways (Figure 6.2), urban parks, dams, and beaches were constructed[389] in these two different contexts, in the 1950s massive destructions, automobile-oriented landscape designs, industrial buildings, and privatized forms of public space were also seen in both İstanbul and New York. Furthermore, Berman (1982, 310) explains the transformation of the urban formation from public to private by stating that this "split between the modern spirit and the modernized environment was a primary source of anguish and reflection in the later 1950s." In the socio-natural context of İstanbul, 1950 is a turning point from the modern spirit of the Young Republican Period and its social goals to the modernized urban environment of Menderes's implementations, symbolizing uneven socio-natural relations that produced nature as space through the waterfronts.

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[388] Marshall Berman (1982, 299-300, 308) explains this as follows: "The metamorphoses of Moses in the 1930s need to be seen in the light of a great transformation in the meaning of construction itself. During the Great Depression, as private business and industry collapsed, and mass unemployment and desperation increased, construction was transformed from a private into a public enterprise and into a serious and urgent public imperative. Virtually everything serious that was built in the 1930s—bridges, parks, tunnels, dams—was built with federal money, under the auspices of the great New Deal agencies, the CWA, PWA, CCC, FSA, TYA. These projects were planned around complex and well-articulated social goals… Projects dramatized the promise of a glorious future just emerging over the horizon, a new day not merely for a privileged few but for the people as a whole… By the 1950s [Moses] was no longer building in accord with his own visions; rather, he was fitting enormous blocks into a pre-existing pattern of national reconstruction and social integration that he had not made and could not have substantially changed."

[389] In the context of New York in the 1930s, "hiring a staff of first-rate planners and engineers (mostly from off the unemployment lines), [Moses] mobilized a labor army of 80,000 men and went to work with a great crash program to regenerate the city's 1700 parks (even more rundown at the nadir of the Depression than they are today) and create hundreds of new ones, plus hundreds of playgrounds and several zoos" (Berman, 1982, 300).

In short, the vision that emphasized creating one millionaire per neighborhood via massive demolitions, the creation of wide boulevards and highways, increasing migration, and a population boom concomitant with squatter settlements without adequate infrastructure was realized in unison with uneven conditions of urban landscapes and increasingly hard conditions in daily life for wide segments of the public. This situation also created its own promises for the working class after 1961 by pushing political parties to make commitments regarding the very basic needs for society in the elections at both local and national scales. Here we have an opportunity to observe and imagine the bitterness of the situation from the promises of the political parties in the elections from their posters, which focus on seemingly basic needs (water) and mainly imply infrastructural developments.

These trends of consumer culture, daily life, and privatizations in Turkey were also criticized in famous novels. Sevgi Sosyal (1936-1976), one of the most important Turkish female novelists, emphasized the increasing consumerism, the influence of American culture in language, shopping malls, and, in short, the transformation of daily culture throughout the 1960s in her novel entitled *Yenişehir'de Bir Öğle Vakti*[390] (*Noontime in Yenişehir*). Not only were the lines of waterfronts left to industrial areas and the creation of a new periphery, but the other periphery of the inner city, the wastelands, were home for the dwellers of *gecekondu*s, too.

Latife Tekin, another important successful female Turkish novelist, wrote about the momentous story of transforming garbage hills to *gecekondu*s in İstanbul in the 1960s in relation to the socio-natural problems of İstanbul in her novel, *Berji Kristin: Tales from the Garbage Hills* (Figure 6.3). This dissertation claims that Latife Tekin's impressive work, written in 1984, was the first example of a novel concerning the perspective of urban political ecology in a squatter settlement in İstanbul. This novel shows us the very metabolism of İstanbul concerning garbage

[390] Sevgi Soysal (2010), *Yenişehir'de Bir Öğle Vakti*, İletişim Yayınları.

hills chosen as space for habitation by *gecekondu* dwellers who migrated from rural regions of the country with both their cultural baggage and health and environmental conditions. After 1953, throwing garbage away into the sea was forbidden in İstanbul, and so trash was collected within landfills, which would later create landscapes of hills (Halkalı and Ümraniye). Furthermore, according to the preface written for this novel by John Berger[391] (1996, 6), until Tekin's work, no such squatter settlements (*gecekondu*s) had entered literature worldwide.

In the novel, the garbage hill is named "Flower Hill," emphasizing the contrasting relations between the name and the unhealthy environment. Tekin (1996) explains the absence of fresh water infrastructure in Flower Hill, with dwellers carrying water from the wells on top of distant hills.[392] Another important aspect of the book is that the direct public health relationship between epidemics and water sources in İstanbul in the 1960s can be seen in the pages of the novel.[393] Furthermore, we find the typical images of water pumps and long lines of slum dwellers waiting for fresh water in 1960s İstanbul[394] (Figure 6.4). Not only the novels but also Turkish cinema and painters (Figure 6.5 and Figure 6.6) had a tendency to mention squatter settlements, unevenness, and the unhealthy and difficult conditions of the working classes in this period. The Turkish movie entitled *Karanlıkta Uyananlar* (*Those Awakening in the Dark*), written by Vedat Türkali and directed by Ertem Göreç

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[391] John Berger, "Preface," in *Berji Kristin: Tales from the Garbage Hills*, Latife Tekin, 6-8 (Marion Boyars, London, New York, 1996).

[392] "… The whole community went to the stone and prayed for water. Metal bowls and little tins were filled with water and lined up round the stone to show the saint what water was. They explained the difficulties of carrying water from wells on top of faraway hills in tins dangling from both ends of a yoke slung across their backs" (Tekin 1996, 27).

[393] "…As the girls on strike sat writing heartbreaking poems in their scrapbooks adorned with film stars, a strange epidemic from the drinking water spread over Flower Hill. Red beak-like sores appeared on every face, big and little, and soon the sores had covered the whole body" (Tekin 1996, 59).

[394] Regarding the possession of water, Tekin (1996, 60) wrote: "…Combined with Güllü Baba's insistence that a man's wits required unpolluted water, her warnings shook the whole community. The panic-stricken people took up buckets and began to wait by far-off water pumps. But the owners chained up the pumps and put them under lock and key."

(1965), has been accepted as the first political movie of workers (Atılgan 2015, 655) in Turkey in the 1960s.

Trying to grasp urban metabolism as a whole is a very difficult undertaking. In this context, we can follow the insights of the socio-natural relationship among production, market conditions, spatial arrangements of waterfronts, and public health and environmental conditions. The production of iron and its market conditions within the context of the reshaping process of motorized urban metabolism were a threat for public health. The urban metabolism was fluctuating in the very material conditions of the city, such as the increasing iron shortage in 1970 and the iron sales on the black market (*karaborsa*). The conflict between tradesmen and increasing numbers of building contractors had a role in both the results of and reasons for the reshaping of waterfronts, concerning the black market and the increasing need for structural iron together with declining production. The ironmongers of the *Perşembe Pazarı* ("Thursday Market") on the waterfronts of the Haliç complained about black market conditions in a newspaper.[395] At the same time, Melih Köknel, the secretary of the İstanbul branch of the Chamber of Civil Engineers (1970), warned the public about the future dangers of construction using recycled old ship plates and scrap rails from the black-market environment as structural iron for buildings of lower strength (Erol Gönenç, *Akşam Gazetesi*, 16 May 1970).

The waterfronts of İstanbul gained particular attention in a 1973 report prepared by the Chamber of Architects (*TMMOB-Mimarlar Odası*) for an elaboration of the fiftieth year of the Turkish Republic. In the section of the report (1973, 24) entitled "Waterfronts Should be Made Public & Tourism for Society," it criticizes the tourism agenda and vision, arguing that it only cares about private property rights and it seeks to increase usage under the service of foreign corporations along the waterfronts. At the same time, it implies an essential

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[395] "Ironmongers described themselves as the 'stepchildren of the government,' unable to obtain the necessary iron from factories and forced to buy from contractors at inflated prices. That, in turn, forced them to sell at inflated prices themselves. The government was blamed for creating these conditions" (*Son Saat Gazetesi*, Erol Özkan, 14 May 1970). Translated into English by the author.

environmental concern and an early warning to the government about the tourism agenda, which was generally accepted as a particular vision after 1980 regarding urban landscapes. The report argues that the projection of tourism for capital accumulation through the waterfronts would result in deforestation, land clearance, and 49 or 99 years of property permissions. Moreover, it pays particular attention to the forested waterfront area between Şile and İğneada, from the north side of the Asian lands to the European lands of İstanbul, which would be destroyed for the sake of "tourism" (Chamber of Architects Report, 1973, 24).

This increasing awareness in various ways, but especially regarding public health concerns via the environmental awareness of an industrial city, was possible in this milieu in the context of Turkey. For example, tobacco exports were very important for the economy in 1960. The tobacco storehouses located along the Bosporus and their waste disposal into the sea were topics of hot debate in the 1960s (Arısoy 1964, 139). At the same time, modern recognition of environmental issues around the world throughout the 1970s also had resonance in Turkey. For instance, in 1977, a congress entitled "Congress of End to Air Pollution" (*Hava Kirliliğine Son Kongresi*) was held in Ankara, open to the public. The congress report stressed that air pollution is a result of the creation of a consumer society, as well as unplanned population growth and city expansion.[396] This example emphasizes the increasing environmental concerns and relations with the urbanized environment of nature in the 1970s in the local context. In June 1972, the United Nations Conference on the Human Environment, also known as the Stockholm Conference, addressed marine pollution. In İstanbul, environmental problems related to the waterfronts began to be visible in the 1970s (Yavuz and Keleş 1983). In 1973, the mayors of the 44 municipalities located on the waterfronts of the Sea of Marmara came together to discuss the sea's marine pollution and took action with a union named "Union of the Marmara and Bosporus Municipalities" (*Marmara ve Boğazlar Belediyeler Birliği*)

[396] Fatih Üstün, Hava Kirliliğine Son Kongresi Raporu (1977), 5.

(Yavuz and Keleş 1983, 100-101). It can be said that the main objective of the union was the total integration of as well as a holistic approach to the design and implementations for waste disposal plans and infrastructural developments (Tortop 1974, 193-195). Municipalism for society and a new understanding of municipal works found a stage in the 1970s, too. The Environment Protection and Greening Association held a "Symposium on the Problems of the Bosporus and its Surroundings" in 1973. Although the first association for nature protection and environmental problems was established in 1955 as the "Nature Protection Society of Turkey" (*Türkiye Tabiatını Koruma Derneği*) with the increasing awareness worldwide, the environmental movement particularly started to rise in the 1960s.

Important women such as Jane Jacobs (1916-2006), with *The Death and Life of Great American Cities*[397] (1961), and Rachel Carson, with *Silent Spring*[398] (1962), had momentous impacts on the movement for environmental and urban rights as well as urban studies worldwide. Jane Jacobs elaborated that cities have complex social and economic interest, but they are designed only for the sake of flows of traffic with massive highway constructions. Moreover, she defended walking through cities and reminded citizens of the importance of streets (Jacobs 1961, 7).[399]

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[397] "… her work changed the way American planners thought about cities. It is widely read today by modern urban planners, promoting sidewalks, parks, mixed use, residential density, local economies and walkability." Source: Home editors "Jane Jacbos Walks," Preservation Sacramento. http://www.preservationsacramento.org/jane-jacobs/. Accessed 20 April 2020.

[398] "The history books say that the American environmental movement began on 16 June 1962, the date of the New Yorker magazine that contained the first of three excerpts from Rachel Carson's new book, Silent Spring. Just five weeks later, before the book was even out, a 22 July headline in the New York Times declared, "'Silent Spring' Is Now Noisy Summer." Source: Mark Stoll, "Introduction." In Virtual Exhibitions, 2012, no.1. Rachel Carson's *Silent Spring*, a Book that Changed the World. Environment Society Portal. http://www.environmentandsociety.org/exhibitions/rachel-carsons-silent-spring/introduction Accessed 20 April 2020.

[399] "The simple needs of automobiles are more easily understood and satisfied than the complex needs of cities, and a growing number of planners and designers have come to believe that if they can only solve the problems of traffic, they will thereby have solved the major problem of cities. Cities have much more intricate economic and social concerns than automobile traffic. How can you know what to try with traffic until you know how the city itself works, and what else it needs to do with its streets? You can't. It may be that we have become so feckless as a people that we no longer care how things do work, but only what kind of quick, easy outer impression they give" (Jacobs 1961, 7).

The main areas of progress and important emerging conditions can be summarized here through the lens of urban political ecology. First, the vision of creating one millionaire per neighborhood and the metabolic flows of oil and coal gave way to the *gecekondu* settlements, reshaping the process of waterfronts as the new periphery of the city and increasing socio-naturally uneven conditions. Second, the 1961 constitution, which redesigned the relation between socio-natures of cities and the state with the character of bourgeois democracy in Turkey, is preeminent. Third, the flourishing of the industrial bourgeoisie and the working class via the transition from agricultural capitalism to industrial capitalism is also essential. Finally, the declining popularity of the USA and its relations, as well as increasing socio-natural struggles throughout the 1970s, are also significant. In this context, in this section we can follow the insights of the socio-natural relationship among production, market conditions, and the spatial arrangements of waterfronts within the traces of the metabolic flows of oil and coal. On the one hand garbage hills, water shortages, long lines for tap water, a cholera outbreak (after many years without), industrial plants, small manufacturers, massive destructions, the cutting down of trees, and land clearance and on the other hand automobile-oriented landscapes, tourism attempts, high-carbon societies, consumer lifestyles, and the creation of millionaires all reflect the uneven production of nature through the reshaping of waterfronts as the new periphery of İstanbul within the motorized urban metabolism. Making coasts the new periphery meant that waterfronts lost dominance regarding their place and metabolic interactions in the daily life of İstanbulites in a more direct manner, making the metabolic interactions between them occur in a more sophisticated way.

Various ecologically driven social movements emerged onto the socio-political scene after the 1960s. The US war in Vietnam, the Western way of life, consumerism, alternative communal/collective lifestyles, student movements, women's rights, civil rights, and urban rights, together with uneven social conditions concomitant with ecological degradation, paved the way for an era of protest and increased awareness all over the world (Figure 6.7). The US Environmental

Protection Agency (EPA) was established together with the first "Earth Day" in 1970, and DDT was banned in 1972. In Turkey, the Democrat Party (DP) period introduced the country to the international market and foreign investments, a shift that would be fully realized after 1980 and would come with consequences. In a 2019 report, the level of oil-based CO_2 emissions was stated to have increased dramatically in Turkey—by five times—between 1960 and 1980 (Table 6.1). On the other hand, in the period between 1950 and 1980, the peak of global oil discovery and usage together with the fact that the West no longer had a monopoly on future fossil fuel sources had dramatic effects on urban metabolism and the socio-political environment through both oil crises and the "blessings" of high-carbon societies. The assets of mobile life and high-carbon societies were enjoyed in this period via various highways, ring roads, bridges, coastal roads, and automobile environments, and consumerist culture was typical in this period. Moreover, limited precautions were taken by governments in Western contexts, such as the sale of gas being controlled by coupons, restrictions on fueling and using private cars on Sundays, limited broadcasting hours for TV channels (Borasi and Zardini 2007, 54-55), or requirements that thermostats be lowered by 3 to 5 degrees. On the other hand, hours spent waiting in long gas and water queues, the threat of being unable to cook, and freezing on cold winter days were aspects of a typical day of a squatter in İstanbul. The usage of oil, roads, and the first bridge over the Bosporus as both propaganda tools and premises for local elections by opposing political poles can also be seen in this period.

There is nothing better to symbolize the very first break from the waterfront, reshaping it as the new periphery for the unlucky ones, than the first bridge of the Bosporus (1973) and the associated asphalt road system with regard to the urban metabolism of İstanbul embedded in the metabolic flows of oil. Furthermore, David Strahan (2008, 112) emphasizes how oil intricately entered our daily lives via its use in products such as computers, cameras, telephones, plastic cups and bottles, detergents, window frames, pesticides, paints, pipes, shower curtains, and X-rays (Strahan 2008, 112). Concerning the alternative, architectural responses in terms of

ecological designs for oil crisis environments, such as solar house designs, were seen in the Western context. In contrast, according to a 2016 report on coal[400] prepared by Sabancı University, more than 70% of electricity was produced from fossil fuels in Turkey,[401] and 20.5% of that derived from coal-powered power plants. The capacity of coal-fueled power plants has actually grown (77%) when examined in contrast to 2004 as per the IPC Report. All of these developments have their roots in the period between 1950 and 1980.

In Chapter 4, we discovered some essential facts and relations that shape the elaborate production of nature as space via the motorized urban metabolism of İstanbul. It can be said that both "credits" and "awards" from foreign capital and institutions, as well as organizations for workers' solidarity, had widespread influence at this moment in Turkey. Menderes's implementations created a shift in the former vision and projection that had existed between 1923 and 1950, explained in the previous chapter, which partially materialized with Prost's reports and plans. The vision of creating one millionaire per neighborhood meant the creation of slum dwellers and uneven environmental conditions. Concerning the metabolic flows of oil, the projections of ring roads and bridges emphasized both abstraction, regarding the Garden City theory for the developments of the 20th century like the global decentralization agenda, and creative destruction, for an efficient movement network of a motorized urban metabolism.

In this period, crossover roads, tunnels, viaducts, and elevated roads projected along the Ring Road and the Bosporus Bridge were characterized by the changing metabolism of İstanbul towards a mobile nature. The creation of the Bosporus Bridge as the first bridge over the Bosporus and an associated road system for motor vehicles through both the waterfronts and the inner city resulted in a tremendous amount of

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[400] Ümit Şahin (edt), "Coal Report: Turkey's Coal Policies Related to Climate Change, Economy and Health," İstanbul Policy Center (IPC), (Sabancı University, Stiftung Mercator Initiative 2016), 7.
[401] "The first coal-derived gaseous fuel was the low-energy town (coal) gas, first produced in 1812 in London by gasification of the fuel in closed retorts… This gas was used for urban lighting until the early twentieth century before it was displaced by electricity" (Smil 2008, 209).

land clearance and landfilling. For the motorized urban metabolism of İstanbul within the conditions of industrial capitalism, the massive amount of land clearance was not the only particular context, but also the material, land, and labor flows. Asphalt has been used in road construction for transportation, for insulating materials in the construction sector, and for some products for industry. Oil-powered ships were very common after 1950. Tankers conveyed the oil. Along with several quays and squares, the coastal roads were also widened and asphalted in this period. All of these transformations gave rise to the waterfronts beginning to lose their significance due to withdrawal from the waterfronts, which had been very important for trade, transportation, recreation, and daily life in a more direct way throughout history. Notably, instead of being the main transportation line for sea travel, the waterfronts became the address for maintaining the motorized urban metabolism by land transportation in this period.

Concerning the metabolic flows of coal, this chapter tried to capture that metabolic flow along the waterfronts of İstanbul from the Kuruçeşme coal depot on reclaimed land and from the Silahtarağa Power Plant to *gecekondu*s via coal-tar felt (*katranlı muşamba*), coal stores,[402] briquette, heating, and organization. The coal metabolized at Silahtarağa produced a particular waste called clinker (*cüruf*), which would flow through the infrastructure network of electricity and the cement industry. Bachelors, unskilled laborers, and the working class were essential considering the space-making agenda through the waterfront areas of İstanbul. It is important to underline that this all implies environmental concerns and an early warning about the tourism agenda, which would be realized as an essential vision after 1980 regarding the urban metabolism of İstanbul. Traces of the metabolic flows embedded in the industrial city would then vanish at the waterfronts of İstanbul throughout the

[402] The Turkish song called "*Mamak Türküsü*" ("Mamak Folksong") mentioned the coal stores of the *gecekondu*s in Mamak. It is from the poem "Lines from Autumn," written in 1971, and composed by the famous Turkish music group Yeni Türkü.

1980s. The new metabolic flows would be iron and cement, between 1980 and 2019. These rose above the sky along the waterfronts of İstanbul in Chapter 5.

Figure 6.1 Coastal Roads, Salıpazarı, and Warehouses. *Alman Arkeoloji Enstitüsü, D-DAI-IST-KB 7456*

Figure 6.2 Cross-Bronx Expressway Construction, 1957.
https://placesnomore.wordpress.com/2013/02/26/hotmailmoseskoch/

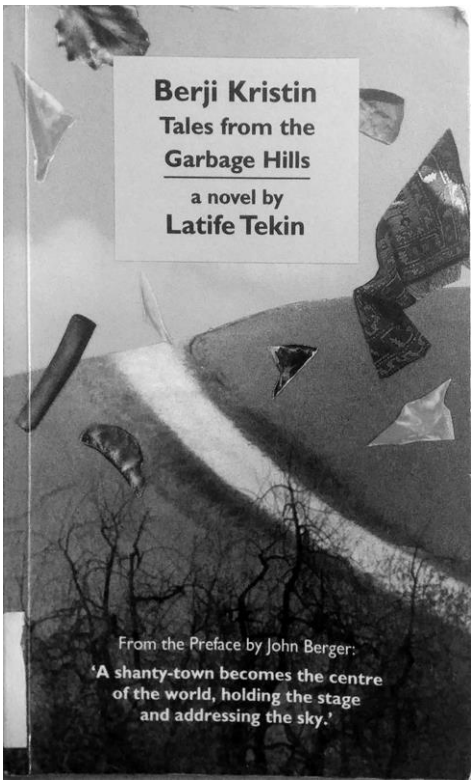

Figure 6.3 Cover photo of Berji Kristin: Tales from the Garbage Hills (1996)

Figure 6.4 Gecekondu Areas of Gaziosmanpaşa and Children Lining Up for Fresh Water from Fountain. *F. Arman Taşan, Pinterest*

Figure 6.5 Bedri Rahmi Eyüboğlu (1973), Yellow Squatter (*Sarı Kondu*).
Çoban&Sert (2018) 1950 Sonrası Çağdaş Türk Resim Sanatında Gecekondu Teması.

Figure 6.6 Nuri İyem (1970), *Beauties of Gecekondu.*
Çoban&Sert (2018) 1950 Sonrası Çağdaş Türk Resim Sanatında Gecekondu Teması.

Figure 6.7 New York, May 8, 1968. *https://www.cnu.org/*
Demonstrators Protests Charges Against Activist & Author Jane Jacobs (not pictured).

Table 6.1 Carbon Emissions Per Capita tCO2 / Person between 1960 and 2018.
Gilfillan et al. (2019), UNFCCC (2019), BP (2019)

Country	Year	Oil tCo2/person	Coal tCo2/person
Turkey	1960	0.2	0.4
Turkey	1970	0.6	0.5
Turkey	1980	1	0.6
Turkey	1990	1.1	1.3
Turkey	2000	1.3	1.6
Turkey	2010	1.1	1.8
Turkey	2018	1.4	2.1

Capital:

The modern city is, in some ways, a component of complex traces of a metabolic story that is embedded in time and space and expressed in the urban landscape throughout history. Simply put, the process that this study conceptualizes as urban metabolism does not only allow for the finding of new spaces for destruction-construction and material flows through the circulation of capital. It also creates the spatiality where socio-natural relationships will be reorganized. Especially in the last decade in İstanbul, mega projections, urban renewals, and the finance sector have had a unique role for reciprocal actions of the inner part of the city and waterfront areas as well as the state apparatus. In **Chapter 5**, we tried to understand the capital-intensive urban metabolism of İstanbul during the neoliberal shift, since 1980 until today, through the metabolic flows of iron and cement embedded in urban solids and voids. While the villas of the Bosporus are essential considering the metabolic flows of iron and cement as urban solids between 1980 and 2002, the towers along the waterfronts of İstanbul are another essential conceptualization of urban solids in Chapter 5, particularly between 2002 and 2019. Considering urban voids, different spaces of the transformation projects were collapsed into fill areas by the radical projection of urbanizing water, such as the Maltepe, Yenikapı, and Pendik coastal land reclamation areas.

The waterfronts of İstanbul were dismantled from the industrial past and human (labor) contents between 1980 and 2002. After the earthquake in 1999, in the period between 2002 and 2019 the agendas of mega projections, delegated legislations, finance-oriented visions, omnibus bills by the hands of the Justice and Development Party (AKP), and ongoing urban struggles as well as law cases were essential for the capital-intensive urban metabolism of the city. The shifting economy from industrial production to the service sector was embedded in the socio-natural transformations of the waterfronts between 1980 and 2002. The military coup on September 12, 1980, and its political context had a specific effect on the labor process that saw the labor force disorganized with the unwilling acceptance of more flexible working conditions, lower payments in manufacturing that hastened into liquidation, and the

shutting down and cleaning up of the factories along the waterfronts. The metabolic flows of iron and cement as reinforced concrete occurring in various construction projects and the "cleaning" projections of the Haliç (Golden Horn) from its industrial past are both illustrative regarding financializing of the waterfronts. Fire precautions, massive cheap labor, capital accumulation, and then the finance sector were the first groups of primary catalysts of socio-natural conditions acting upon the metabolic flows of iron and cement, while the second group comprised the visions and projections of "tourism" and "privatization" coming together for the materialization of the fantasy of global capital. The third one was environmental concern and how this ideology used the apparatus of "protecting and cleaning" synchronically throughout the waterfronts of İstanbul to rid it of its human and labor content for the sake of the international finance sector. In other words, the finance sector, struggles, labor processes, technology, the ideology of tourism, the privatization process, and environmental concerns on both local and global scales formed the metabolic relations through the waterfronts of İstanbul between 1980 and 2019.

It is possible to see urbanization as a permanent displacement, decentralization, and resettlement (Swyngedouw et al. 2003). The social and physical channels or metabolic networks can be grasped for understanding this continuous process. In this context, Heynen et al. (2006) approach the processes that cities encounter today and the relationship between the "built" and "natural" environment with a question based on the proliferation of socio-metabolic processes: "How has nature been urbanized?" On this point, urban political ecology, according to Heynen et al. (2006), has the potential to provide an ideal platform from which to query and understand complex, interrelated socio-natural processes. Heynen et al. (2006, 9) observe that while "there is no such thing as an unsustainable city, there are several urban and environmental processes in which some social groups make use of it whereas other social groups are negatively affected." Furthermore, they draw attention to the "unequal development" brought about by this unsatisfactory situation, raising the potential for a different perspective from studies conducted in this area over the last decade. Likewise, Short and Short (2008) have stated that the term "natural disaster"

obscures the socio-economic-political relationships between events and outcomes and their solutions. The Gölcük-İzmit earthquake (1999) in Turkey, which resulted in the collapse of coastal land reclamation areas, is a significant example considering this relationship.

The typical trend in architectural knowledge is not concerned with the metabolic flows of a reinforced concrete structure within the relation between raw material and the production of space. Considering reinforced concrete, the interest in architectural knowledge limits itself to the aesthetic properties and the technical strength of it. It is no coincidence that the Second Congress of Economics in Turkey (1981) emphasized a turning point fifty-eight years after the İzmir Economic Congress in 1923. While in 1923, all the companies under private ownership, such as mines, water companies, railways, and transportation companies, were decided to be nationalized and converted to public ownership (1981, Vol. 1, 15), in 1981, all resources and industries had been opened to foreign capital and investments, and the new economic agenda oiled the wheels of private enterprises for the sake of economic development (1981, Vol. 1, 47-50).[403] Furthermore, the relation between public and private enterprises takes an essential place in the report (1981, Vol. 1, 51-112).

This turning point explained above is not only related to the economy but is also intertwined with the very urban metabolism of İstanbul via the flows of iron and cement between 1980 and 2019 embedded in the projection of villas, towers, and coastal land reclamations. On the one hand, the Second Congress of Economics in Turkey (1981) emphasized a turning point in terms of foreign investments and the tourism agenda materialized by five-star hotels, international congress centers, museums, and privatization attempts, while on the other hand the Law of the

[403] The Second Economic Congress of Turkey (*İkinci İktisat Kongresi*) (1981), Politics of Development Study Group Report Vol. 1. Turkish Republic Prime Ministry of State Planning Organization.

Bosporus (1983) defined buffer zones of the Bosporus[404] for the first time in its history as well as protecting green areas of the Bosporus and the ethical public concerns repeated many times in articles. The population of İstanbul had increased from 4.7 million in 1980 to 18 million by 2019. Turkey was among the twelve countries that consumed the most cement in 2004, with China ranking first.[405] The common grounds of these countries were inadequate infrastructure and high growth rates. İstanbul had a special place considering that the first cement factory of Turkey was built in Darıca-İstanbul in 1911. Before the 1950s, in Zeytinburnu and Kartal, two cement factories were added. In 1989, five cement factories with public ownership had been privatized and were sold to private French companies. It is essential to underline that, apart from the dominance of the United States in the concrete industry in the 20th century, until the late 19th century American architects did not pay much attention to reinforced concrete constructions. Imported cement was expensive, and it was seen as a luxury. After the cement industry developed and long lines of iron rods became possible, the mass concrete design period began (Collins 2004, 56).

Villas are a context envisioned in this study as a "natural," "safe," and "luxurious" form of housing for the new capitalist class within the forests along the hills of the Bosporus with a view of the sea after the 1980s. Chapter 5 asserted that between 1950 and 1980, the waterfronts and hills of the Bosporus were an address for the working class in the forms of *gecekondu* settlements and factories. Between 1980 and 2002, however, they became a perfect location for the postmodern "natural" fantasy of the bourgeoisie through gated communities of encircled villas.

For the first time in its history, massive amounts of iron and cement flowed through the projection of villas and deforestation of the Bosporus was materialized for the sake of these constructions. All of the constructions conceptualized as

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[404] Front view of the Bosporus, back view of the Bosporus, Bosporus waterfront line, interactive areas of the Bosporus, and areas of the Bosporus. For details, see Law of the Bosporus No. 2960 (18/11/1983), Vol. 5/22, p. 6301.
[405] According to the Global Cement Report between 1990 and 2004 (6th edition).

"**towers**" in this chapter have consumed massive amounts of iron and steel, cement, and energy in the hands of the construction sector through the capital-intensive urban metabolism of İstanbul. The most prominent common feature of all of the tower projects along the waterfronts of the Sea of Marmara mentioned in this period is that they have all been the subject of intense debates and lawsuits filed by neighborhood residents and chambers of architects and other professionals. All of them caused massive excavations, at some points coastal land reclamations, and the destruction of vegetation through the metabolic flows of iron and cement between 2002 and 2019 via the urban agenda of the AKP. Apart from politicians and people in business, on the one hand, star architects took their places in these highly controversial projects. In contrast, their colleagues who favored the public interest took their own places, filing lawsuits and informing the public.

Considering **coastal land reclamations**, urban debris (the second cycle of iron and cement) re-circulates through these projects via continuous metabolic flows by the dissolution of the ecosystem and dislocation of society by urban renewals (*kentsel dönüşüm projeleri* in Turkish), thus resulting in uneven, complex landscapes that make it hard to intervene in the urban agenda. The chain of mega projects in İstanbul[406] and many other cities fits perfectly with the neoliberal production of nature as space alongside the dislocation of society by placelessness and the dissolution of the ecosystem by out-of-scale movements of urbanization. The background of the current urban transformation's progress from excavation logistics to spatial projections of fill areas—which are forced to be integrated into the body of the city—creates an urban landscape, and it shapes the urban form. In transformation processes institutionalized via chains of architectural projects in the urban landscape, it is further necessary to underline the role of spatial production and reproduction of the complicated relationship between nature and society from an urban political ecology perspective. We can see **a common point in the villas,**

[406] For details, see İstanbul'un Mega Projeleri, https://megaprojeleristanbul.com. Accessed: September 10, 2020.

towers, and coastal land reclamations applied over the past forty years in İstanbul, being both cause and result of the capital-intensive urban metabolism embedded in the massive metabolic flows of iron and cement through the finance and construction sectors. Given this progress, it seems possible to follow the uneven development of the relevant transformation. Especially over the last decade, mega projects applied in Turkey have affected the urban ecology and spatial quality and perception directly. Hence, it is possible to say that they will have socio-natural consequences and conflicts. At this point, this study accepts the coastal land reclamation projects as "mega projects" of İstanbul like the İstanbul Canal Project. For a different example, we can look at the waterworks of İstanbul. A common point of all relevant projects is the increasing imperviousness of the urban landscape. Furthermore, it is not hard to see that the physical environment of the city has been degenerating with the construction of the 3rd Bridge, as was similarly the case with the construction of the 2nd Bridge. The bridge will not only destroy the green areas in the construction area; it will also cause an increase in impervious surfaces and interrupt the water cycle to a considerable extent while ensuring the urbanization of capital because of the structure in the places through which the road will pass.

In short, **if there is *hope without optimism***,[407] we seem to be needing a kind of continuous effort for **urban mining** that reveals the metabolic relations and actions through **which nature is produced**, and **how these produced socio-natures are shaped and reshaped**. Maybe, for the first time in urban studies, considering the context of İstanbul without a false separation of the natural and the social, in both theory and practice, we can reclaim the livable coastal city of İstanbul, intervening in the urban agenda and **reconciling its human (labor) and non-human components**. Understanding the waterfronts of İstanbul as distinct metabolized socio-natures is an important part of the contributions of this work in terms of transcending the dualities between social and natural.

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[407] Borrowed from the title of the book *A Hope Without Optimism* by Terry Eagleton (UVA Press, 2015).

6.2 Contribution of the Thesis and Further Studies

This dissertation illustrates the continuous reshaping process of İstanbul's waterfronts with a twofold focus on social and physical flows from the 19th century to the 21st century for an understanding of the city's urban metabolism. First, it traces the particular metabolic flows that constitute the space-making agenda embedded in the political-economic vision, projection, and struggle of each period. Second, it records the transition and struggle from a labor-intensive urban metabolism to a capital-intensive urban metabolism in İstanbul between 1839 and 2019. Third, it follows the critical role of architectural practice and urban agenda as political instruments that operate through metabolic flows concerning the shifting urban metabolism of İstanbul within the perspective of urban political ecology. Rather than explaining the process of urbanization of waterfronts with a linear discourse on the domination of nature bordered with a biophysical dimension, which implies the bourgeois ideology of nature, dependent on the duality between society and nature, this study offers an alternative analysis that approaches the city and nature as a single interacting system. Production of nature as space in İstanbul is emphasized here through the intertwined history of the urbanization of the waterfronts as metabolized socio-natures. The original contributions of this dissertation will be summarized in this chapter within the following four subsections: "Contribution to urban metabolism context," "Exploring the shifting ideology of nature through the space-making agenda," "Transcending the dualities between the social and natural," and "The unfinished projection of one period completed in another period."

1- Contribution to urban metabolism context

This dissertation offers a contribution to urban studies by exploring the political ecology of urban metabolism in the context of İstanbul, Turkey. Newly produced natures through the urban metabolism context materialize the process of its making, which is essential in grasping the city through power relations and political struggles in a dynamic process. Concerning the urban metabolism context of İstanbul, this study's essential contribution is to show the transition and struggle from a labor-

intensive urban metabolism to the industrially disciplined and motorized one of the 20th century, then finally reaching the materialization of the capital-intensive urban metabolism of İstanbul through the metabolic flows of land, water, urban voids, oil, coal, iron, and cement, respectively embedded in the urban agenda and architectural projects between the 19th century and 21st century along the waterfronts.

In this study, the urban metabolism of İstanbul is grasped far beyond the *terminus technicus*, illustrating the arithmetic and computational data concerning flows of materials, energy, goods, and bodies in urban areas and their hinterlands. The context of urban metabolism throughout all chapters in this study calls forth the production regimes and political projects, and the struggles through which materials, energy, goods, and society are shaped and reshaped through sophisticated urban space in the process of remaking the waterfronts of İstanbul. Approaching the production of nature as space (i.e., waterfronts) through particular metabolic flows (i.e., land, water, urban voids, coal, oil, iron, and cement) concerning different political-economic regimes in the context of İstanbul is quite a new context for urban studies. It defines a new critical dimension for the spatial organization of current metabolic interactions in the context of the urban metabolism of İstanbul.

The development of the context of metabolism from an individual human body to a house and urban to regional scales is important in scholarly works. At the same time, current efforts have mainly focused on the calculations of metabolic flows as output-input relations in urban areas. Historically, Antoine Laurent Lavoisier's discovery of the combustion process appeared as a missing link in Santorini Santorini's efforts to understand the metabolism of individual human beings after two centuries. This study similarly aims to find the missing link in the current studies on urban metabolism. Giving an essential role to the transformation of labor processes in the production of nature as space related to the political-economic projections and visions of the urban agenda reveals the perspective of political ecology of urban metabolism. On the other hand, it is also essential to reveal how architectural practice operates through particular metabolic flows as a political apparatus that has an essential role in the management of socio-natural relations

throughout the urban environmental history of İstanbul. According to Ferrao et al. (2009, 388), metabolic flows can be reshaped from linear, one-way, unsustainable, hinterland-urban landscape-hinterland flows (Brunner 2007, 12) to more continuous, circular flows by following ecological paths (Ferrao and Fernandez 2013). Mostafavi et al. (2014, 59) give importance to urban metabolism analyses through socio-economic aspects and environmental flows of the urban area.

The original contributions of this dissertation underline the dialectical historical-geographical materialist considerations in terms of the political ecology of the urban metabolism of İstanbul via qualitative methods such as spatial analysis and context analysis. It is obvious that without the Marxist perspective it would be hard to deal with the historically loaded duality between the social and natural in urban areas. The corroded borders between the social and natural in a historical-dialectical way considering the urbanization process of the waterfronts of İstanbul emphasizes a specific gaze for this study. This constitutes a contribution of the present scholarly efforts, which address a gap in the environmental history and theory of İstanbul.

Within this general perspective, this research illustrates socio-natural transformations concerning the actions of political forces in the context of waterfronts. It contributes not only to urban metabolism debates, but also to critical urban theory, urban environmental history, and urban form in the context of middle-income capitalist and developing countries like Turkey. Additionally, it considers whether urban political ecology perspectives can enhance critical urban theory in understanding current urbanization processes and whether an architectural contribution can further and deepen the knowledge of urban political ecology studies. Nevertheless, rather than focusing on the biophysical flows as a matter of calculation, this study has tried to grasp the more striking features of "how these flows are politically contested and struggled over" (Hubert 2008, 106) as well as the shaped and reshaped socio-natures of İstanbul. This study uses particular metabolic flows for embracing the urban metabolism of İstanbul under different regimes and within different moments; moreover, it accepts these flows not as a source or material but

as socio-natural relations embedded in the political reconfiguration of urban space via struggles.

2- Exploring the shifting ideology of nature through the space-making agenda

This study reveals the ideology of nature through different political projections and visions in the context of İstanbul, Turkey, between the 19th and 21st centuries. Before the Tanzimat reforms, land and water resources could be bought or sold and were secured as inalienable properties. This rule was the most crucial aspect of the prevention of the division and alienation of humans from nature. The 19th century of İstanbul witnessed the emergence of this division and a new urban metabolism. The political project of the Early Republic in the 20th century followed the implementations of the bourgeois ideology of nature, which separates human and nature within the agenda of the scientific production of nature. This ideology was embedded in countless efforts to combine humans and nature by the new political vision and projection of the young republic, as explained through Prost's plans and reports on İstanbul.

The historical and geographical blend of capitalist urbanism with the nation-state had agreement on public places until the 1980s. This consensus depended on merging city with nature by the hands of science, technology, and state, looking out for "public interest" through expropriation for the sake of creation of "public space" by the creation of "designed" urban voids. Neoliberal visions and projections attacked and directed the "scientific production" of nature as urban space through the waterfronts of İstanbul between 1980 and 2019, which had been more or less characteristic for the first three-quarters of the 20th century. The disappearing industrial city and the unique working-class habitations after the 1980s were legalized with the postmodern understanding of nature under the cover of "environmental" concerns, supporting the melting away of the human content of nature and mutually the labor context throughout the waterfronts of İstanbul. This had also imposed upon the "financial production" of nature as space for capitalist accumulation. While the bourgeois ideology of nature separates humans and nature, embedded in the countless efforts by a nation-state to combine them, the neoliberal

ideology of nature deepens this duality by the declaration of "freeing" nature from human and labor contents.

The production of nature as space is studied in this dissertation, through which socio-natural urban conditions emerge in various moments and mediums. We have followed the paths of the production of nature as waterfronts in İstanbul through political visions, projections, and class conflicts via constant struggles as integral parts of metabolized socio-natures in the context of the waterfronts of İstanbul through the chapters and for each period.

3- Transcending the dualities between the social and natural

In this study, it is believed that we cannot see the waterfront as a bordering line or separate the transformations of the waterfronts from the inner parts of the city's socio-natural changes. This study illustrates a critical reading and further insights into the city's urban metabolism by taking both inner-city lands and the sea as a dialectical continuum and in a vivid relationship. Different political economy projections and agendas, as well as power relations on a broader scale, are significant for this study. While environmental criticism has long hesitated to look at ecological problems within the framework of social relations and ecological problems are also often paired with socialist countries, like capitalist ones, on the other hand, social relations and crises have been grasped without ecological problems in class conflict (Harribey 2014, 189). The worldwide struggles around the commodification of urban space and increasing social inequality, wherein vulnerable societies live under exploitative conditions, have brought social and ecological struggles closer in the 21st century in Turkey, too.

This dissertation tries to contribute new ways of reconsidering urban design theory and practice without separating the social from the natural in the space-making agenda; by doing so, it acknowledges the waterfronts as metabolized socio-natures in the context of İstanbul. Many scholars (Nordhaus and Shellenberger 2007, White and Wilbert 2009) accept that the idea divorced from the social via the ahistorical idea of "nature" inhibits dynamic politics of livable urban environments. This study carefully records a political basis via an urban political ecology

perspective in order to refrain from the material determinism that removes the urban metabolism debate from its very socio-natural and political grounds.

At this point, considering İstanbul it is necessary to distinguish the following periods: that before the 19th century, when the relationship between the waterfronts and the urban metabolism of İstanbul was more direct and everyday life and production were straightforwardly observed along the waterfronts of the city, and that after the 19th century, when this relationship became complicated, mediated, and separated from the waterfronts day by day in terms of life and production. The 19th century thus defines a turning point for the history of urban metabolism in İstanbul, which was shifting from being labor-intensive, by direct human and animal labor, to capital-intensive, as a financially driven and complicated one. Additionally, along the way from the 19th century to the 21st century, the human and labor contents of daily life broke off from the waterfronts of İstanbul. Thus, today's transformation of the waterfronts is determined by the more complicated and financially driven transformation of the inner city. This perspective reveals how architectural practice operates through metabolic flows as a political instrument embedded in *yalı*s and summer palaces, quays and ports, sea baths, great fires, transportation routes, *çayır*s, tap water, cholera, wastes, coastal roads and boulevards, woods, parks, gardens, public squares, *plaj*s, road constructions, the first bridge over the Bosporus, quays for fuel oil, coal discharge and storage and distribution places, power plants, *gecekondu*s, villas, towers, and coastal land reclamations, all of which illustrates essential roles in terms of transcending the dualities between the social and natural in İstanbul throughout its history.

4- The unfinished projection of one period completed in another period

Previous studies have been limited to seeing the "Westernization" attempts within the context of the "modernization of a city" in a radical way as the basic components for understanding the urban landscape of İstanbul in the late 19th century and early 20th century. Being under the umbrella of the context of "Westernization" prevents us from the critical point of criticizing the real economic and socio-natural conditions of the city and their intricate relationships with the concomitant transformations of

waterfronts and its past. This study also argues that the preliminary insights of the uneven production of nature as space between 1923 and 1950 can be examined as having been rooted in the Ottoman past. The new political project of the 20th century, which created more or less uneven geographies, is rooted in the 19th century's vision of reforms, or, in other words, in the late Ottoman Empire. This study asserts that this new emergent urban metabolism of İstanbul in the 19th century is reminiscent of very early insights into the 21st century's metabolism. It records that the emerging metabolic interactions of İstanbul in the 19th century saw total materialization within the complex relations of a nation-state apparatus in the Turkish Republic. This study tries to further and deepen the body of work that reads the period as the first modern transformation of İstanbul for dismantling its Ottoman past in various ways, and it is claimed here that the nation-state's vision was a desire to keep, materialize, and rescale the control over the emerging metabolism of the city(from labor-intensive and ad hoc to capital-intensive, and from industrially disciplined by foreign private corporates to driven by the nation-state) of the city in the 19th century for the sake of altering the production and control of nature as space in the process of the whole.

Accordingly, this study records that the unfinished projection of one period was completed and materialized in another period mainly through the disciplining agenda of nature along the waterfronts of İstanbul. For an example, as a disciplining agenda of nature, road-making appears for the first time in the Early Republic period. However, it fully takes place as a massive projection in the Menderes period and leaves its mark on the waterfronts of İstanbul between 1956 and 1960. Currently, the road-making agenda is beyond the scales of the former visions, but still a powerful projection. The road-making agenda of the 21st century wants to create shortcuts for the city's metabolism to the periphery and even more distant cities (for instance, the Eskişehir Osmangazi Bridge). For example, the agenda of the 3rd Bridge of İstanbul functions to facilitate the draining of building stock to the northern forests, which have carried great importance since the late Ottoman period.

While the first grand-scale coastal land reclamation projects were visioned along the waterfronts of Yenikapı in the 19th century by Eugene Henri Gavand and

could not be implemented at that time, the most significant coastal land reclamation project of that era was the Port of İstanbul. Materials were directly taken from the sources of İstanbul for use in waterfront construction at the Port. However, the coastal land reclamation areas of the 21st century materialized on mega scales, rendering a much more complex metabolism. The secondary transformation cycle of the building stock created by the metabolic flows of iron and cement in the previous periods—a form of urban debris obtained from urban renewals and used as a raw material this time—corresponds to the calculations of excavation logistics and the capital-intensive urban metabolism of the city. Giant empty spaces, which are alien to the human scale, appear as the new coastal land reclamation areas of İstanbul through the metabolic flows of urban debris piled up on the nearest shores in the 21st century.

At the same time, these coastal land reclamation areas remind us of the Early Republic's political project to create urban voids at the beginning of the Republican Period. Considering whether this is a continuation of the Early Republic's political project, this dissertation shows us that neither the scale nor the path followed was very similar. On the contrary, an urban void appears in the 21st century as massive artificial lands piled up along the waterfronts as an easy solution for capital accumulation, rather than being created by specific urban "planning" and "design." Although claimed to increase the amount of green space and create a gathering area to be used in the event of an earthquake, the current report on earthquakes in İstanbul by the İstanbul Metropolitan Municipality does not confirm this.

The new political project of the young republic's intricate urban economy has been a stage for the creation of the Turkish bourgeoisie and its habitation and recreation agenda on the one hand and for the Turkish laboring class who lived and worked in the urban center on the other hand. A society of different economic classes and their unique habitational cultures and socio-natural environments, with massive numbers, would be realized after the implementation of the DP government in İstanbul. As a preeminent example, preliminary insights of uneven production of waterfronts as coastal roads were first imagined by the mayoralty of Cemil Topuzlu

in the late Ottoman Period in Chapter 2. After the establishment of the new political project of Turkey, the production of waterfronts as coastal roads was partly materialized and legitimized by Prost's visions and projections in the period described in Chapter 3. It was then completed and concertized in the DP period in Chapter 4.

Accordingly, the particular metabolic flows of a period then constitute the metabolic flows of the following periods, acting as raw material or catalyzers for the other flows. For instance, coal and oil defined the essential metabolic flows between 1950 and 1980 through the waterfronts of İstanbul. Moreover, water was a crucial metabolic flow between 1839 and 1923. Between 1980 and 2019, these constituted the critical inputs for the iron and cement industry.

Between 1950 and 1980, the waterfronts and hills of the Bosporus were an address for the working class through *gecekondu* settlements and factories. Between 1980 and 2002, they became a perfect location for the postmodern "natural" fantasy of the bourgeoisie through gated communities of encircled villas. During the 2000s, villa-like luxury residences with shopping malls and office complexes have taken their places along the skyline of the waterfronts of İstanbul as "towers." All of these constructions consume a massive amount of iron and steel, cement, and energy in the hands of the construction sector through the capital-intensive urban metabolism of İstanbul. Accordingly, traffic islands became the new vegetated landscapes of İstanbul between 1950 and 1980 through the metabolic flows of oil. At the same time, graveyards, which were transformed into children's gardens and urban parks between 1923 and 1950, were expropriated between 1950 and 1980 for the construction of the expanded road-making agenda through the metabolic flows of oil.

The great fires of İstanbul in the 19th century had a role in the start of new flows of land and commodity flows, intervening in the urban agenda and fostering economic interests. While fires still occur in İstanbul today, the main problems are the inevitable great İstanbul earthquake and flood problems that are always looming. As in the 19th century, the city witnesses urban transformation projects with the

discourse of changing the building stock entirely all over again; in the 21st century, the city is turned upside-down, too. Data show that buildings must be earthquake-resistant and transformed, even if massive amounts of urban renewals have materialized since 2012, by Law No. 6306 on Transformation of Areas Under Disaster Risk and this process reshaped the waterfronts. Concerning the 20th century, fossil fuel-centric development, high-carbon society, migration from rural areas to towns and cities, and urban sprawl can be addressed as typical for altering the urban form everywhere, including İstanbul. The late 20th century and the 21st century's urban agenda, meanwhile, only produce financially driven landscapes. Everything is under constant, rapid, uneven, mega-scale radical change, with a constant and vulnerable flow of land temporarily on mega scales for profit through the capital-intensive urban metabolism. In short, this study illustrates that the unfinished projections and space-making agenda of one period were completed in another period. All of the periods in this study (1839-1923, 1923-1950, 1950-1980, 1980-2019) are linked with each other within the context of the urban metabolism of İstanbul.

Further Studies:

In the age of ecological rift, current environmental discussions still cannot fully grasp the urbanization process (Swyngedouw, 2009). How nature is becoming urbanized and who has produced these environments can only be understood by reworking the social and dynamic struggles via complex socio-natural processes for the projections and visions of livable environments. This study contributes to efforts to fulfill the need for an approach for criticizing the socio-natural transformation of urban space in terms of urban metabolism. In the current restructuring process of capitalism, this is vital for current critical urban theory on the world scale and for practice and professionals who work on urban landscapes in the Turkish context. This dissertation offers a theoretical investigation into the socio-natural transformations of space from the late Ottoman Empire through the Republican Period to the regime of the 21st

century by looking at waterfronts as critical locations and scales of urban transformation.

For future studies, first of all, this study has created a fertile foundation for mapping the urban metabolism of İstanbul in the context of particular metabolic flows. Visual representations of the particular metabolic flows for each period in İstanbul based on scholarly works of mapping can complement this dissertation in the future.

The second contribution of this study is the idea that the labor process of architecture can be exercised through the urban environmental history of İstanbul, which may be pursued further in future studies.

Approximately 539,000 tons of electronic waste are generated every year in Turkey. Our various collective urban wastes seem to determine the complex socio-natural relations of cities and the planet in the 21st century. Urban debris, satellite wastes, and electronic wastes are important considering both urban resilience and public health, and the cyberspace economy's metabolic flows in the context of the e-waste of İstanbul still await further studies. Studies on the wired landscape of İstanbul could uncover meaningful socio-natural metabolic relationships of the 21st century. Comparing the relations between seaward and landward expansion in the context of İstanbul for future projections and vulnerability predictions could also be possible with the help of this study.

Finally, this study has sought to utilize novels and paintings related to the environmental history of İstanbul throughout its chapters. Comics, novels, and paintings could be exercised in detail in the future for understanding the changing perceptions of the socio-natural situation and giving more light to the urban environmental history of İstanbul from other mediums.

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APPENDICES

Appendix 1: Written Question to the Minister in the TBMM Archive on Coastal Land Reclamation of Maltepe

T.B.M.M.
CUMHURİYET HALK PARTİSİ
Grup Başkanlığı
Tarih
Sayı 1016

19755

TÜRKİYE BÜYÜK MİLLET MECLİSİ BAŞKANLIĞINA

Aşağıdaki sorularımın İçişleri Bakanı Sayın Muammer GÜLER tarafından yazılı olarak cevaplandırılmasını saygılarımla arz ederim. **20/02/2013**

Dr. Celal DİNÇER
İstanbul Milletvekili

İstanbul İli Maltepe İlçesi sahilinde 1 milyon 300 bin m2 deniz alanı hafriyat doldurulmak suretiyle dolgu alanı oluşturulmuş olup üzerine tesisler yapılacağı ve geçen yıl başlatılan çalışmaların yakın zamanda tamamlanacağı açıklanmıştır.

Tamamı deprem kuşağında yer alan İstanbul İlimizin fay hattına yakınlığı nedeniyle en riskli bölgelerinden birinde yer alan Maltepe sahil kesiminde yapılan bu düzenlemeler kaygı ile izlenmektedir. Ülkemizde 1999 yılında yaşanan Marmara depreminde özellikle Yalova, Gölcük ve civarında bulunan dolgu alanları birçok vatandaşımızın hayatlarını kaybetmesine, birçok binanın yıkılmasına sebep olmuştur.

Durum böyleyken;

1. Dolgu alanı ve düzenleme ile ilgili işler hangi tarihte ihaleye çıkarılmıştır? İşin muhammen bedeli kaç liradır?

2. İhaleye teklif veren ilk 3 firma ve teklifleri nedir? İhale kime hangi fiyatla verilmiştir? İşin başlama ve bitiş tarihi nedir? Bugüne kadar yapılan iş artışı veya süre uzatımı var mıdır? Varsa artış miktarı ve/veya uzatılan süre nedir?

3. Anılan yere doldurulan hafriyat toprağının döküm fiyatı (m3 veya kamyon bazında ve toprak, taş moloz vb) nedir? Hafriyat dökümü için ücret kime, hangi yöntemle ödenmektedir?

4. Dolgu alanlarına doldurulan malzemenin vasfı nedir? Bu malzeme dolgu alanları için uygun mudur? Bu alana Ataşehir'de yapılan Finans merkezinin uygun olmayan harfiyat toprağının döküldüğü iddiası doğrumudur?

5. Mesai saatleri içinde kent içi ve sahil yolunda tonlarca hafriyat taşıyan bini aşkın büyük yük kamyonlarının, dolgu alanına giriş-çıkışı hangi kriterlere göre nasıl yapılmakta veya düzenlenmektedir? Bu kamyonların istihap haddinin üzerinde harfiyat toprağı taşıdığı, bir kısım güvenlik güçleri ve zabıtanın buna göz yumduğu iddiası doğrumudur?

Appendix 2: Response to the Chairman of the Grand National Assembly of Turkey by the Minister in the TBMM Archive

7/18755
G.K = 134

T.C.
İÇİŞLERİ BAKANLIĞI
Mahalli İdareler Genel Müdürlüğü

Sayı : 14399437-010.09- 23139 15/08/2013
Konu : 7/18755 Esas No.lu yazılı soru önergesi

TÜRKİYE BÜYÜK MİLLET MECLİSİ BAŞKANLIĞINA

İlgi : 18/03/2013 tarihli ve 113625 sayılı yazınız.

İstanbul Milletvekili Dr. Celal DİNÇER'in 7/18755 Esas No.lu yazılı soru önergesi ile ilgili olarak yapılan incelemede;

İstanbul Büyükşehir Belediyesi tarafından "Maltepe Sahil Düzenlemesi 1. Etap Anroşman İnşaatı" işinin ihaleye çıkarıldığı, söz konusu ihaleye katılan ilk üç şirketten AKM Yapı Taah. San. ve Tic. Ltd. Şti. + CENGİZ İnş. San. ve Tic. A.Ş.'nin (iş ortaklığı) 65.267.758,89 ₺ + KDV, Özka İnşaat A.Ş. - Bektaşoğlu İnş. San. ve Tic. A.Ş.'nin 65.777.661,24 ₺ + KDV, Nas İnş. A.Ş. - Nuhoğlu İnş. A.Ş. - Uğraş İnş. San. Tic. Ltd. Şti.'nin ise 73.371.841,98 ₺ + KDV teklif ettiği, bahse konu ihalenin, İhale Komisyonunun 30.01.2012 tarih ve 482 sayılı kararı ile 65.267.758,89 ₺ + KDV teklif eden AKM Yapı Taah. San. ve Tic. Ltd. Şti. + CENGİZ İnş. San. ve Tic. A.Ş.'ne verildiği, sözleşmeye göre 15/04/2013 tarihinde bitirilmesi gereken iş için 30 gün süre uzatımının verildiği,

Söz konusu alanda yapılan geri saha dolgusu işinin, 5216 sayılı Büyükşehir Belediyesi Kanunu'nun 26'ncı maddesine istinaden İstanbul Büyükşehir Belediyesi Meclisince alınan 15/06/2012 tarih ve 1358 sayılı karar doğrultusunda, Büyükşehir Belediyesinin iştiraki olan İSTAÇ A.Ş. tarafından yapıldığı, iki kademeli olarak yapılan bahse konu dolgu işinde, her iki kademede de nitelikli malzeme (bataklık veya suyla doygun hale gelmiş killi ve marnlı zeminler, kömür, kömür tozu dâhil içten yanması söz konusu olan malzeme, süprüntü, enkaz gibi artık maddeler, suyla kolayca ufalanarak oturmalara sebep olacak malzeme, karlı, buzlu ve donmuş topraklar, ağırlıkça % 20'den fazla jips bulunmayacak vb. hariç) kullanıldığı, Ataşehir Finans Merkezi inşaatı kazısından çıkan malzeme belirtilen kriterlere uygun olduğundan geri saha dolgusunda kullanıldığı, sonuç olarak; yukarıda ifade edildiği gibi, yapılmakta olan geri saha dolgusu işinin İSTAÇ A.Ş. tarafından protokol ile belirlenen şartlara göre nitelikli malzeme kullanılarak yapılmakta olduğu ve bu konuda problem yaşanmasının öngörülmediği,

Geri saha dolgusu işine ilişkin ödemenin mevzuat ve sözleşmede öngörülen şekilde yapıldığı ve birim fiyatlarının aşağıdaki tabloda açıklandığı;

Malzeme Türü	Döküm Yapacak Araç Tipi	Araç Başına Döküm Bedeli/₺ (KDV dahil)
Toprak	Tır	100
	Kırkayak	80
Taş	Tır	80
	Kırkayak	60
Grovak	Tır	100
	Kırkayak	80

Devlet Mah. İnönü Bulvarı No: 4 Bakanlıklar 06100/ANKARA
Telefon: (0 312) 422 43 49 – 422 43 74 Faks : (0312) 425 17 91
Elektronik Ağ: www.mahalli-idareler.gov.tr

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Sert, Esra
Nationality: Turkish (TC)
Date and Place of Birth: 3 May 1985, Kayseri
email: esra.sert@metu.edu.tr

EDUCATION

Degree	Institution	Year of Graduation
MS	İTU Faculty of Architecture, Landscape Architecture Department	2013
BS	YTÜ Faculty of Architecture, Architecture	2008
High School	İçel Anatolian High School, Mersin	2003

WORK EXPERIENCE

Year	Place	Enrollment
2018-Present	MEF University, Faculty of Arts, Design and Architecture, Bachelor Program. 2019 - present | MEF University, Faculty of Arts, Design and Architecture, Alternative Architectural Practices Graduate Program (AAP).	Instructor

FELLOWSHIP

İstanbul Studies Center Doctoral Residency Fellowship| Kadir Has University

FOREIGN LANGUAGES

Advanced English

PUBLICATIONS & PAPERS AND PRESENTATIONS

Sert, E. (2019). Mobility of Land in İstanbul: Production of Nature as Space in 2000's. 6th International Congress Livable Environments & Architecture LIVENARCH VI-2019: Replacing Architecture, Proceedings Book Vol II, pp. 640-649.

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