

TECHNOLOGY AS A MULTIDIRECTIONAL CONSTRUCTION:
ELECTRIFICATION OF ISTANBUL IN THE LATE NINETEENTH AND
EARLY TWENTIETH CENTURIES

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İSTANBUL ŞEHİR UNIVERSITY
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ELECTRIFICATION OF ISTANBUL IN THE LATE NINETEENTH AND
EARLY TWENTIETH CENTURIES

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EMİNE ÖZTANER

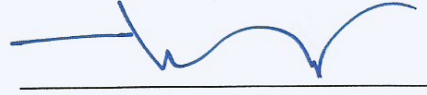
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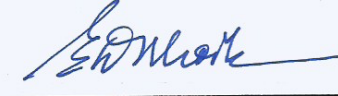
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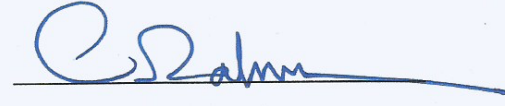
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ABSTRACT

TECHNOLOGY AS A MULTIDIRECTIONAL CONSTRUCTION: ELECTRIFICATION OF ISTANBUL IN THE LATE NINETEENTH AND EARLY TWENTIETH CENTURIES

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MA, Department of History
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This study endeavored to investigate the transfer and development process of electric power systems in Istanbul. Governors, politicians, engineers, state officials, entrepreneurs and consumers all made choices to frame the development of the electric power grid in Istanbul. Furthermore, geographical factors, urban morphology and the spatial organization of Istanbul were considered as the inanimate actors shaping the introduction process of electric technology. Instead of interpreting the late arrival of electric technology in the Ottoman state as a failure, I aimed to understand the characteristic of the electrification process in Istanbul, which differs from region to region.

This thesis revisits the questions that the existing literature on the electrification process in Istanbul asks and reevaluates answers given. In this endeavor, the thesis relies not only on secondary sources but also primary sources such as archival documents, periodical articles, literary works, books and manuals on electrical appliances. I suggest that there were multifaceted reasons behind the delay of adopting the early electric lighting technologies in the Ottoman state. The implementation of a power supply system influenced by the various factors including economic, social and political concerns of the Ottoman government as well as their preferences, priorities and cultural considerations. Therefore, we need to have better grounded findings to explain the issue than a “discourse” of backwardness or the perpetual fears of a ruler.

Keywords: Illumination, Public Lighting, Electrification, Istanbul, Silahtarağa Power Center

ÖZ

ÇOK YÖNLÜ BİR İNŞA OLARAK TEKNOLOJİ

ONDOKUZUNCU YÜZYILIN SONU YİRMİNCİ YÜZYILIN BAŞINDA İSTANBUL'A ELEKTRİĞİN GİRİŞİ

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Bu çalışma elektrik enerji sistemlerinin İstanbul'a transferi ve bu sistemlerinin gelişim safhasını farklı aktörler üzerinden ele almaktadır. Yöneticiler, politikacılar, mühendisler, devlet görevlileri, girişimciler ve tüketiciler teknolojinin gelişme sürecinde yaptıkları seçimler ile aktif rol oynarlar. Coğrafi etmenler, İstanbul'un mekânsal yapılanması ve morfolojisi gibi lokal faktörler de süreci şekillendiren cansız aktörler olarak kabul edilmelidir. Bu çalışmada elektrik teknolojisinin Osmanlı Devleti'ne Avrupa ve Amerika'ya nazaran geç girişini yargılamak ve bir başarısızlık olarak addetmek yerine, teknolojinin bölgeden bölgeye değişiklik gösteren gelişim süreci İstanbul örneği üzerinden tahlil edilmeye çalışılmaktadır. Arşiv dokümanları, gazete ve dergiler gibi birincil ve konu ile ilgili ikincil kaynaklarının kullanıldığı bu çalışmada İstanbul'un elektrifikasyonu üzerine olan mevcut literatürün sorduğu soruları tekrar ele almak ve farklı bir bakış açısıyla yeni cevaplar aramak amaçlanmıştır. Elektrikle aydınlatma teknolojisinin gecikmesinin nedeni olarak bir çok farklı etken göz önüne alınmıştır. Sosyal, ekonomik ve siyasi faktörlerin yanı sıra öncelikler, tercihler ve kültürel kodlar da süreci şekillendiren faktörler olarak değerlendirilmiştir. Şu kesindir ki; konuyu değerlendirmek için bir yöneticinin korkularından veya geri kalmışlık söyleminden daha iyi temellendirilmiş cevaplara ihtiyaç duyulmaktadır. Bu çalışma sorduğu sorular ve kullandığı metodoloji ile İstanbul'un elektrifikasyonun sürecini anlamayı amaçlamaktadır.

Anahtar Kelimeler: Aydınlatma, kamusal aydınlatma, elektrifikasyon, İstanbul, Silahtarağa Elektrik Fabrikası.

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LIST OF ABBREVIATIONS

Abbreviations Used In Footnotes

BCA	Başbakanlık Cumhuriyet Arşivi
BEO Porte)	Bab-ı Âli Evrak Odası (Document Bureau of the Sublime
BOA	Başbakanlık Osmanlı Arşivi
DH.EUM. 6şb	Emniyet-i Umumiye Müdüriyeti Altıncı Şube
DH.İ.UM	Dahiliye Nezareti İdare-i Umumiye Evrakı (Documents of the Ministry of Internal Affairs, Section of the General Administration)
DH.MKT Scribe's Office)	Dahiliye Mektûbî Kalemi (Ministry of Internal Affairs, Scribe's Office)
HR.SFR	Hariciye Sefareti (Foreign Ministry)
HR.TO.	Tercüme Odası Belgeleri (Documents of the Ottoman Foreign Ministry's Translation Bureau)
İ.DH.	İrade Dahiliye
İ.HUS.	İrade Hususi (Special Decrees)
İ.MMS.	İrade Meclis-i Mahsus
İ.RSM	İrade Rüşumat
MV. Ministers)	Meclis-i Vükela Mazbataları (Minutes of the Council of Ministers)
Y.A.RES.	Yıldız Sadaret Resmi Maruzat Evrakı
Y.A.HUS	Yıldız Sadaret Hususi Maruzat Evrakı
Y.EE	Yıldız Esas Evrakı (Basic Documents, Yıldız Palace)
Y.MTV.	Yıldız Mütenevvi Maruzat Evrakı
Y.PRK.ASK	Yıldız Perakende Evrakı Askeri Maruzat
Y.PRK.ŞH.	Yıldız Perakende Evrakı Şehremaneti Maruzatı

Abbreviations Used In Text

AC	Alternative Current
AEG	Deutsche Edison Gesellschaft für Angewandte Electricität
ANT	Actor Network Theory
CUP	Committee of the Union and Progress
DC	Direct Current
IBB	Istanbul Metropolitan Municipality
SATIE	Societe Anonyme Turque d'Installation Electrique
SCOT	Social Construction of Technology
SOFINA	Ottoman Joint Stock Electric Company
SSK	Sociology of Scientific Knowledge

INTRODUCTION

This study asserts different socio-cultural and political actors shaped the transfer and development process of electric power system in Istanbul. I argue that backwardness or the perpetual fears of a ruler were not the reasons of belated electrification of Istanbul. Instead, there were multifaceted reasons behind the delay of adopting the early electric lighting technologies in the Ottoman state in comparison to its European counterparts.

Since the late nineteenth century, electricity has played an ever-increasing crucial role in daily life and new technological products gradually became more dependent on electricity than other energy sources. This new source of energy started to be used for a broad range of areas including illumination, transportation, heating, industry, communication and alike. The electrification of cities played a role similar to that of the invention of the steam-powered machinery that triggered the ongoing economic fluctuations and led to the Industrial Revolution. Accordingly, electric light and power systems proliferated throughout the industrial world in Europe and America, between 1870 and 1914, which is called as the second Industrial Revolution.¹ One of the leading historians of technology Thomas P. Hughes, who conducted a pioneering study titled *Networks of Power: Electrification in Western Society, 1880-1930* argues, “The first, commonly known as the Industrial Revolution, impressively transformed regions of Britain and Scotland; the second, occasionally called the second Industrial Revolution, changed newly united Germany and the United States.”² This thesis aims to examine the electrification process of Istanbul with a specific focus on the important actors of the period and the social background. Furthermore, this study argues whether the Ottoman state welcomed the so-called “second Industrial Revolution” before experiencing the first revolution precisely in the late nineteenth and early twentieth century.

¹ Joel Mokry, “The Second Industrial Revolution, 1870-1914” in *Storia dell’Economia Mondiale*, ed. by V. Costronovo (Rome: Latreza, 1999), 220.

² Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (London: The Johns Hopkins University Press, 1993), 175.

There are various studies concentrating on the implementation and proliferation of electric power systems. The main concern of these researchers, who go beyond the anecdotal stories of invention, has been the social formation of technological artifacts. These scholars such as Thomas P. Hughes, David E. Nye, Wiebe B. Bijcker and Trevor Pinch aim to understand how a technological artifact participates in a society. However, Ottomanists still do not have any comprehensive study addressing the electrification process of the Ottoman Empire. The present studies solely concentrate on Istanbul and even in that case they do not make the effort to understand how electric systems evolved in Istanbul under the impetus of various social and political dynamics.

Why is it important to understand the story of electricity in the Ottoman state? Since people learned how to use electric energy in the late nineteenth century with the first inventions, this healthier, cheaper and more efficient source of energy started to reveal itself in almost every aspect of life. The leading metropolises of Europe and America such as Berlin, Paris and Chicago experienced a rapid electrification program during the late nineteenth century. Their success in developing large scale light and power systems strengthened the image of “western civilization”, implying scientific and technological developments, in the minds of the westernized Ottoman intellectuals, bureaucrats and professionals. Electric energy not only represented technical developments but also became a cultural artifact symbolizing modernization, advancement and power. In this context, the gradual diffusion of electrification process in the Ottoman state was interpreted as an outcome of the state’s backwardness in comparison to its European counterparts. In addition, Abdülhamid II was accused of being intolerant, oppressive and suspicious towards electric technology. However, such simplistic explanations overlook the multifaceted reasons behind the late arrival of electricity to the Ottoman lands, which reflect the economic, social and political concerns of the Ottoman government during its last decades. Therefore, it is significant to understand the electrification process of the Ottoman state as it reveals the technological aspect of the modernization process the state experienced. It also helps to track the policy shift that came with the increasing influence of the members of Committee of Union and Progress after the dethronement of Abdülhamid II.

This thesis aims to contribute to the history of electrification in the Ottoman state but concentrating only on Istanbul. The most prominent motivation behind choosing this topic is the lack of a comprehensive study handling the electrification process of Istanbul with reference to the different socio-cultural and political actors of the period. There is a remarkable amount of discussion and studies about the modernization of the Ottoman state, but studies about the technological aspects of modernization are limited to approaching technology as a tool of modernization and westernization. Few social scientists including Murat Güvenç, Vahdettin Engin and Uğur Gülsoy deal with the social, cultural and political implications of electric technology in the Ottoman state. However, they are essential for understanding the policy and position of the Ottoman government regarding technological advancements.

Writing about the introduction of a new technological system into a society is an exhaustive work. It necessitates considering various interactions between different social groups such as inventors, scientists, engineers, bankers, financial advisers, politicians, state officials and consumers.³ As Hughes remarks, “with the recent studies there have been interest in the impact of technology on society, but that with rare exceptions the impact of society, or culture, on the shape of technology had been virtually ignored.”⁴ Likewise, a major part of the studies on the introduction of electricity into the Ottoman state handle the case from a relatively narrow perspective focusing on either economic or political aspects of the technological development. As a result, they present a relatively constricted narrative for such an issue that necessitates multidisciplinary research. The primary purpose of this thesis is to help close this gap. It reconsiders the story of Istanbul’s electrification process from a broader perspective by taking into account a variety of agencies including consumers, engineers, companies, political actors, world fairs, entrepreneurs, publications and intellectuals.

Social scientists have adopted various theoretical approaches to the historiography of technology. There are three new trends in the history of

³ Donald MacKenzie, “Missile Accuracy: A Case Study in the Social Process of Technological Change” in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed., Wiebe E. Bijker, Thomas P. Hughes and Trevor Pinch (Cambridge: MIT Press, 2012), 191.

⁴ Thomas P. Hughes, *Networks of Power*, 1.

technology in terms of analysis attempted.⁵ The first theory is the “Social Construction of Technology (SCOT)” developed by Wiebe Bijker and Trevor Pinch.⁶ Social constructivists explain the development of technological artifacts with reference to social context. They argue that technology does not determine human action but human action shapes technology.⁷ Wiebe Bijker asserts in *The Social Construction of Technological Systems* that “there is nothing but the social: socially constructed natural phenomena, socially constructed social interests, socially constructed artifacts, and so on.”⁸ Others criticize his approach for being reductionist and giving the social interactions a privileged position to understand technological artifacts. The second theory is the “Systems Approach” that is mostly known from the studies of Thomas P. Hughes. He analyzes technological systems comprising numerous elements. Unlike social constructivists, Hughes acknowledges that the social factors shape technological artifacts but he also considers the way in which the artifacts relate to economic, political, and scientific factors.⁹ The third theory is “Actor Network Theory (ANT)”, which is associated with the works of Michel Callon, Bruno Latour, and John Law. They attempt to extend the “Systems Approach” one step further and break down the distinction between human actors and natural phenomena.¹⁰ Different from Hughes, who includes only the animate (reflexive) agencies such as inventors, consumers, engineers and financiers to explain the stages of technological growth in his studies, Callon uses a higher abstraction, "actors" that covers both animate and inanimate

⁵ Wiebe. E. Bijker and Thomas P. Hughes, foreword to *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, 3.

⁶ Donald MacKenzie and Judy Wajcman foreword to *The Social Shaping of Technology* (Buckingham: Open University Press, 1999), 37.
[http://eprints.lse.ac.uk/28638/1/Introductory%20essay%20\(LSERO\).pdf](http://eprints.lse.ac.uk/28638/1/Introductory%20essay%20(LSERO).pdf)

⁷ Wiebe. E. Bijker and Thomas P. Hughes, *The Social Construction of Technological Systems*, 4.

⁸ John Law, “Technology and Heterogeneous Engineering: The Case of Portuguese Expansion” in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, 109.

⁹ Ibid, 112.

¹⁰ Wiebe. E. Bijker and Thomas P. Hughes, *The Social Construction of Technological Systems*, 4.

factors.¹¹ Notwithstanding their different viewpoints, these three perspectives have common grounds such as moving away from the individual inventor (or "genius") as the central explanatory concept and challenging technological determinism.¹²

These theories largely contribute to the theoretical approach of this thesis. This study adopts most methods of the SCOT theory such as using a multidirectional model instead of a simpler linear model to describe the transfer and implementation process of a technological artifact. On the other hand, unlike the social constructivists who assume technology and society as separate spheres influencing each other, technology and society are considered as mutually constitutive with reference to the approach of Thomas P. Hughes.¹³ Accordingly, the thesis deals with the introduction of electricity in Istanbul based on Hughes's methodology, which evaluates technological artifacts as interrelated with a wide range of non-technological and social factors. Furthermore, relevant actors involved in the electrification story of Istanbul are analyzed based upon the "Actor Network Theory" since it embodies a much broader definition of "actors" including both animate and inanimate agencies.

Electrical engineers, architects, urban planners, and independent researchers studied the electrification of the Ottoman Empire within the scope of their professional interest or curiosity but not the social scientists. For example, Sertaç Kayserilioğlu, who is a dentist, has researched the history of street lighting and electric tramway system of Istanbul.¹⁴ Furthermore, Nusret Alpeböz and Hamit Serbest, both of whom are electrical engineers on the formative years of electricity in Istanbul in the periodicals of the *Chambers of Electrical and Electronics*.¹⁵ In

¹¹ Govindan Parayil, *Conceptualizing Technological Change: Theoretical and Empirical Explorations* (Maryland: Rowman & Littlefield Publishers, 2002), 28.

¹² Ibid, sf 3.

¹³ Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other" in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, 41.

¹⁴ R. Sertaç Kayserilioğlu, Mehmet Mazak and Kadir Kon, *Osmanlı'dan Günümüze Havagazının Tarihçesi*, (İstanbul: İETT Yayınları, 1999) & R. Sertaç Kayserilioğlu, *Dersaadet'ten İstanbul'a Tramvay I* (İstanbul: İETT Yayınları, 2003)

¹⁵ Hamit Serbest, "Türkiye'de Elektrik Enerjisi Üretiminin İlk Yılları" *Elektrik Mühendisleri Dergisi*, no.418 -419 (June- September, 2003). For detailed information see:

addition, Binnur Kır a and Mevl de Kaptı, assistant professors at Mimar Sinan University in the field of restoration, published an article regarding the first urban-scale power plant of Istanbul, SilahtaraĐa Power Plant. They handled the issue from an architectural point of view.¹⁶

Academic studies dedicated to the introduction of electric technology into Istanbul are limited to a few master and PhD theses, compilations of articles and an unpublished T bitak project about the electrification of Istanbul prepared by Vahdettin Engin and Ufuk G lsoy.¹⁷ As discussed in detail in the first chapter, theses handling the development process of the electric industry in Istanbul adhere to the same perspective and do not provide a comprehensive contextual analysis of the evolution of electric power systems in Istanbul. These studies address the issue by adopting a linear understanding of history, as if there were solely one way of interpreting technology. Accordingly, the technologic growth is thought of as a linear accumulation of facts. However, arraying the facts and events chronologically without analyzing the underlying motives behind them does not help understand the unique nature of the process. Hence, this thesis examines the transfer and development stages of the electric power system of Istanbul with a special focus on the relationship between technical, social, economic, and political factors that shaped the process. Furthermore, actors identified with the electrification process determine the framework. Thus, this study evaluates the issue from different perspectives.

A number of studies sought to examine the economic, social, and political changes that might have caused the delay in the implementation of electric power systems in Istanbul. However, their findings are not satisfying because misleading assumptions shapes their questions and analyses. Research questions are the most important component of a study since they define the argumentation and inquiry of a study. Each question might carry certain assumptions and if there is a problem

http://bbm.emo.org.tr/genel/katalog_detay.php?katalog=7&kayit=10

¹⁶ Binnur Kır a and Mevl de Kaptı, "Monografik Bir alıŐma; SilahtaraĐa Elektrik Fabrikası", in *Tarihi, K lt r  ve Sanatıyla VIII. Ey p Sultan Sempozyumu TebliĐler 7-9 Mayıs 2004* (İstanbul: Ey p Belediyesi, 2004).

¹⁷ Vahdettin Engin and Ufuk G lsoy, "ElektriĐin İstanbul'a GiriŐi, Teknolojik ve Toplumsal Katkıları" (unpublished T bitak Project). (Thanks to Prof. Vahdettin Engin and Ufuk G lsoy for kindly sharing their article)

with the assumption, questions and accordingly answers might be misleading. For instance, the most frequently asked question, “What were the reasons of the belated arrival of electricity in Istanbul?” assumes that the meaning of electric technology was the same for every society. It is indisputable that electricity is an unavoidable requirement for a great majority of people at the present time but was it perceived similarly in the Ottoman society during the formative years of the electric lighting technology? It is a historical fact that the electric lighting systems arrived Istanbul while the leading European cities such as Paris and Berlin had been already illuminated with electric lamps for approximately thirty-five years. However, this delay could also be interpreted by considering that the Ottoman state was not necessarily eager to welcome all the technological artifacts developed over the world unless they were of crucial importance for the people. In this context, this study questions whether electric energy was an obligation or a matter of preference for the Ottoman society and when it became inevitable for them to be a part of the electric industry. Accordingly, this thesis revisits the questions that the existing literature on the electrification process in Istanbul asks and reevaluates answers given. In this endeavor the thesis relies not only on secondary sources but also on primary sources such as archival documents, periodical articles, books and manuals on electrical appliances.

My research is mainly based on Ottoman archival sources and Osman Nuri Ergin’s *Mecelle-i Umûr-ı Belediye* in which I could examine the contract documents, regulations, and specifications related to introducing of electric energy in Istanbul. Archival sources provide detailed information about the government’s policy in importing electric devices. The imperial edicts of Abdülhamid provide some clues about the position of the sultan regarding electrification of Istanbul. Moreover the contract documents inform us about the transfer process of electric technology from Europe to the Ottoman state.

In order to analyze the social dimensions of the issue I also benefit from the newspaper and journals of the period, treatises on electricity, textbooks and manuals as well as the literary works such as poems, memoirs, travel writings and novels. One of the main aims of this thesis is to investigate the different discourses and opinions shared by Ottoman intellectuals. In order to achieve this, I evaluate the writings of the Ottoman intellectuals regarding the first impressions for electric power.

This study benefits from the relevant secondary sources as well, such as articles, theses, and books. There are limited number of articles and books devoted to the electrification of Istanbul covering the social, political and economic dimensions of the topic. These books and articles reviewed above present some evaluations about the electric power system introduced in Istanbul. Master and PhD theses evaluating the arrival of electricity in Istanbul provides a detailed account of the facts regarding the process as well.

This thesis consists of three main chapters. The first chapter is devoted to the theoretical discussions about the social construction of technology with reference to such leading technology historians such as Thomas P. Hughes, Wiebe Bicker and Trevor Pinch. Furthermore, this chapter reviews the present literature and evaluates the academic studies focusing on the electrification of Istanbul. The second chapter presents the history of electricity in Istanbul from the 1850s, when the electric telegraph was introduced into the Ottoman state to the formative years of the Silaharağa Power Plant. The main concern of the second chapter is to describe the electrification process of Istanbul with reference to the archival documents and a view to understanding the stance of the Ottoman government towards electric technology. This narrative on the introduction of electric power system to Istanbul takes into consideration such structural actors as the central government administration, local governments, economic systems, regulations, concessions, international companies and financial institutions.

The third chapter concentrates on the role of human agency and relevant social groups such as Sultan Abdülhamid II, the ruling elite, Ottoman intellectuals, engineers and state officials throughout the electrification process of Istanbul. The chapter is an attempt to understand the different social reactions and discourses on electric technology in Istanbul by means of the periodicals, newspaper and literary works of the period including *Mecelle-i Umûr-i Belediye* compiled by Osman Nuri Ergin and periodicals such as *Amelî Elektrik*, *Mecmua-i Fûnun* and *Fen Alemi*. Furthermore, this chapter investigates the changing public sphere with the introduction of electric energy via streetlights and tramcars of Istanbul with a special focus on new perception of night.

This study does not claim to present an exhaustive picture of the electrification of Istanbul. Neither does it fully explain the policies of the Ottoman state regarding the electric industry since the scope of this study is limited to

Istanbul excluding Ottoman provinces. Rather, the thesis is an introductory step in the pursuit of tracing the history of the electric power systems in Istanbul from the aspects of the different actors of the period. I hope my efforts will trigger new researches based on new sources and evidence towards an even better understanding of to find new sources and evidence, which might illuminate the electrification history of the Ottoman Empire.

CHAPTER I

Theoretical and Methodological Approaches & Literature Review

“How should one tell the history of technology?” became one of the most discussed questions among sociologists of science and historians of technology in America, especially after the 1970s. They mainly dealt with the breaking down of the distinction between science and technology and argued that the sociology of science and the history of technology might benefit each other. An academic debate similar to the one in America, regarding the historiography of science and technology did not take place in Turkey. The underdevelopment of the field and consequent scarcity of perspectives caused serious methodological problems in academic studies on the history of technology. For instance, the history of science and technology is generally considered as a field that examines the technical dimension of a certain scientific or technologic development without reference to its social context.

This chapter aims to present the methodical debates and theoretical approaches regarding the social construction of technology by way of an introduction to the theoretical approach adopted in this thesis. The chapter begins with a discussion of the major theories in technology studies emphasizing the cultural and social dimensions of new technologies and the relationships between science, technology and society. Next, the chapter provides a summary of the main assumptions and the concepts of the social constructivists and continues with an evaluation of the literature on the history of electricity in the Ottoman Empire in terms of context, research questions and methodologies. In the final part, the chapter introduces methodology used in developing the second and the third chapters with due reference to social construction of technology.

1.1 Theoretical and Methodological Approaches

For centuries, the history of humankind has been shaped by various factors such as wars, ideologies, rebellions, revolutions, explorations, immigrations, ecological factors, diseases, natural sources, means of production, economic crises, market upheavals, trade, developments in science, technology, and so on. However, during the last few centuries, technological developments have played a crucial role

in determining the flow of history. The invention of steam-powered machinery and the assembly line led ignited the Industrial Revolution, the consequences of which marked the late eighteenth and nineteenth century. Likewise, during the nineteenth and twentieth century, faster, safer and wider means of communication and transportation became possible thanks to the development of telegraph, telephone, railway and electric power systems. Even though the knowledge of electricity existed since antiquity, the use of electricity as an energy source became widespread after numerous scientific studies around the turn of the twentieth century. Useable electricity had such a profound impact on daily life, space, and time that the social scientists called the technological advances triggered by the use of electric energy as the second Industrial Revolution. In addition, the nineteenth century gave birth to such inventor-entrepreneurs* as Thomas Edison and Nikola Tesla. One of the leading historians of technology Thomas P. Hughes defines them as follows;

Inventor-entrepreneurs, who differ from ordinary inventors in that the former is active through the process from the inventive idea to the time when the invented system is ready to be used by considering a set of social, scientific, economic and diplomatic relations ¹⁸

Electric lighting systems developed in America and then spread all over the world. The most populated and greatest cities of the period such as Paris, London, Berlin, Chicago and Istanbul welcomed electricity in different times and in a different manner according to their resources, traditions, political arrangements and economic practices. Thomas P. Hughes argues that since electric power systems embody a set of changing resources and aspirations of society that constructs them, a historian must examine the intellectual, cultural and symbolic factors in explaining the configuration of power systems.¹⁹ Accordingly, scientific and technological innovations could be considered as cultural artifacts. Studying the introduction of a technology in a city necessitates considering the social practices, human affairs, and spatial characteristics of a city, which are inextricably intertwined with the transformative characteristics of technological artifact. Hence,

¹⁸ Thomas P. Hughes, *Networks of Power*. 14.

* Thomas P. Hughes introduces the concept “inventor-entrepreneurs “ in his book *Networks of Power*.

¹⁹ *Ibid*, 2.

social scientists that are willing to write the history of technological changes should evaluate the issue in a broad social, politic, geographical and cultural context.

The spread of debates on technology studies dates back to the 1970s, when social scientists started raising questions about the possibility of benefiting from the methods of sociology of scientific knowledge (SSK) for the sociology and the history of technology. The main characteristic of the SSK can be represented by its effort to understand the development of a scientific field in terms of social construction, which is taking its lead from the ideas of Thomas S. Kuhn's groundbreaking book, *The Structure of Scientific Revolutions*. Social constructivists such as Trevor Pinch and Wiebe Bijker were inspired by the methods and concepts of the sociology of scientific knowledge and attempted to implement similar methods in technology studies. Accordingly, they concluded that the development process of a technological artifact could be understood as social constructs and established a scholarship known as the social construction of technology (SCOT).

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1.1.1. Social Construction of Technology (SCOT)

Social construction of technology is a theoretical framework to study the social context of a technological innovation developed by Trevor Pinch and Wiebe E. Bijker in 1987.²¹ The leading adherents of SCOT are the leading historians and sociologists of technology such as Thomas P. Hughes, Wiebe Bijker, Trevor Pinch, Michel Callon, John Law, and Bruno Latour. They argue that technology does not necessarily determine human action, but human action shapes technology so much so that technological development cannot be understood without analyzing how technology is embedded in its social context. As such, SCOT is a response to technological determinism, which presumes that technology drives a society's cultural values and social structure.²²

²⁰ Steve Woolgar, "Reconstructing Man and Machine: A Note on Sociological Critiques of Cognitivism" in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, 311.

²¹ Hans K. Klein and Daniel L. Kleinman, "The Social Construction of Technology: Structural Considerations," *Science, Technology, & Human Values*, vol. 27, no. 1(2002), 28.

²² Technological Determinism vs Social Construction of Technology, Communicationista, last modified December 16, 2009, <http://communicationista.com>.

The relationship between science and technology is complex and includes contributions from a variety of disciplinary perspectives. Trevor J. Pinch and Wiebe E. Bijker asserted that technology and science are separated from one another in philosophical thinking on analytical grounds. By doing so, these two intricate concepts are defined by strict and idealized explanations, such as that science is about the discovery of truth whereas technology is about the application of truth.²³ However, since researchers of the generation knew that modern technology involved scientists who 'do' technology and technologists who function as scientists they were not satisfied anymore with over idealized distinctions.²⁴ Pinch and Bijker argued “both science and technology are socially constructed cultures and that the boundary between them is a matter for social negotiation and represents no underlying distinction.”²⁵ Similarly, Thomas P. Hughes stressed that; “the science and technology labels are imprecise and do not convey the messy complexity of the entities named.”²⁶ Hughes, as well, defined science as part of knowledge about technology and technology as embodied knowledge. To sum up, a group of social scientists that gathered under the umbrella of SCOT preferred to avoid certain abstractions such as science and technology and they assumed the difference between them was not about knowing or doing but social. They criticized historians who still took categories and dichotomies such as technology/science, pure/applied, internal/external, and technical/social seriously, because such distinctions undermined for historical authenticity.²⁷

The adherents of SCOT, who are generally named as social constructivists, construct their narratives based on certain assumptions. First of all, they avoid determinist approaches and reductionist explanations that assume technological

wordpress.com/2009/12/16/technological-determinism-vs-social-construction-of-technology/

²³ Trevor J. Pinch and Wiebe E. Bijker, “The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other”, 19.

²⁴ Ibid, 20.

²⁵ Wiebe. E. Bijker and Thomas P. Hughes, *The Social Construction of Technological Systems*, 11.

²⁶ Ibid.

²⁷ Ibid, 10.

change may be explained in terms of an internal logic. On the contrary they believe technological change is contingent, and there is no grand plan of history that drives historical change.²⁸ The social constructivists also assume that technologies are born out of conflict, difference or resistance, which arise from different groups of protagonists. These various groups such as organizations, government, bureaucracies, customers, consumers, designers, and inventors have different interests and resources to shape the characteristics of artifacts during the formative years of a new invention.²⁹ As an alternative to the prevalent approaches in technology studies, which does not consider social context as a determiner, the social constructivists employ the primacy of human agency in shaping technological artifacts. Further, they believe using a linear stage model for explaining a certain technical development can be detrimental to understanding the natural flow of development.³⁰ Thus, they do not solely deal with the question “how a new invention succeeds” but they are also interested in failures that occur during the process of a technological development.

Another dimension of their arguments involves transforming technology studies into a unit of sociological analysis. For the scholars of SCOT, social construction of technology is the main goal. They refuse the prevailing historiographical traditions such as linear perceptions of historical developments, technological determinism, and dualistic categories of events. These discussions led to the emergence of new approaches in the field such as the systems metaphor and the actor network theory. Even though the adherents of SCOT had the same concerns and ambitions and agreed on basic assumptions; different theories had been put forward due to differences in interpretation. Some researchers among the social constructivists such as Bruno Latour and Thomas P. Hughes developed their own concepts and assumptions. In consequence, SCOT includes subfields such as actor-network theory of Bruno Latour and systems theory of Thomas P. Hughes.

²⁸ Wiebe E. Bijker and John Law, foreword to *Shaping Technology, Building Society*, ed., Wiebe E. Bijker and John Law (Cambridge: MIT, 1992), 8.

²⁹ Trevor J. Pinch and Wiebe E. Bijker, “The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other”, 12.

³⁰ Wiebe E. Bijker, “The Social Construction of Fluorescent Lighting, or How an Artifact Was Invented in Its Diffussion” in *Shaping Technology Building Society*, 75.

1.1.2 Systems Approach

Thomas P. Hughes is differentiated from other social constructivists such as Trevor Pinch and Wiebe Bijker with his “systems metaphor” that he developed as the main approach in his groundbreaking work about electrification of western cities. In his pioneering work, Hughes asks; “how did the small, intercity lighting systems of the 1880s evolve into the regional power systems of the 1920s” and he evaluates the various factors that shape this new technological artifact during the formative years of the electric supply systems. Hughes argues, “those who build artifacts do not concern themselves with artifacts alone but must also consider the way in which the artifacts relate to social, economic, political, and scientific factors.” In other words, his argument is that, inventors could be considered as system builders in such a modern era.³¹ Hence, Hughes avoids labeling such as individual inventor or genius for Edison. Instead, he handles him as one of the most important inventor-entrepreneurs of his period and tracks the pattern of evaluation of the power networks.

The key concepts of the systems approach are “reverse salient” and “critical problem”. Reverse salient refers to the problems that arise during the development and innovation process of the technology. Hughes says;

A reverse salient appears in an expanding system when a component of the system does not march along harmoniously with other components. As the system evolves toward a goal, some components fall behind or out of line. As a result of the reverse salient, growth of the entire enterprise is hampered or thwarted, and thus remedial action is required.³²

Accordingly, Hughes offers that in the case of the electric power system, an earlier reverse salient was the difficulty of distributing direct current to the areas that are located far away from the main load center. Although this major technical problem was solved with the invention of alternating current generators, system builders faced several critical problems simultaneously. Their reverse salient was economic (how to supply electric lighting at a price that would compete with gas), political (how to persuade politicians to permit the development of a power

³¹ John Law, “Technology and Heterogeneous Engineering: The Case of Portuguese Expansion”, 112.

³² Thomas P. Hughes, *Networks of Power*, 79.

system), technical (how to minimize the cost of transmitting power by shortening lines, reducing current, and increasing voltage), and scientific (how to find a high-resistance incandescent bulb filament).³³

John Law argues that the theories of social constructivism and the systems approach have much in common. First of all, they concur that technology is not fixed by nature alone. Secondly, they agree that technology does not stand in an invariant relation with science. Their methodologies are similar as well. Both parties assert that technological stabilization can be understood only if the artifact in question is seen as being interrelated with a wide range of non-technological and specifically social factors. However, when they specify the relationship between the technological and the social, they start to diverge. Social constructivism works on the assumption that the social directs the growth and stabilization of technological artifacts. In contrast, the systems approach argues that the social is not especially privileged. In particular, it presupposes that social interests are variable, at least within certain limits.³⁴ Consequently, Thomas P. Hughes refuses that technology and society are separate spheres influencing each other, instead, he asserts that technology and society are mutually constitutive.

1.1.3. ANT (Actor-Network Theory)

Actor network theory was first developed in the writings of Michel Callon, Bruno Latour and John Law in the 1980s. Latour, Callon and Law developed their theory to strictly criticize the studies on technology, which examines links among persons and technology but ignores the interactions between technology and things. The basic assumption of the theory is that both humans and non-humans could be actors. They claim that there are no differences between non-human and human forms of agency and animals, machines or even electrons can be ‘actors’ in the same sense as human are. Their definition of “actors” affecting technology includes electrons, catalysts, accumulators, users, researchers, manufacturers and ministerial departments defining and enforcing regulations. According to the actor-network theory, these and many other actors interact through networks to create a coherent

³³ John Law, “Technology and Heterogeneous Engineering: The Case of Portuguese Expansion”, 112.

³⁴ Ibid, 113.

actor world.³⁵

ANT differs from SCOT in terms of basic assumptions. ANT does not explain the action of the actors by reference to their social context whereas Wieber and Bijker preserve the social environment.³⁶ Callon refuses dichotomies such as outside/inside or social/ technology as Thomas P. Hughes and he believes the boundary between the social and the technical is a matter for social negotiation and represents no underlying distinction. The “seamless web” metaphor is one of the key elements to understand the theories of Callon and Hughes. They both challenged the distinction between technology and its social impact by treating them as a seamless web. Callon asks “why one should categorize the elements in a system or network when these elements are permanently interacting, being associated and being tested by the actors who innovate”.³⁷ Pinch and Bijker, in contrast, preserve the social environment. The web is not seamless in this regard, so Pinch and Bijker develop other conceptual themes. The social environment, for instance, shapes the technical characteristics of the artifact.³⁸

1.2. Review of the Literature

Technology studies is an overlooked area within Ottoman studies since there is not much interest among Ottoman historians towards the history of a technologic artifact. As a consequence, there is not enough scholarship on the introduction and implementation stages of electric power systems in the Ottoman state. Academic studies dedicated to the electrification process of the Ottoman lands remain limited for such a vast research area as it consists only of a few articles, dissertations and books. Further, a major part of the studies concentrates on Istanbul and other provinces of the state remain obscure. These studies have focused mostly on either the modernization of the telegraph and tramway systems with the introduction of electric energy or on the implementation of the electric lighting systems in the

³⁵ Wiebe. E. Bijker and Thomas P. Hughes, *The Social Construction of Technological Systems*, 12.

³⁶ Henrik Bruun and Janne Hukkinen, “Crossing Boundaries: An Integrative Framework for Studying Technological Change” *Social Studies of Science*, vol.33, no.1 (2003), 105.

³⁷ Wiebe. E. Bijker and Thomas P. Hughes, *The Social Construction of Technological Systems*, 11.

³⁸ Ibid, 12.

Ottoman state.

The American historian Roderic H. Davison, who specialized in late Ottoman history, analyzed the western influence on the latter Ottoman Empire and on the formation of the modern Turkish nation-state in his works. His *Essays in Ottoman and Turkish History, 1774–1923: The Impact of the West*, published in 1990, comprises twelve essays focusing on related issues.³⁹ One of these essays addresses the advent of the electric telegraph in the Ottoman Empire. This study has a great significance since it deals with one of the least studied topics and analyze the western influence on the Ottoman state by focusing on its technological aspect. An important shortcoming in the existing literature on the late Ottoman history is the lack of research regarding the reaction and the stance of the Ottoman state towards the scientific and technological developments that took place in Europe and America during the nineteenth and early twentieth century. There is a huge gap in our understanding of Ottoman modernization and the impact of “western world” on the Ottoman society. Hence, Davison’s article is an attempt to fill this gap.

The article provides detailed information about the introduction of the electric telegraph into the Ottoman Empire including the social, cultural, economic, and political aspects of this technological change. Davison tells the story of the electric telegraph in Ottoman world by considering a large amount of components that interfaced with the technological artifact. Accordingly, he does not only focuses on the technical dimension of the invention but also touches upon the social reactions of the Ottoman subjects towards the electric telegraph. He also presents the legislations associated with the use of the electric telegraph, the policies on technical education, and the architectural innovations that arise during the development period of the electric telegraph service. Throughout the article, one can trace the attitudes of different social groups such as intellectuals, bureaucrats, the *ulema*, technicians, and ordinary people towards this new means of communication and it helps the reader understand how the reactions of relevant social groups mutually affected one another. As discussed before, in the social construction of the technology approach, the development of a technological artifact or its adaptation is described with a multidirectional model as opposed to

³⁹ Roderic H. Davison, *Essays in Ottoman and Turkish History, 1774-1923: The Impact of the West* (Austin: University of Texas Press, 1990), 134.

linear models.⁴⁰ The multidirectional model explains the evaluation of a technological system as an alternation of variation and selection. In this manner, Davison points to technological controversies, which took place between system builders and different social groups.

Davison's approach is important since his article is an example of the studies analyzing how a technological artifact participates in a society. He analyzes the process of the adaptation of electric telegraph that is transferred from Europe when the Ottoman ruling elites were eager to establish a politically modernized and centralized regime. The electric telegraph was endowed with a unique ability to separate communication from transportation and it helped to establish a broad network of communication in the hands of a centralizing government. As the name of the book suggests, the author constructs his narrative based on the westernization question and examines the Ottoman experience of the adaptation of electric telegraph systems in the Ottoman state under western influence. It is a very valuable study, which provides significant insights related to the introduction of electric telegraph system in the Ottoman society.

Another academic study that will be evaluated within the scope of this thesis is the unpublished Tübitak project on the electrification process of Istanbul prepared by Vahdettin Engin and Ufuk Gülsoy.⁴¹ Their study covers the period beginning with the early days of illumination using coal gas in Istanbul and continues until the 1930s when electric street lighting became widespread all around Istanbul. The article is composed of two main parts. The first part, which is written by Vahdettin Engin, tells the evolution of public lighting in Istanbul -which was powered first by coal gas and then electric energy - until the Republican era. In the second part of the article, Ufuk Gülsoy traces how the electric power system expanded and evolved in Istanbul during the first years of the Republican era. Further, he touches upon the profound impact of electric energy on urban life with a special focus on the introduction of electric home appliances into the houses of Istanbul.

⁴⁰ Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other", 45.

⁴¹ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları"

In the first part of the study, Vahdettin Engin narrates the transfer of electric power system to Istanbul and its implementation process based on Ottoman archival sources. It provides detailed information regarding the electrification process of Istanbul. However, since the main consideration of the study is limited to narrating the introduction of electricity in Istanbul, the author does not question the underlying reasons and motives behind the facts. For instance, he provides detailed information about Abdülhamid II's approach towards electric technology but he abstains from interpreting them. In short, although the article provides a detailed account of electrification of Istanbul it does not question the possible reasons of the rigid stance of Abdülhamid II about the electrification of Istanbul.

Vahdettin Engin narrates the transfer process of electric technology with reference to structural actors such as central and local government administrations, entrepreneurs, international companies and financial institutions. Since his study excludes such socio-cultural actors as intellectuals, electric engineers, professors of electricity and ordinary people, it fails to present the complete picture of the process. In the second part of the article Uğur Gülsoy explains the growth of electric consumption in Istanbul during the first years of the Republican era. He constructs his narrative with reference to the milestones of the electrification process in Istanbul based on archival sources as well. He also includes consumers into the narrative to show how electric lighting and various types electric home appliances changed the daily life practices of the residents of Istanbul. However, contrary to the social constructivists who assume that the social lies behind technology and directs the growth of artifacts, Engin and Gülsoy do not include ordinary people into the narrative as system builders but only focus how electricity transformed the lives of its consumers.

Vahdettin Engin adopts a different approach in another study namely *İstanbul'un Atlı ve Elektrikli Tramvayları* in which he addresses the transition process from horse tramways to electric tramways.⁴² This comprehensive study sheds light on the transformation process of a socio technical system by considering relevant social groups such as passengers, workers, employers, men, women and inanimate factors such as local conditions of the city, war and alike.

⁴² Vahdettin Engin, *İstanbul'un Atlı ve Elektrikli Tramvayları*(İstanbul: İstanbul Ticaret Odası Yayınları, 2011).

Another study addressing the electrification of tramways in Istanbul is the Duygu Aysal Cin's article, named as "*Tracing the History of Transportation in the Ottoman Empire: Electrification of İstanbul's Tramways*" (1898-1914).⁴³ In this article, the author focuses on the transfer process of the electric tramcar system to the Ottoman state and she presents the essential actors of tramway concessions such as multinational consortia, international financial institutions, creditors and Ottoman bureaucrats. The author presents information on the negotiations and competition of enterprises and recognizes the efficiency of the Ottoman bureaucrats in the course of the consultations. Opposed to the prevailing belief, which underemphasizes the role of Ottoman bureaucrats throughout the introduction of electric power for tramways, she shows the active role they played based on concession documents, agreements, and contracts.

Emine Erol's dissertation "Türkiye'de Elektrik Enerjisinin Tarihi Gelişim; 1902-2000" is an important study in investigating the historical development of the electricity sector in the late Ottoman Empire and Turkey from 1902 until the 2000s.⁴⁴ Erol evaluates the history of illumination with electricity in the Ottoman Empire from an economic relations aspect. Accordingly, she analyzes the 100 year time span in four different periods: the Ottoman era (1914-1923), the Republican era (1923-1960), the planned development period of the 1960s and 70s, and the privatization attempts after the 1980s. This periodization is based on different energy policies of the governments in the electric sector. Erol adopts both qualitative and quantitative research methods and uses plenty of data and statistics. According to the author, during the late Ottoman period privileged domestic and foreign companies operated in the sector and this continued until the 1930s when the companies were nationalized. The ten-year period between 1930 and 1940 was statist in nature. However after the 1950s the role of the private sector increased. Between the years of 1960 and 1980, development plans became cornerstones for

⁴³ U. Duygu Aysal Cin, "Tracing the History of Transportation in the Ottoman Empire: Electrification of İstanbul's Tramways (1898-1914)", in *CIEPO 6. Uluslararası ve Osmanlı Öncesi ve Osmanlı Tarihi Araştırmaları 6. Ara Dönem Sempozyum Bildirileri I: Uşak 14-17 April 2011*. Ed. Adnan Şişman, Tuncer Baykara and Mehmet Karayaman, Uşak, (İzmir: Meta Basım, 2011).

⁴⁴ Emine Erol, "Türkiye'de Elektrik Enerjisinin Tarihi Gelişimi: 1902-2000 (PhD diss., Istanbul University, 2007).

the electric sector. In the 1980s privatization took place in the industry and continued until the 2000s. Erol's dissertation fit into the group of "innovation studies" according to the definition of Trevor Pinch and Wiebe J. Bijker. They divide the literature of technology studies into three groups: innovation studies, the history of technology, and the sociology of technology. They view economic analyses of technological artifacts or systems within the scope of innovation studies, which are carried out by economists generally.⁴⁵ Social constructivists criticize this approach for using simple linear models to describe the process of innovation. According to critics, although innovation studies provide detailed information concerning the changing economic conditions during the technological developments, they ignore the social aspects of technology.⁴⁶

Another relevant dissertation is Mustafa Esenduran's "İstanbul'da Elektrik Üretimini Başlangıcı ve Tarihi"⁴⁷ Unlike Emine Erol, Esenduran explains how electricity affected daily life in the capital city of the state. The author presents the social and economic atmosphere of the period that shaped the introduction and development process of electric power in Istanbul under nine main headings: the relationship between electric and socioeconomic processes, the Industrial Revolution, foreign capital, the Republic era statist policies, the economic structure of the Ottoman state, the great depression, foreign debt, the concessions granted to foreign companies and industrialization efforts. Each part highlights certain milestones, economic growth, changing balance of powers, international relations and significant events of the era. Even though such a general introduction is essential for contextualizing the main story, Esenduran's approach is too general to establish the mutual relationship between the macro and micro dimensions of the issue under scrutiny. For example, the author focuses upon the rate of the Muslim and non-Muslim populations in Istanbul and its alterations from the early fifteenth century to 1935. However, he does not explain the relationship between the increasing population growth rate of Istanbul and the electrification process.

The author gives general information about the Industrial Revolution,

⁴⁵ Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other", 45.

⁴⁶ Ibid, 22.

⁴⁷ Mustafa Esenduran, "İstanbul'da Elektrik Üretimini Başlangıcı ve Tarihi"(MA diss, İstanbul University, 2010)

Ottoman industrialization efforts and foreign debt taken after the Crimean War are used to illustrate the economical obstacles and political circumstances of the period for the Ottoman government. He argues “Since the Ottoman state could not benefit sufficiently from the Industrial Revolution due to the economic structure of the state, the Ottomans could not keep up with technological developments occurring in Europe”⁴⁸ According to him the “late arrival of electricity to the Ottoman state” was a consequence of the economic and political conjuncture of the period. Due to the financial crises, companies and financial institutions of European interests undertook electricity production and distribution services in return concessions. He asserts granting concessions to foreign investors was an economic necessity rather than choice.

Esenduran presents different opinions regarding Sultan Abdülhamid’s stance towards electric technology. The author refuses the prevailing belief that Abdülhamid II was not open to new technologies and had deep concerns about electricity, thereby keeping Istanbul away from electricity. Esenduran asserts that the interruption of the transfer of electricity to Istanbul during the reign of Sultan Abdülhamid was associated with the urban structure of Istanbul and the existence of gas companies that had been already granted concessions for the illumination of Istanbul. Esenduran treats the interaction between electric technology and the Ottoman Empire both at a national and regional level by considering the political situation and local geographic factors. However he only focuses on political actors of the period; Abdülhamid II and the members of the Committee of the Union and Progress (CUP) as determinant agents. He does not pay attention to the opinions of the relevant social groups such as the Ottoman state officials, intellectuals, engineers and ordinary people about electricity.

Mustafa Esenduran does not only address the illumination of Istanbul with electricity but he narrates the introduction of coal gas lighting systems in Istanbul and electrification of Istanbul tramway system as well. However, he does not make a comparison between implementation stages of these technological systems which might provide clues regarding the position of the Ottoman state towards technological developments.

Another related dissertation is Serhat Küçük’s “Osmanlı İmparatorluğu’nda

⁴⁸ Mustafa Esenduran, “İstanbul’da Elektrik Üretimine Başlangıcı ve Tarihi”, 136.

Teknolojik Değişim ve Dönüşüm: Elektrik Örneği.”⁴⁹ Küçük addresses the introduction of electric energy into the Ottoman Empire and its socioeconomic impacts. The study includes comprehensive bibliography that would be useful in future researches. Unlike Mustafa Esenduran, Serhat Küçük introduces various articles from the press of the period that reflects the relevant developments in the formative years of electricity in the Ottoman Empire and he shares quotations from travel memoirs, embassy notes, and writings of the Ottoman intellectuals regarding the first impressions for electric power. His endeavor in presenting a list of articles written on electricity from the various newspapers and journals of the period sheds light on a neglected but crucial aspect of the Istanbul’s electrification. Although his study presents a lengthy and carefully selected bibliography, he does not analyze or interpret the documents, and he does not reach a conclusion and comment about the ongoing discussions on electricity in the Ottoman state during the late nineteenth and early twentieth centuries.

Serhat Küçük starts his narrative from Renaissance and continues with Enlightenment, French and Industrial Revolutions by adopting a linear conception of historical development. He defines the evolution of electric power systems as a product of a modern, enlightened and industrial European world and recognizes electric technology as a tool of modernization and westernization.

The author uses a similar concept with Hughes’ *inventor-entrepreneurs* referring to those who not only deal with the technical character of their innovations but also try to innovate the artifact according to social, political, and economic contexts of the time and space. Küçük uses *mucit* as a translation of the word *inventor-entrepreneur* but his interpretation of the term differs from Hughes’. Küçük argues that the distinctive features of inventor-entrepreneurs were their curiosity, ambition and desire to be rich. This portrait is appropriate for the liberal capitalist conditions of the modern world. According to Küçük, efforts of investors to get patents for their inventions and search for creditors for commercial investments were a problematic phenomenon of the age because they led to patent

⁴⁹ Serhat Küçük, “Osmanlı İmparatorluğu’nda Teknolojik Değişim ve Dönüşüm: Elektrik Örneği” (PhD diss., Hacettepe University, 2010).

competitions.⁵⁰

Serhat Küçük introduces various new technological devices that were improved and redesigned with usable electricity such as the electric telegraph and tramway, telephone, cinematograph, radio, and television by giving their technical development process from inception to development in a chronological time line. After providing technical information, he explains the westernization efforts of the Ottoman government that underpinned technological transfers from Europe. He argues that the Ottoman state had been always eager to adopt the latest advancements in science and technology, however as the state weakened relatively, the way it transferred innovations changed. It became no longer a party positioned to demand an innovation but bound to adopt it.

As opposed to Serhat Küçük's interpretation, which assigns a passive role to the state, Duygu Aysal Cin emphasizes the active role that the Ottoman government played against foreign companies, creditors and entrepreneurs who desired to obtain the concessions for the electrification of the Istanbul tramway lines in her aforementioned article. Competing ventures had to ensure to fulfill the tough conditions of the contract determined by a technical commission who would decide the winner of the adjudication.⁵¹ Vahdettin Engin makes a somewhat different observation based on his examination of the contract that was signed between the Dersaadet Tramway Company and the government for the electrification of tramways. He argues that during the negotiations the technical commission charged by the Ottoman government put forward requirements that would guarantee the government's profit and the public's convenience. Even though the government's demands were not acceptable by the company both sides agreed upon the basic requests and principles of the Council of State (Şura-yı Devlet). Engin concludes that the Ottoman government was eager to make the shift to electric tramway as soon as possible. As a result, the government preferred to grant the concession to the company, which was already running the pre-existing horse tram, to save time

⁵⁰ Serhat Küçük, "Osmanlı İmparatorluğu'nda Teknolojik Değişim ve Dönüşüm: Elektrik Örneği", 22.

⁵¹ U. Duygu Aysal Cin, "Tracing the History of Transportation in the Ottoman Empire: Electrification of Istanbul's Tramways (1898-1914)", 343.

and money.⁵²

Another study is a conference paper regarding the Silahtarağa Power Plant prepared by Binnur Kıracı, Mevlüde Kaptı and Saadettin Ökten.⁵³ The article tells the story of the first power plant in the Ottoman Empire, from an architectural perspective and examines the power plant as an important edifice of the industrial heritage. The Silahtarağa Power Plant, which is located at the Golden Horn district, was built with a capacity to generate 13400 kW of electricity in 1911. The Silahtarağa Power Plant was not only an electric production plant but was a social complex including a residential area, housing facilities, and restaurants for personnel along with the main production unit. Thus, the analysis of this structure provides important clues about the cultural and social impacts of a new technological complex. For instance Thomas P. Hughes compares the characteristics of the power plants in Chicago, Berlin, and London to understand different cultural factors and internal dynamics that shape power systems, and he deduces that at each time and place local factors influenced the development of the power systems. The authors of the article explain the different components of the complex and give information about the structural and architectural design of the buildings. However one cannot find any information regarding the social and cultural reflections involving the complex of the Silahtarağa Power Plant in the article.

Silahtarağa Elektrik Santrali 1910-2014 edited by Asu Aksoy comes closest to adopting a social constructivist approach in terms of the questions raised in the book.⁵⁴ The book consists of four articles written by different researchers and a selection of bibliography of reference sources for the Silahtarağa Power Plant. The book examines the Silahtarağa Power Plant from various aspects such as its location, construction, development, and operation processes. Moreover, the impact of electricity on the modernization of urban life is handled from a social

⁵² Vahdettin Engin, *İstanbul'un Atlı ve Elektrikli Tramvayları*, 125.

⁵³ Binnur Kıracı, Mevlüde Kaptı and Saadettin Ökten, "The Old Power Plant at Silahtarağa in İstanbul", in *Proceedings of the First International Congress on Construction History. Madrid, 20th-24th January 2003* (Madrid: Instituto Juan de Herrera, 2003).

⁵⁴ Asu Aksoy, Funda Açıkbaz and Ayşenur Akman, ed., *Silahtarağa Elektrik Santrali 1910 – 2004* (İstanbul: İstanbul Bilgi Üniversitesi Yayınları, 2009).

constructivist perspective. For example, Murat Güvenç asserts it was not only architecture, means of production & transportation and medical technology that changed with the distribution of electrical energy but also the perception of time and space was transformed during the period. His article emphasizes the significant points that can provide a new perspective in the narration of the social history of electrification in the Ottoman state. These points include the transformation of the urban morphology and the spatial organization of Istanbul with the production of electricity at the Silahtarağa Power Plant and the introduction of the electric tramway in Istanbul. Another point he underlines is the abolishment of the monopolization of physical power with the accessibility of usable energy by the civil society. This distribution let people benefit from energy and become free from mechanisms that enhanced physical power. Güvenç suggests reviewing the impact of electricity through this perspective.⁵⁵ From the point of historiography of technology he shares similar ideas with social constructivists and he strongly opposes the delimitation of the history of electricity to a technological discourse. Güvenç converges on the systems approach with his emphasis on the Silahtarağa Power Plant as a symbol of the unmapped territories yet to be discovered by the social history of Istanbul in the first half of the twentieth century.⁵⁶ He encourages the writing of urban history by considering the interactions of such variables as urban morphology, technology, architectural design, social dynamics and institutional history.⁵⁷

The Ottoman industry was not sufficiently developed to demand heavy electric energy in the early years of the Silahtarağa Power Plant. Hence, the plant produced electricity mainly for public services such as the transition from the horse tramcar to the electric tramway and the illumination of streets.⁵⁸ Analyzing the transition from old to new technology helps understand the perception of “the new technology” idea in people’s minds by comparing the two sources of energy.

⁵⁵ Murat Güvenç, “İstanbul’da İkinci Sanayi Devrimi: Yeni Bir Kentsel Araştırma Programına Doğru”, in *Silahtarağa Elektrik Santrali 1910 – 2004*, 107.

⁵⁶ Murat Güvenç, “İstanbul’da İkinci Sanayi Devrimi: Yeni Bir Kentsel Araştırma Programına Doğru”, 107.

⁵⁷ Ibid.

⁵⁸ Asu Aksoy, Funda Açıkbaz and Ayşenur Akman, “Silahtarağa Elektrik Santrali’nin Hikayesi”, in *Silahtarağa Elektrik Santrali 1910-2004*, 51.

Accordingly, it is important to understand the horse tramcar or illumination with coal gas before commenting on using electric energy for both transportation and illumination. For example, Sertaç Kayseriliođlu aims to explain the history of the street lighting in Istanbul by considering that the illumination with coal gas and electricity co-existed for a long span of time. His three volumes of *Düinden Bugüne Havagazının Tarihi* begins from the early days of illumination with beeswax and olive oil, continues with lighting by petroleum and coal gas, and ends with arc lamps and electric lighting. He mainly focuses on the history of gas lighting from its formative years to the closing of coal burning plants with the advent of electric lighting.

The book includes a rich context of primary sources including correspondences between the Ottoman government and the foreign gas companies, contract documents and the governmental documents regarding the issue. Kayseriliođlu addresses the history of the coal gas technology in Istanbul based on the above-mentioned primary sources. His narrative starts from the 1853 when the first gashouse of Istanbul Dolmabahçe Gasworks was built and continues until the shift to electric street lighting systems. It is indisputable that this study is one of the main references for those who want to study on street lighting in Istanbul since it provide access to the a great number of primary sources regarding illumination of Istanbul by coal gas.

Sertaç Kayseriliođlu narrates the transfer, implementation and development processes of the four gashouses that illuminated the streets of Istanbul Dolmabahçe, Yedikule, Kadıköy-Üsküdar and Beylerbeyi Gasworks. These four coal gas plants had been illuminating the city of Istanbul before the Silahtarađa Power Plant met the energy needs of Istanbul by itself in the 1950s. Since the aim of the writer limited to narrate the story of illumination he does not ask how a new technology or a new invention is introduced in a society. As a result, he presents a descriptive picture of the illumination of Istanbul by coal gas. In short, he merely transmits the raw data open to his readers' interpretation and only narrates the transfer and implementation process of street lighting systems without reference to context.

In addition to the studies mentioned above, there are articles dedicated to the introduction of the training in electric engineering in the Ottoman Empire and on the first electric engineers. The studies generally focus on Mehmed Refik Fenmen, one of the first electric engineers of the Ottoman Empire who witnessed both the

last decades of the Ottoman Empire and the first decades of Republic of Turkey. Fenmen was a well-educated electric engineer, a pioneer in the introduction of electric education in the empire and an intellectual who paid attention to the electrification problems of Turkey in 1920-1930. Meltem Akbaş and Füsun Oraalp discuss Refik Fenmen as an engineer, scholar and intellectual in their articles.⁵⁹ The articles offer a biography of Fenmen and cover the very first attempts to organize and build an education program for electric engineering in the first decades of the Turkish Republic. For the scholars of SCOT, identifying relevant social groups regarding the new technology is essential. Therefore a work on the history of technology as a social construction cannot ignore such main actors as Refik Fenmen. The role of engineers and intellectuals is as much important as the role of the sultan, the bureaucrats and the state officials.

1.3. Conclusion

The literature on the transfer of electrical energy from Europe to the Ottoman state can be grouped indifferent categories according to genre, content, historical approach and basic assumptions. Categorizing these studies with respect to methodology and perspective is rather difficult due to the limited number of academic studies. Aforementioned literature includes different genres such as dissertations, research studies and academic articles. Even though dissertations constitute a large part of the literature on electrification in the Ottoman Empire, only three of them are evaluated within the scope of this study. In general, theses and dissertations narrate the story of electrification covering a long time span from the industrial revolution to the last years of the Silahtarağa Power Plant and even the following years. The authors do not focus on specific phases such as the transfer, development or distribution processes but they try to tell the whole story with special emphasis on its economic and political aspects.

Studies by non-academics appeal to a wider audience in their wording and the way they construct the stories. For example, Sertaç Kayserilioğlu, who focuses on the history of public services such as transportation and illumination in Istanbul,

⁵⁹ Meltem Akbaş, “Mehmet Refik Fenmen: A Turkish electrical engineer and dedicated intellectual”, *Osmanlı Bilimi Araştırmaları*, vol.9, no.1-2(2008).

Füsun Oralalp, “Türkiye’de mühendisliği meslekleştiren eğitim dehası Refik Fenmen” *Tübitak Bilim ve Teknik*, no.338 (January,1996).

prepared prestigious publications for the İETT and the Istanbul Metropolitan Municipality (İBB). The third genre relates to academic articles written by historians, sociologists and architects. These studies differ from others by their content and methodology. Academic articles about the use of electricity in the Ottoman state do not tell the comprehensive story but focus on one component of technology. For instance Duygu Aysal Cin concentrates on Ottoman officials who dealt with the electrification of tramways. Rhoderic H. Davison examines the introduction of the electric telegraph. Meltem Akbaş and Füsün Oraalp present Refik Fenmen, one of the first electric engineers of the Ottoman state.

In the absence of a historiographical tradition specific to the history of technology the related issues have long been studied in the fields of economic or social history in Turkey. Therefore, it is difficult to talk about certain methodologies, assumptions or theories. As a consequence, the classification of technology studies according to their approach is bounded to be schematic. The historiography of the Ottoman Empire in the nineteenth century is mainly concerned with economic regression, unsuccessful wars, industrialization attempts, process of modernization, and centralization. As a result of the cultural milieu of the period, import of European technology by the Ottoman state in the nineteenth century is recognized as an important tool of westernization by most social scientists. In contrast to SCOT theory, which argues that different social groups interpret artifacts differently and seek to shape them, studies on electrification in the Ottoman Empire aim to show how the European technology shaped Ottomans into modern citizens. This approach is a common feature of all the studies examined above. Furthermore most of these writers present a descriptive picture of the history of electrification. For example Kayserilioğlu extensively relies on archival sources such as contracts, legislations, and specifications regarding the street lighting of Istanbul with coal gas and electricity. He transcribes them into modern Turkish and shares them with the reader without comments. Since his aim is limited to telling the story of illumination he does not ask how a new technology or a new invention is introduced in a society. Consequently the archival documents he uses do not shed light on the distinctive characteristics of the electrification process in the Ottoman state but only help to construct a chronological narrative. A large number of studies are descriptive, which is good as a starting point but insufficient to answer why technology changes the way it does.

Since the 1980s, historians of technology have begun to seek a new methodology, which would transform technology into a sociological tool of analysis. Accordingly, they raised new questions and criticized traditional assumptions. Clearly, asking the right questions plays a critical role in both sociological and historical analysis. When one looks at the existing literature on the electrification process in the Ottoman Empire one can easily identify the main research questions that shape the overall approach of the studies. The most common question is “What were the reasons of the belated arrival of electricity in Istanbul?” For example, Serhat Küçük explains the late arrival of electricity with the concurrence of two important historical periods, the development of electric technology in Europe and America and the Hamidian era. He thinks the Ottoman government had always been eager to transfer technology beneficial to the state. However, as the state gradually lost its economic, political and military superiority over the European forces the Ottomans became less confident in their demands compared to the earlier days. On the contrary, Esenduran and Erol reject such opinions, which judge Abdülhamid II as being against electric technology. They point out Abdülhamid’s consent for the electrification of Tarsus, Damascus, Beirut and Izmir before the capital city of Istanbul had been illuminated by electric power. Mustafa Esenduran suggests that the Ottoman system did not pay enough attention to electric energy. Development programs (Umur-u Nafia), which were prepared in 1908 and 1930, did not cover any regulation regarding the usage of electricity. Moreover, Emine Erol adds that Ottoman government waited for the results of studies, tests and researches carried out in Europe concerning the reliability of daily electricity consumption to be able to stay on the safe side. On the other hand, Vahdettin Engin does not even address the issue of the late adaptation of electric energy in Istanbul because he does not initiate the electrification process of Istanbul with the Silahtarağa Power Plant, which opened in 1914. Rather he emphasized the electric plant built within the Imperial Dockyard (Tersane-i Amire), twenty-six years earlier than the construction of the Silahtarağa Power Plant. He also emphasizes Abdülhamid’s interest and desire of using some of the electric machines such as an electric car, which had been already in use in certain European cities. Consequently, Engin argues that the sultan was aware of the benefits of electric technology, however he preferred to wait until the technologic inconveniences were eliminated.

Another common consideration of the researchers is the impact of electric technology on the modernization of the Ottoman society. There is a consensus among researchers on the significance of the common usage of electricity because of its high potential to penetrate and modernize almost any aspect of daily life. According to them, modernization, which had been a notion among a very restricted elite class, was reshaped as a result of a series of transformations triggered by electricity and became a substantial part of daily life. In other respects, Güvenç offers to look beyond the familiar discourse of modernization by referring to Istanbul's narrowing sphere of influence and economic significance as the city went through the second Industrial Revolution.⁶⁰ At this point, making a comparison between the electrification process of Istanbul and other European cities helps understand the unique experience of the Ottoman capital. Because unlike European metropolises, Istanbul was compelled to confront this new technology while the state was going through difficult times.

Since the history of the introduction of electric energy in Istanbul has been narrated by several researchers as presented above, this thesis does not aim to retell the same story but seeks for a new approach benefiting from the analyses of the social construction of technology. The main concern of the study is to identify the actors that participated in the electrification process and looking on the issue from their perspectives. As Hughes states, if historians are needed to comprehend the complex, multifaceted relations of the technological systems, initially a broad range of components of the technological system should be considered for a better understanding.⁶¹ This study adopts the basic assumptions of the SCOT theory but at the same time refers to other different approaches such as the actor network and systems theory. The basic assumption shared by both the social constructivists and the systems approach, is that technological artifacts can be understood only if the artifacts are seen as interrelated with a wide range of non-technological and social factors.⁶² I adopt this position. In addition, I benefit from the position of the actor network theory on relevant actors, which use a more abstract and broader definition

⁶⁰ Murat Güvenç, "İstanbul'da İkinci Sanayi Devrimi: Yeni Bir Kentsel Araştırma Programına Doğru", 107.

⁶¹ Thomas P. Hughes, *Networks of Power*, 14.

⁶² Ibid.

for actors than social constructivists. It includes both animate and inanimate factors such as users, researchers, manufacturers and regulations.

CHAPTER II

Introducing Electricity to Istanbul: The Role of State, Politics and Priorities

Reason and justice tell me there's more
love for humanity in electricity and steam
than in chastity and vegetarianism.

Anton Chekhov

Throughout the nineteenth century the power of scientific knowledge and the success of technological developments became crucial determinants of political supremacy. One of the most visible technological developments was the “burgeoning science of electricity”.⁶³ As the nineteenth century advanced, America and Germany began to match the power of the industrialized Great Britain thanks to electric power systems. In other words, the use of electricity became a decisive factor in the power distribution among the states and empires by the turn of the twentieth century. As electricity started to become the most-widely used energy source, the period became known as the “second Industrial Revolution”.

The second Industrial Revolution is usually dated between 1870 and 1914, just after the period referring to the years 1859-1873, which is characterized as one of the most fruitful and dense periods of time for innovations in history.⁶⁴ A steady accumulation of scientific knowledge led to considerable feedback from science to technology and path breaking innovations in energy gave rise to the invention of new technological artifacts.⁶⁵ The borders between science and technology, inventor and entrepreneur, technical and social blurred day by day. New inventions came out of rapid developments in the science of physics and they were publicly more available to society than ever by penetrating the daily lives of middle and working classes. The second Industrial Revolution extended the limited and

⁶³ Iwan Rhys Morus, *When Physics Became King* (Chicago&London: The University of Chicago Press, 2005), 87.

⁶⁴ David C. Mowery and Nathan Rosenberg, *Technology and the Pursuit of Economic Growth* (New york: Cambridge University Press, 1991), 22.

⁶⁵ Joel Mokry “The Second Industrial Revolution, 1870-1914”, 219.

localized influence of the first Industrial Revolution, became more global and reached widespread masses.⁶⁶ International exhibitions in many ways reached its zenith in the second half of the nineteenth century. The market-based economies of the modern world did not only produce technological artifacts but they also marketed and advertised them globally. The world fairs played a crucial role in marketing a new culture and way of life that is adorned with new technology.

These waves of industrialization swept over Europe and America profoundly and influenced the rest of the world during the nineteenth and early twentieth centuries. The nineteenth century was also the era of a new type imperialism. New technologies generated high levels of productivity in countries that produced them. These countries then began to compete with each other to gain access to raw materials and to markets for their products. Capital, technology and new products permeated different lands expeditiously. For example, electric power systems as the most significant mark of the second Industrial Revolution, was welcomed by different countries at different times and through different processes. Electric lights reshaped the cities and the nights became much brighter than before. As it is well known, modernism had a close relationship with technological systems. The electrification of cities was among the causes and the consequences of modernism and each city experienced a unique sense of modernity shaped by a series of internal and external dynamics.

In the second half of the nineteenth century the Ottoman state went through a series of reforms, wars, economic crises and clash of ideologies. The ruling elites, leading intellectuals and bureaucrats of the period believed they could only compete with their European counterparts only if they modernized and kept up with the latest technological developments. Since the early years of the state, the Ottomans were always aware of the latest technological developments around the world and they adapted them successfully. They also tried to adapt electric power systems but their manner of adapting them differed from their previous experiences in terms of transfer, implementation and development processes due to certain internal and external factors. Therefore, in order to better evaluate whether the Ottoman state was successful in transferring and implementing the electric

⁶⁶ Joel Mokry “The Second Industrial Revolution, 1870-1914”, 221.

technology or not, we should first understand the inner logic behind the process by considering the role of local and foreign actors. The previous chapter evaluated the literature on the electrification of Istanbul and presented the existing discussion questions, assumptions and judgments regarding this issue. There are various studies that present a detailed account of the facts regarding the electrification of Istanbul. In order to avoid repetition, this chapter does not offer a long description of facts and a chronological narrative. Instead, it tells the story of the coming of electricity to Istanbul under subtitles that represent the key actors and entities of the process.

2.1. First Experience of the Ottoman State with Electric Technology: Introduction of Electric Telegraph

The Ottoman state employed electric technology formally for the first time by starting to use the electric telegraph in 1855 during the Crimean War. The Sublime Porte welcomed the electric telegraph with great excitement since it was a crucial device for the communication of the armed forces during warfare. This new way of communication allowed people to transmit messages across continents and oceans in a very short period of time due to the great speed of electric signals. As a result, electric telegraph technology became essential for statesmen who were eager to build centralized governments.⁶⁷ Installing a telegraph line was not as expensive as laying rails and less manpower was required to erect poles and to run the system. These construction advantages and the war conditions accelerated the transfer process of the electric telegraph in the Ottoman state.⁶⁸ When the first telegraph cables were lined between Edirne and Şumnu in 1855, the world's first telegraph line in Britain had only been eighteen years old. Although two Americans had previously shown the electric telegraph to Sultan Abdülmecid in 1847, it was the French and British engineers who constructed the first telegraph system for the Ottoman state.⁶⁹

Tracking the implementation and development stages of the electric telegraph system in the Ottoman state is crucial to understand the policies of the government

⁶⁷ Roderic H. Davison, *Essays in Ottoman and Turkish History*, 134.

⁶⁸ *Ibid*, 133.

⁶⁹ *Ibid*, 134.

for the succeeding inventions. During the implementation and development process of electric telegraph system, distribution of labor benefitted foreign investors. British engineers were in charge of laying submarine cables and French engineers strung cables from Varna to Bucharest. The Ottoman government dealt only with supplying telegraph poles and the required permissions.⁷⁰ Salaries of imported specialists and workers were so much higher than those of the native Ottoman technician that one salary could hire five Ottoman employees.⁷¹ However, the Sublime Porte took a number of measures during the contract period since the government's policy was to adapt the new technology and to retain both the ownership and the operating control of the telegraph network within the borders of the state. In order to establish a government monopoly over telegraph system, the agreement signed with French contractors stipulated that their engineers would train Ottoman technicians. Moreover, the dominance of foreign technical manpower in the Ottoman telegraph system pushed the Ottoman government to provide technical education. Due to their knowledge of French, which was the dominant language in telegraph communication, outstanding members of the Translation Bureau were assigned as the first officers of telegraph offices. Besides, a formal school named as Fünun-i Telgrafiye Mektebi was established in 1861. It had a two-year program that included both theory and practice-oriented classes. In the meantime, Dârüşşafaka, wherein the orphans could receive a high quality education supplied technicians and officers to serve in the telegraph offices.⁷²

It was not only technical manpower that made the Ottomans dependent on foreigners, but also all equipment used in the Ottoman telegraph system was imported from foreign countries. In order to minimize the imports of the required equipment and devices and to manufacture them within the empire, the government constructed a tiny factory across the street of the Istanbul telegraph office in 1869. Watchmakers and their apprentices were chosen to work at the new factory according to their ability to repair gadgets and mechanic components. The new factory was so successful that one hundred machines were produced within two

⁷⁰ Roderic H. Davison, *Essays in Ottoman and Turkish History*, 138.

⁷¹ *Ibid*, 149.

⁷² *Ibid*, 150.

months. Each machine saved a considerable amount of money for the Ottoman budget.⁷³

Another important stage of the adaptation process was the preparation of a set of codes that regulated the practical use of the telegraph system. Two years after the installation of the first lines, the Tanzimat Council prepared a three-article law. The main concern of the lawmakers was to prevent telegraph cables and poles from damage and to prepare a set of codes that would regulate the punishments of the cases of carelessness and malevolence. Thus, electric telegraph found its place in the Ottoman criminal law as the first line was laid.⁷⁴

Ronald Murphy asserts that the telegraph made a leap from west to east more rapidly than any other western invention including railway systems and illumination by coal gas.⁷⁵ Controlling the telegraph network also meant to dominating information. This is why, the Ottoman government wanted to monopolize the telegraph works and to develop its own system. Apparently, the government succeeded in its goals thanks to a set of regulations, technical education and repair workshops. The numbers of foreigners employed in the Ottoman telegraph offices was high at the beginning but it declined along with the proliferation of telegraph offices in a time span of the fifteen-years. Eventually, the Ottoman state became self sufficient in managing the telegraph system with the state's own materials and manpower. They even produced telegraph equipment to be exhibited in the world fairs of the period.⁷⁶

2.2. Between Two Sources of Energy, Gas versus Electricity: The First Attempt at Street Lighting with Electric Lamps

There was intense competition among scientists from different nations for improving the most effective electric lamps once the physics of electricity became triumphant in the nineteenth century. This competition between nations accelerated

⁷³ Roderic H. Davison, *Essays in Ottoman and Turkish History*, 144.

⁷⁴ *Ibid*, 146.

⁷⁵ *Ibid*, 133.

⁷⁶ BOA.Y.A.RES. 10/4. 25 Kanun-ı sani 1298 / 6 January 1881.

the scientific development that resulted in new inventions in the field of street lighting such as arc light* and incandescent light**. Accordingly, the use of electricity in street lighting and transportation expanded quickly in the 1870s. Probably because of this, the 1870s are often considered as a decade of transition from the first to the second Industrial Revolution.⁷⁷ Meanwhile, electric energy started to be used for transportation purposes. A miniature electric railway was displayed at the Berlin exhibition in 1879 and the first central electric station became operational in London and New York in 1882.⁷⁸

The first attempt to electrify street lamps in Istanbul dates back to 1878. Monsieur Thoucas, a Parisian entrepreneur, applied to the Istanbul Municipality (Şehremaneti) on behalf of the Société Générale d'Electricité de Paris for implementing Jablochhoff *** electric candles in Istanbul.⁷⁹ The company was already in charge of illuminating various places in Paris for the Universal Exhibition of 1878. Sixty-two Jablochhoff electric candles lightened the Avenue de l'Opéra during the fair from dawn until midnight.⁸⁰ The Société Générale d'Electricité asked for concession to illuminate some of the streets and the bazaar

* “arc lights, in which an electrical arc jumped from one carbon electrode to another when they touched and were then pulled apart, had been known since 1808, and were used in lighthouses in the 1860s. But it was Gramme’s dynamo that made smaller scale arc lights, suitable for use in stations and theatres, a practical proposition” *City Of Cities: The Birth Of Modern London*

** “ In 1886 the Austrian chemist and engineer Auer von Welsbach invented incandescent gaslight, which exploited the power of the flame to heat rather than illuminate. Incandescent gaslight was produced by heating an incandescent mantle, made of a suitable alloy, in a Bunsen flame until it reached to White light” *Disenchanted Night: Industrialization of Light in the Nineteenth Century*, 48.

⁷⁷ Thoman P. Hughes *Networks of Power*, 175.

⁷⁸ Wolfgang Schivelbusch, *Disenchanted Night: Industrialization of Light in the Nineteenth Century* (Berkeley/Los Angeles/London: The University of California Press, 1995), 64.

*** ”In 1876 a Russian inventor, Paul N. Jablochhoff, invented an improved arclamp (or "candle"), which used alternating current. Subsequently factories, streets, railway stations and similar public places began to replace gaslight with arc light. “The Second Industrial Revolution, 1870-1914”, 6.

⁷⁹ BOA.İ.MMS. 64/ 3006. 21 August 1295/ 2 September 1879.

⁸⁰ Alain Beltran, ”La difficile conquête d'une capitale: l'énergie électrique à Paris entre 1878 et 1907”, *Histoire, économique et société*, vol 4, no.3 (1985): 369.

districts of Istanbul with Jablochhoff candles as the streets of Paris. Şura-yı Devlet (The Council of the State) discussed the issue and presented its positive opinion to Abdülhamid II. The sultan was convinced and an imperial edict (*ferman-ı hümayun*) allowing the implementation of arc lamps in Istanbul, was issued on 21 September 1878.⁸¹ Nevertheless, the first attempt to illuminate the streets of Istanbul with electricity was unsuccessful. There were probably multifaceted reasons behind the withdrawal of the agreement signed with the electric company. The Ottoman Empire was just defeated against Russia in the war of 1877 and as a consequence of foreign debt, the state was in the midst of a financial crisis that led to the establishment of Duyûn-i Umûmiye, a European controlled public debt administration. In addition, during the process of negotiations, the French electric company did not only demand to have the electric monopoly in Istanbul for fifty years but they also wanted the government support them to make experiments in Izmir, Tarsus, Selanik, Edirne, Sinop, Konya and Bursa for their new invention of Jablochhoff candles. Moreover, they would not pay any compensation in the case that the state was not satisfied with their services.⁸² It seems that, the Ottoman state did not want to take a risk while European specialists continued to argue over the relative advantages and disadvantages of electric and gaslight for illumination. The competition was not only between the gas and electric companies but there was a great fight between the incandescent lamp systems such as Russian Jablochhoff candles, the French Lontin system and American Brush lamps as well. The Illumination of streets with arc lamps was a brand new invention and various different lamps were still being tested in Europe. As Thomas P. Hughes states, Edison and many others were aware of the need for development activities in incandescent lamps for a more economic and feasible lighting system.⁸³ As a consequence, the Ottoman government might have waited for a better system, which would be more effective and less expensive.

The German scholar of cultural studies Wolfgang Schivelbusch explains the

⁸¹ BOA.Y.PRK.ŞH. 1/21. 22 Ağustos 1295/ 3 September 1879. For the archival document see Appendix A.

⁸² Aliye Önay, “Türkiye’de İlk Elektrik Tesisi”, *Belgelerle Türk Tarihi Dergisi*, no.59 (1972): 31.

⁸³ Thoman P. Hughes *Networks of Power*, 28.

implementation process of arc lamps in Europe and suggests that the local context might prove crucial to understand the feasibility of arc lights for street lighting as follows;

In Europe only a few especially significant streets, squares and buildings enjoyed the benefits of arc lighting. Ordinary streets remained the domain of gaslight which was modernized extensively in response to the competition offered by arc lighting (...) Electric arc lighting was unsuitable for general-purpose street lighting for another reason apart from its cost: this artificial sun put out more light than the street could absorb. The problem of dazzling arose something that had never happened before. The core of the arc-light was so bright, so like the sun, that in contrast to the flame of the gaslight, it could not be looked at directly.⁸⁴

Schivelbusch asserts that arc lighting systems were appropriate for the illumination of open and large areas instead of street lighting and the lamps had to be hung not along a street but above it.⁸⁵ On the other hand, the characteristic features of Istanbul as a city were different from the regular and geometrically planned nineteenth century European cities. For example, in contrast to Haussmann's Paris with its wide and geometric avenues, the short and crowded streets of Istanbul showed an irregular pattern in the late 1830s. Even the major artery of Istanbul, Divanyolu was about six meters in its widest portion and less important streets were no wider than two or two and a half meters.⁸⁶ Post-Tanzimat urban planning in the Ottoman capital was based on concepts of regular street pattern of European models. However, the state did not have enough funds to undertake the Parisian scale rebuilding operations. Although large-scale fires served regularization and improvement of the streets, still the general characteristic of the city did not change dramatically.⁸⁷ Eventually, the government might have preferred gas lighting instead of electric arc lighting since it was cheaper and more appropriate way of illuminating the narrow streets of Istanbul.

Meanwhile, the various districts of Istanbul such as Pera, Dolmabahçe,

⁸⁴ Wolfgang Schivelbusch, *Disenchanted Night*, 120.

⁸⁵ *Ibid.*

⁸⁶ Zeynep Çelik, *The Remaking of Istanbul: Portrait of an Ottoman City in the Nineteenth Century* (Berkeley/Los Angeles/ London: The University of California Press, 1993), 4.

⁸⁷ *Ibid.*, 78-79.

Niřantařı and Karaköy had already been equipped with coal gas lanterns that used the surplus gas from the coal gas utility established for Dolmabahçe Palace since 1853. Afterwards, the Dolmabahçe Gasworks expanded its service area to include streets in the Beřiktař, Harbiye, Fındıklı, Galata and Saraçhane districts. On the Asian side of Istanbul, the Beylerbeyi Gasworks, which was built for supplying coal gas for Beylerbeyi Palace in 1861, illuminated the streets of Beylerbeyi, Kuzguncuk and Üsküdar.⁸⁸ However, the first gashouse built for public use, came into operation at a relatively later date. The first attempt to establish a gashouse for the sake of public use was the order of Sultan Abdülaziz dated 1873 to construct a gashouse in Yedikule. However, the project could not have been completed until the reign of Sultan Abdülhamid II. In 1880 the government decided to assign the municipality the task of reconstructing the Yedikule Gasworks to supply gas to the Eyüp, Bakırköy and Yeřilköy districts.⁸⁹ The Yedikule Gasworks was completed in 1880 shortly after the unsuccessful electrification attempt of the French company mentioned above. Consequently, the first effort devoted to public lighting resulted in favor of gas lighting technology and the transfer of electric lighting technology was postponed to a later date.

The situation in London was not so much different from Istanbul in terms of preferring gas lighting in the 1880s. Demand for electricity was generally limited to richer parts of the city, where the clubs, theatres and shops were located and where the cost was not a concern. The high cost of electric supply was one of the major problems of the electric industry. The latest advances in gas lighting in between the years 1880-1890 had greatly reduced the advantages of the costly electric lamp over cheap gas lighting. However, different western cities followed different trajectories in adopting the electric lighting system depending on their special circumstances. Due to the strength and inventiveness of the gas industry in Britain, the city of London was slow in shifting to electricity compared to American cities where the gas industry remained weak.⁹⁰ Meanwhile, the artificial lighting system fueled by

⁸⁸ R. Sertaç Kayseriliođlu, Mehmet Mazak and Kadir Kon. *Osmanlı'dan Günümüze Havagazının Tarihçesi* (Istanbul: İETT Yayınları, 1999), 90.

⁸⁹ Ibid, 45.

⁹⁰ Stephen Inwood, *City Of Cities: The Birth Of Modern London* (London: Macmillan, 2005), 258.

coal gas was a very recent technology for Istanbul and a very limited area enjoyed gaslight at night when the foreign electric companies offered them a new technology to adorn the streets of Istanbul.

2.3 International Expositions: A New Culture Rises at the World Fairs Under the Lights of Electric Lamps

In the second half of the nineteenth century international exhibitions spread all over Europe and America following the unprecedented success of the Great Exhibition took place in London in 1851. Massive and attractive international exhibitions of the nineteenth century provide important clues to understand how the inventors such as Thomas Edison and Nikola Tesla found a new and spectacular way of making their inventions visible to the public and potential inventors. Especially during the development process of electric lighting systems, Edison and Tesla tried to demonstrate the technical and industrial competence of their own electric power systems in the public eye. International exhibitions turned into a battle area in which the two systems clashed.⁹¹ The Ottoman state was a regular participant in international exhibitions. As a result, the Ottomans who participated in these fairs encountered the latest inventions such as electric cars, various kinds of electric lamps, elevators and domestic appliances at the same time as Europeans.

International exhibitions were also occasions for international congresses of scientists from all over the world.⁹² In 1881, the International Electrical Exhibition and Congress were organized in Paris. The organizers of the congress invited the Ottoman state to this exhibition and congress, which would be a center for national competition. The French technician Emile Lacoine who headed the Ottoman office of telegraphic science represented the Ottoman state in the congress. Moreover, the Ottoman government sent several dozen electric telegraph apparatuses produced in the Ottoman telegraph factory to be displayed at the exhibition that occurred during the Congress.⁹³

⁹¹ Iwan Rhys Morus, *When Physics Became King*, 117

⁹² Ibid, 119.

⁹³ BOA.Y.A.RES. 10/4. 24 February 1296/ 8 March 1881.

Electricity was particularly visible in American exhibitions held in increasing number during the last quarter of the nineteenth century. The World Columbian Exposition in Chicago was the world's first electric fair where a special building was devoted to the demonstration of the wonders and benefits of electricity.⁹⁴ The participation of the Ottoman state was due to a special invitation that was sent to Sultan Abdülhamid II from a delegation in America. The Sadullah Suhami Company who cooperated with the Sublime Port in organizing and supervising the Ottoman displays was representing the Ottoman state.⁹⁵ Among various items such as carpets, valuable jewels, paintings, torpedo boats, soaps, odors and coffee manufactured within the borders of the state, there were several electric tools sent to the exhibition as well. Electric machines displayed in the Ottoman pavilion as an indication of technological competence of the state had been produced in the electric plant of the Imperial Dockyard (Tersane-i Amire), which was opened in 1888. Some of the objects such as electric rudders, control buttons and the electric boats were rewarded in the exposition.⁹⁶ However, Ottoman electrical products were restricted to telegraph tools and military equipment used in new naval technology. Gültekin Yıldız argues; "Ottoman bureaucrats were especially proud of their torpedoes, telegraph machines, electricity instruments and world-famous textiles rather than their traditional handiworks, agricultural products and minerals which were the major commodities displayed in the Ottoman Pavilion."⁹⁷ However, it is apparent that the Ottoman State made a humble contribution to the electric industry as the representatives of the Muslim world although Ottomans were not competitive in the science of electricity.

A new culture flourished in world expositions and the electric industry was the locomotive of this new worldview, which transformed nature and culture through technology. ⁹⁸ International fairs were temples of progress where the

⁹⁴ Chaim. M. Rosenberg, *America at the Fair: Chicago's 1893 World's Columbian Exposition* (San Francisco: Arcadia Publishing, 2008), 128.

⁹⁵ BOA.Y.A.RES. 59/3. 26 May 1308/ 7 June 1892.

⁹⁶ Gültekin Yıldız, "Ottoman Participation in World's Colombian Exposition (Chicago-1893)", *Türklük Araştırmaları Dergisi*, no.9 (March,2006) :29.

⁹⁷ Ibid, 165.

⁹⁸ Iwan Rhys Morus, *When Physics Became King*, 121.

standards of western civilization were being encoded in an imperialist context. On the other hand, the superiority of the Christian world in science and technology led Muslims to explain how the Islamic faith encourages scientific endeavors. For example, the American ambassador in Tehran who was charged by the Chairman of the Congress to correspond with the Sublime Porte to invite a speaker who would make a presentation about how Islam was not an obstacle to progress in the World Parliament of Religions that would take place within the scope of the Chicago fair.⁹⁹ This had already become a popular issue in orientalist circles in the nineteenth century. Ahmed Cevdet Paşa was assigned to represent the Ottoman state at the Congress as a delegate and to present an article to explain how Islam does not oppose progress and modern civilization. However, Cevdet Paşa could not participate in the congress. Instead, another scholar George Washburn, President of the Robert College, gave a presentation about the relationship between Christianity and Islam.¹⁰⁰ Moreover, Muhammed Alexander Russell Webb who was an American writer converted to Islam, made a speech explaining Islam as the only representative of Muslim world in the congress. Russell Webb addressed the worldly advancement of the western world and their changing value judgments as follows;

We of the west believe that our wonderful progress in the arts and sciences, and the perfection of those means by which our physical comfort and pleasure are secured, give us just cause to feel superior to those who do not bask in the sunshine of our nineteenth century civilization.¹⁰¹

World fairs led to rapid penetration of the latest technology in the leading metropolises of the period such as Paris, Berlin, Chicago, Barcelona, Vienna, Turin and Brussels. Entrepreneurs flocked to the patent offices aiming to make their fortunes through their inventions. The primary investors in Europe and America were impatient to seek exclusive rights to manufacture and market the latest electric systems. For example, in 1883 the company of Joseph Swan, the English inventor

⁹⁹ BOA.Y.EE. 38/5. 2 Kanun-ı sani 1307/ 14 January 1892.

¹⁰⁰ Gültekin Yıldız, "Ottoman Participation in World's Colombian Exposition (Chicago-1893)", 158.

¹⁰¹ Minot J. Savage, ed., *The World's Congress of Religion* (Boston: Arena Publishing Company, 1893), 320.

of incandescent light bulb, merged with the Edison Lamp Company. In 1887, Emil Rathenau founded Deutsche Edison Gesellschaft für Angewandte Electricität (AEG) in Berlin with the patents he bought from the American inventor Thomas Edison. The American financier and banker J.P Morgan financed Edison's research about a practical electric light bulb and founded the General Electric Company in 1892.¹⁰²

It is apparent that, the capital chances helped proliferate the electric industry in Europe and America. The explosive growth that occurred in the European industry during the late eighteenth and nineteenth centuries made this accumulation possible. A similar development and change did not occur in the Ottoman Empire. Mehmet Genç, as a theorist of Ottoman economic history observes that the limited nature of export markets was seriously detrimental to capital accumulation in the Ottoman state during the eighteenth century.¹⁰³ According to Genç, although the export market expanded in the late nineteenth century, the dearth of investment capital prevented the rise of this potential in the Ottoman Empire.¹⁰⁴

In Europe and America while financiers and entrepreneurs, who had access to investment funds, promoted the electric industry, in the Ottoman state only the government could have patronized the electric technology due to the limited nature of capital accumulation. However, granting concessions to foreign companies meant the flow of profits to foreign investors who enjoyed monopolistic privileges in the public sector during a long period of time. Abdülhamid II recognized the problem and paid attention to political alliances and relying on local ventures before granting privileges to foreign investors. In short, the electric industry could not flourish within the lands of the Ottoman state as fast as it did in the leading European countries as a result of the different economic conditions.

2.4. Constructing the First Electric Factory of Istanbul: The Role of the Naval Ministry and the Imperial Dockyard

¹⁰² Thoman P. Hughes *Networks of Power*, 76.

¹⁰³ Çağlar Keyder, "Manufacturing in the Ottoman Empire and in Republican Turkey, ca. 1900-1950" in *Manufacturing in the Ottoman Empire and Turkey, 1500-1950*, ed. Donald Quatert (New York: State University, 1994), 59.

¹⁰⁴ *Ibid*, 8.

There had always been technologic diffusion between the Ottoman State and the European world. The Ottoman state was willing to adopt military innovations and they were successful in creating their indigenous arms through technological imports.¹⁰⁵ Gábor Ágoston, who is mainly concerned with the Ottoman military in comparison to other European powers, argues the Ottomans successfully integrated technology into their military systems and they were largely self sufficient in manufacturing technical equipment until the mid-eighteenth century. However from the mid-eighteenth century onwards, the growing disparity between the Ottoman Empire and its European rivals led the Ottoman state to experience failures in the wars. Ágoston asserts “it was neither the Ottomans’ inferiority in military technology nor their supposed shortcomings in ordnance production that brought on their significant military failures.”¹⁰⁶ Rather, it was the result of a "better drill, command and control, and bureaucratic administration" on the part of European rivals.¹⁰⁷

In the last quarter of the nineteenth century the electric industry contributed to almost limitless set of areas, which included lighting, heating, transportation, communication and industry. The naval forces also benefitted from electricity in military operations as the power of electricity emerges as the latest and the most effective way of improving the navy. European and American battleships were enlightened with electric lanterns during dark nights for a better range of visibility against enemies and they were equipped with weapons that used electricity to shoot their shells. The Ottoman state was quick to deal with its military shortcomings. Rapid innovations in naval technology thanks to the use of electric energy attracted their attention in a very short time. In 1885, the Ministry of the Navy asked for Abdülhamid’s authorization to finance of electric education for the naval personnel. The education would take place in the frigate *Muhbir-i Sürûr* that was already allocated for the torpedo school. The letter requesting the Sultan’s permission to train the Ottoman naval personnel referred to the good results of the

¹⁰⁵ Jonathan A. Grant, “Rethinking the Ottoman "Decline": Military Technology Diffusion in the Ottoman Empire, Fifteenth to Eighteenth Centuries”, *Journal of World History*, vol.10, no.1(1999):181.

¹⁰⁶ Gábor Ágoston, *Guns for the Sultan: Military Power and the Weapons Industry in the Ottoman Empire* (New York: Cambridge University Press, 2005), 201.

¹⁰⁷ *Ibid*, 202.

implementation of thorough developments in the science of electricity for the navies of France, Britain and other coastal states with a great enthusiasm;

...Elektrik fenni bir müddetten beri düvel-i ecnebiyece nazar-ı itinaya alınarak bir çok tebahurlar icrasıyla bunun cihet-i berriyye ve bahriyyece muhassenat anlaşılaraq elyevm Fransa ve İngiltere ile sair düvel-i bahriye donanmalarında iş'ar ve isti'mal olmaktadır...¹⁰⁸

Electric lanterns were a basic necessity of the Ottoman battleships to prevent the ships from adversaries' torpedo boats, for bullets to reach their targets and for an adequate lighting of the ships. The Ottoman Ministry of the Navy imported electric lanterns and some electrical tools for ships but the naval personnel was incapable of using them effectively due to lack of adequate training. Thus, the Ministry asked for an assignment from Emile Lacoine and Raif Efendi for electric training in the torpedo school of the Imperial Dockyard (Tersane-i Amire).¹⁰⁹ Sultan Abdülhamid II approved the request and then *Muhbir-i Sürûr* frigate served as both torpedo and electric workshops for naval officers. Besides the technical training at the Imperial Dockyard, the most competent naval officers were sent to Paris for education on electricity during the reign of Abdülhamid II. Kolağası Ramiz, Mülazım Faik and Nedim Efendi, who were three of these officers, arrived in Paris on 19 March 1886. Each of them was paid a salary of 20 pounds by the Paris branch office of the Ottoman Bank during their training.¹¹⁰ They returned to Istanbul in 1888 with a theoretical knowledge of electricity and practical experience in manufacturing electric devices they had gained during their two years of training in Paris. When they returned, it was time to put their knowledge to the service of

¹⁰⁸ BOA.Y.A.RES. 28/49. 26 Mart 1301/7 April 1885. For the archival document see Appendix A.

¹⁰⁹ "...zabutan-ı bahriyenin mucceb-i muhassenat-ı azime olan fenn-i mezkûru talim ve tahsil eylemeleri lâzımeden olup ve bunun için bir mekteb-i mahsus tesisine hacet olmayıp torpido mektebi ittihaz olunan Muhbir-i Sürûr fırkateyn-i hümayununda iktiza eden âlât edevat ekseri mevcut olacağı ve ileride icab ettikçe mübayaa edileceği beyanıyla şimdilik mevcut olan âlât ile haftada iki gün fırkateyn-i mezkûrun da zabıt-i bahriyyeye fenn-i mezkûru talim ve tedris etmek üzere şehri bin beş yüz kuruş maaş ile mühendis Mösyö Emil Locaine'in muallim ve fenn-i mezkûra vukuf ve malumatı haber verilen Raif Efendi'nin dahi beş yüz kuruş aylıkla muavin nasb ve tayinleri hususuna dair..." BOA.Y.A.RES. 28/49. 26 March 1301/7 April 1885.

¹¹⁰ Şakir Batmaz, *Bilinmeyen Yönleriyle (19. Yüzyıl) Osmanlı Bahriyesi* (İzmir: Çağlayan Matbaası, 2010), 74.

the Ottoman Empire.¹¹¹ They were asked to construct an electric factory in the Imperial Dockyard to manufacture the required tools and to produce electric energy for the navy in 1888.¹¹² As a result, the first electric factory of the Ottoman state was opened on 12 December 1888 for military purposes. The present literature on the electrification of Istanbul does not include any information about the first electric factory in the Ottoman state. As a result of their ignorance the history of electric production in Istanbul is started with the Silahtarağa Power Center. Only Vahdettin Engin presents Tersane Electric Factory as the first plant built for generating electricity in the Ottoman lands.¹¹³ Nevertheless, he does not even provide detailed information about the Tersane Electric Factory.

The factory's primary services were internal and external illumination of steamboats, placing electric generators in frigates, repairing electric equipment and lighting the coasts of the Bosphorus and the Black Sea with electric lanterns in order to supervise the passage of ships. Their service was not restricted to military purposes. They manufactured electric apparatuses for international exhibitions and undertook the electrification of Yıldız Palace.¹¹⁴ Furthermore, because of the restrictions on importing electric equipment, various hotels applied to the Ministry Office of the Navy to obtain electric dynamos manufactured in the Tersane Electric Factory.¹¹⁵ However, unless they had special permission from the government, electric consumption was forbidden for private use. As an exception, Pera Palace

¹¹¹ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 3.

¹¹² BOA.Y.PRK.ASK. 52/40. 29 Teşrin-i Sani 1304/11 December 1888. For the archival document see Appendix A.

¹¹³ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 3.

¹¹⁴ "...Yıldız Saray-ı Hümayunu'nun divar-i alisinin elektirik ile tenveri için Saray-ı Hümayun'da intihab bulunan mahalde Tersane-i Amire'den imal olunan makina ve kazanların mahsus vâz'ına ebniye ile memurin daire-i seniyye ve kebir bacasına inşası irade ve ferman buyurulmasına mebni..." BOA.Y.MTV. 284/9. 15 January 1321/28 February 1906.

¹¹⁵ "Donanma için tersane fabrikalarında imal olunan elektrik dinamolarına otel gibi bazı ebniye-i cesimenin sahiplerinin talib olduklarına dair Bahriye Nezareti'nin arzı." BOA.Y.MTV. 59/1. 15 Teşrin-i sani 1310/ 27 November 1894. Fort the archival document see Appendix A.

and the Tokatlıyan Hotel imported electric dynamos from abroad and joined the first buildings that were powered by electricity via private generators in the early years of the 1900s.¹¹⁶

The first electric factory of Istanbul could not meet the illumination requirements of the navy and only a group of warships were illuminated with electric power.¹¹⁷ Naval officers such as Rauf Orbay and Hasan Rami Pasha blamed either Abdülhamid or the economic restraints for the inadequacy of the electric factory. Rauf Orbay, one of the navy officials of the Hamidian Era accused Abdülhamid II for being indifferent to the latest technologic advancements and complained about the backwardness of the Ottoman naval technology.¹¹⁸ In his memoirs Hasan Rami Pasha, who served as the Naval Minister in 1903-1908, criticized the lack of electric lights in the Ottoman navy, which enabled communication between ships at night, and electric lanterns that were crucial to spy on enemies. In 1897, when he was the commander of the Ottoman navy emphasized the inadequateness of the Tersane Electric Factory even though the factory had been manufacturing materials for the last ten years.

Bugün düzenli ve mükemmel bir donanmada bile haberleşme noksanlığının donanmayı yaralayacağını gerçeği görenler bilir. Gerçi donanmada istenilen tarzda ilerlemeler olmuştur ancak mevcut olup da bir faydası olmayan şimşekli ve diğer işaret fenerleriyle geceleri sabaha kadar, tekrar ve tekrar işaret verildiği halde istenilen ölçüde sonuç alınmadı(...) önemli noksanlıklar dikkate alınınca, kuruluşunun onunca yılına ulaşan elektrik fabrikasının ne gibi faydalı eserler verdiğini üzüntüyle düşünmemek imkansızdır. Bir elektrik fabrikası, beş on harp gemisine birer elektrikli fener imal edemez ise, ondan ne fayda beklenebilir?¹¹⁹

¹¹⁶ “İngiltere'den vürud edip Tarabya Rüsumat İdaresi'nce tevkif edilen iki sandık derunundaki elektrik âlât ve edevatının otelin aydınlatılması için getirildiği anlaşıldığından, sandıkların geçişine izin verilmesi” BOA. BEO. 2327/174508. 23 Nisan 1320/ 6 May 1904.

¹¹⁷ Şakir Batmaz, “II. Abdülhamid Devri Osmanlı Donanması”(PhD.diss. Erciyes University, 2002), 167.

¹¹⁸ “Kapitülasyonlar, refahı temsil eden hizmet sahalarını yabancıların tekeline bırakmıştı. Buhar ve elektrik asrın uygarlıklarını millet ve fertlerin nimeti yaparken bunlar bizim için bilinmeyen şeylerdi. İlim, irfan kurumlarımız devrini tamamlamış, sadece devlet bünyesinde katip efendiler yetiştiriliyordu. “ Osman Öndeş, ed., *II. Abdülhamid Devri Son Bahriye Nazırı Hasan Rami Paşa ve Hatıratı* (İstanbul: Alfa /Arşiv, 2013), 74.

¹¹⁹ Osman Öndeş, ed., *II. Abdülhamid Devri Son Bahriye Nazırı Hasan Rami Paşa ve Hatıratı*, 129.

Hüseyin Rami Pasha emphasized in his report that if the Ottomans did not catch up with the latest naval technology of their adversaries, they would suffer from military defeat sooner or later. Thus, he tried persistently to improve the Ottoman naval technology during his tenure. However, the Ministry of the Navy was unable to acquire funding for the demands due to unpaid debts of the government. According to Hüseyin Rami Pasha, the Ministry of the Navy was corrupt reflecting the decay of the Ottoman state as a mirror.¹²⁰ Eventually, it seems that the first electric plant of Istanbul was a rather early but unsatisfactory attempt in terms of military purposes.

The history of the Telegraph Factory and the Tersane Electric Factory provides some clues about the Ottoman approach to the electrification of Istanbul. Since the earlier days of the Ottoman state, the government tended to benefit from the latest developments in the military by adapting the artifacts invented and produced throughout the world and improving them. It is apparent that had the same reflex even by the end of the nineteenth century. They prioritized improvement of the Ottoman naval technology instead of modernization of the streets in Istanbul with the use of electric lamps. As a result, the transfer of electric technology can be interpreted in terms of priorities. The streets of Istanbul were already lit with gas lamps and electric lamps were not crucial in comparison to the electric apparatus that assured the security of the Ottoman navy. Moreover, Abdülhamid II had concerns about the flow of foreign capital, which potentially could weaken the government's authority over public services. Mostly the Ottoman officers and mechanics operated the telegraph workshops and the Tersane Electric Factory. By the end of the nineteenth century, the Ottoman military officers undertook all the works related to electricity. Thus, electricity had military connotations in contrast to Europe and America where the electric energy symbolized modern civilization that illuminated not only cities but also enlightened minds with its white and glamorous light.

¹²⁰ Osman Öndeş, ed., *II. Abdülhamid Devri Son Bahriye Nazırı Hasan Rami Paşa ve Hatıratı*, 218.

2.5. Customs, Authorizations and Regulations: Import and Export of Electronic Equipment

In the last quarter of the nineteenth century Istanbul was a gaslight city as it had been illuminated with gaslight since 1853. Istanbul's coal gas supply was dominated by two consortia; "Société pour l'Eclairage de la Ville de Constantinople (Gaz de Stamboul) and "Société Imperiale Ottomane d'Eclairage par le Gaz et Electricité (Üsküdar Kadıköy Gaz Şirket-i Tenviriyesi). In 1888, Banque de Bruxelles had acquired a forty-year concession to build and operate Gaz de Stamboul to provide coal gas to various neighborhoods of Istanbul including Eyüp, Yeşilköy and Bakırköy. A similar development took place on the Asian side of the Bosphorus. In 1891 "Société Imperiale Ottomane d'Eclairage par le Gaz et Electricité" was established with exclusively with Belgian capital to illuminate the Kadıköy and Üsküdar districts with gas lamps.¹²¹ Société Impériale ran an operation of over two thousand streetlights on the Asian side of Istanbul and provided light and electric power to military buildings in Haydarpaşa and the homes of some 1200 private subscribers. On the European side of Istanbul, Gaz de Stamboul invested 200 000 Ottoman Liras for the renovation of the Yedikule Gasworks and the plant supplied gas to approximately 20 000 outlets and 4000 street lanterns.¹²² On the other hand, usage of electric energy was restricted to the Yıldız Palace, Tersane-i Amire and few shops in the Galata district in the last quarter of the nineteenth century. The residents of Istanbul had to obtain special permission to import electric batteries and generators from Europe. Custom officers were transferring the imported electric machines to Tersane-i Amire for technical inspection and they rarely returned back to their owners.¹²³

¹²¹ Marc Van deen Reck, ed., *Belgium in the Ottoman Capital, From the Early Steps to 'la Belle Epoque' 1900-2000: The Centenary of "Le Palais de Belgique": 1900-2000* (Istanbul: Consulate General de Belgium, 2011), 40.

¹²² Ibid, 41.

¹²³ "Köln'den Pob namına Sirkeci gümrüğüne gelen ve hastalık tedavisinde kullanılacak elektrik aletlerinin bir kerede Tophane-i Amire'ce muayene edilerek mahzurlu olup olmadıklarının tahkiki." BOA. DH.MKT. 187/23. 26 Teşrin-i sani 1319/ 8 December 1893. Dersaadet İstinaf Müddei-i Umumi Muavini Hakkı Bey ile Gürcü Kumpanyası tarafından getirilerek gümrükte alıkonulan elektrikli fenerin dalgıçların kullanması maksadıyla Tersane-i Amire'ye gönderildiği." BOA.DH.MKT. 2203/81. 4 Mayıs 1315/16 May 1899.

One of the early requests for electric lighting, dated 1889, came from the owner of a clothing shop at Bursa Waqf Khan whose revenues were devoted to the students of the Industrial School (Sanayi Mektebi). The Khan was located in the Galata district, the financial center of the Ottoman Empire and a prominent neighborhood for foreigners. Monsieur Esteban had rented the shop for 825 liras, a very high price for the average annual rent tariffs. Before settling down, he wanted to enhance the shop with electric lights in order to attract more customers. He sent his offer to Süleyman Bey, the Minister of the Technical School. Süleyman Bey was aware of the common usage of electric lighting in European cities and encouraged Monsieur Esteban to apply to the Ministry of Public Works and Commerce (Ticaret ve Nafia Bakanlığı) to become the first shop in Istanbul illuminated by electricity.¹²⁴ However his request was rejected due to probable conflicts that might have arisen between the government and Gaz de Stamboul. According to the commission appointed for the renovation of the Dolmabahçe Gasworks, only the Yıldız Palace was authorized to have electric lighting and the illumination of public places was under the exclusive responsibility of Gaz de Stamboul.¹²⁵ However, the Council of State annulled the act of the Ministry of Public Works and Commerce and gave its consent for supplying electric energy for the shop of Monsieur Esteban.¹²⁶ Thus, the Istanbul Gas Company could not prevent private attempts to acquire electric lighting.

Another conflict between the gas company and private entrepreneurs occurred in 1895. The owner of an Ottoman cordite factory, which was located within the borders of the service area of the gas company, appealed to the Ministry of Public Works for supply of electric power. Upon this demand, the gas company wrote

¹²⁴ “Mekteb-i Sanayi talebesinin iaşesine karşılık gösterilen Galata'daki mağazanın tamiri ve elektrikle ışıklandırılması ancak elektrik işinin yeni icat olması hasebiyle durumun mutlaka padişahın iznine bağlı olduğu hakkında Mekteb-i Sanayi Nazırı Süleyman Paşa'nın arzısı.” BOA.Y.MTV. 37/1.22. Kanun-ı evvel 1304/3 January 1889.

¹²⁵ “...Dolmabahçe Gazhanesinin ıslahatına memur komisyonca dahi yalnız Saray-ı Hümayunun elektrik ile tenviri mücaz tutulup umuma mahsus mahaller için bu usul kabul edilememekte bulunmuş olunmasına göre ileride icâb-ı hale bakılmak üzere şimdilik ruhsat-ı matlubenin itâsına girilemeyeceği...” BOA.MV. 45/28. 2 Temmuz 1305/14 July 1889.

¹²⁶ “...işbu mağazanın elektrikle tenvirine bir güne mahzur ve mazarrat görülmediğinden...” BOA.MV. 45/28. 2 Temmuz 1305/14 July 1889.

their grievances to the municipality and asked for the rejection of the private appeal, which was an interference with the granted rights of the company. Again, the decision resulted against the gas company. The municipality concluded that since the applicant's intention was not selling or distributing electric energy, the gas company does not have the right to interfere.

...devlete aid bir fabrikanın tenviratına mahsus olarak meydanda suret-i umumiyyede şuna buna tevzi'ye furuht edilecek bir şey olmadığı cihetle şirketin buna itiraz ve müdahaleye hakkı ve mezkur maddenin bu işe şümûlü olamayacağı der-meyân bulunmuş olmağla şirkete bu yolda cevap yazıldığı berâ-yı malûmat arz olur...¹²⁷

In the meantime, the Tarabya Summer Palace Hotel, which was one of the most luxurious hotels of Istanbul built by a Belgian company, was enhanced with electric candles to assure the comfort it offered. Archival documents reveal that the hotel imported and installed electric generators that powered the candles without permission.¹²⁸ The Summer Palace Hotel was not the only building that shifted to electric use in spite of ongoing prohibitions. Some non-Muslim Ottomans who were affiliated with European agencies and missions benefitted from the advantages of the capitulations and could import electric machines via the intervention of embassies of their affiliation.

At the turn of the nineteenth century, coping with the increasing demand to import electric devices became more difficult for the government day by day. The situation forced them to develop a set of codes related electric use to assure permissions, prohibitions and punishments. In order to take necessary precautions Abdülhamid II issued an imperial order in 1900 in which he expressed his concerns and presented the government's justifications for the prohibition on the private use of electric energy. Even if the import of any type of electric device to the Ottoman Empire was forbidden some hotels in Istanbul were already using electric machines. Abdülhamid II stated; "European societies are allowed to use electric power since

¹²⁷ "Dumansız barut imaline mahsus fabrikanın elektrikle tenviri için icab eden âlet ve edevâtın celb ve tedarikinin şirketin hukukunu ihlâl edeceği yolunda İstanbul Gaz Şirketi tarafından yapılan itirazın ne sûretle cevaplandırılacağına dâir Şehremaneti'nin tezkiresi." BOA.Y.MTV. 131/155. 6 Teşrin-i sani 1311/ 18 November 1895

¹²⁸ "Tarabya'daki Summer Palas Oteli'nin safarethanelerin ve bazı muteber mahallerin elektrikle tenviri teşebbüsünde bulunulduğundan gerekli alat ve edevâtın idhalinin bir nizama bağlanabilmesi icab ettiğinden nizamnamenin tanzimi." BOA. DH.MKT. 2212/87. 29 Mayıs 1315/10 June 1899.

their governments have the jurisdiction over both its citizens and foreigners equally in the implementation of the regulations that apply to problems arising from electric use. This is not the case in the Ottoman Empire while foreigners enjoy the advantages of capitulations.”¹²⁹ The Ottoman government had concerns about provisions that grant jurisdictional privileges and immunities to foreign citizens that considerably obstructed the regular administration of Ottoman justice. Hence, the sultan insisted on the proper implementation of prohibitions regarding the use of electric energy until the issuance of a set of legal regulations that would govern such use and apply to all users equally. Once the regulations were drafted, they would be sent to each embassy to take the necessary precautions against the illegal import of electric tools.¹³⁰ Approximately forty years earlier, the Ottoman government had experienced a similar situation with the advent of the electric telegraph. A basic set of regulations including seventy-nine articles on the administration of the electric telegraph system was promulgated in the early years of the implementation of the telegraph system contrary to the delayed codes regulating the use of electric machines.¹³¹ What was the main difference between these two technologic artifacts? Was it a matter of changing social and political dynamics? As it is understood from the edict of Abdülhamid II, certain privileges

¹²⁹ “memalik-i şahaneye elektrik alet ve edavatının idhali usulen memnu olduğu halde dersaadette otel gibi bazı mebanî-i umumiyece işbu memnuiyet hilafında bir takım elektrik makineleri celb edilerek istimal kılınmakta bulunmuş olub gerçi Avrupa’da efrad-ı ahalinin dahi elektrik kuvvetinden her suretle istifade eylemelerine mücade olunmakta ise de elektiriğin istimalinden tevellüd edebilecek mazaratdan dolayı ind’el icab müsebbiblerini mesul tutmak hususunda Avrupa hükümetlerinin salahiyet-i kamilesi olduğu ve oralarda ecnebiler buldukları memleketin ahaliyle nazar-ı kanunda müsavi bulunduğu halde memalik-i şahanede ecânibin kapütülasyon ahkâmınca haiz oldukları imtiyazat hükümeti seniyyenin serbestien harekât ve muamelâtına mani olmakda ve mesela teb’a-i ecnebiyeden birinin ahz u grift türlü türlü kabul ve şurûta vabeste bulunmakta olduğu cihetle elektiriğin efrad-ı ahali tarafından istimali yüzünden mümkün ? olan mahazır ve mazarratın müsebbiblerinin tecrimiyle men ve def’i her zaman kabil olamayacağından ve binaenaleyh devletce bir nizam-ı mahsus vaz’ ve tesis olununcaya değin memnuiyet-i vakıanın idamesi lazım geleceğinden o vakte kadar bu babdaki memnuiyetin hatır ve gönüle bakılmayarak hüsn-i muhafazasına çalışılmakla beraber bu hususda ecanib tarafından müracat vukuunda dahi müdafaat-ı lazıma serdiyle devletin memnuiyet mevzuyu ibka etmekteki maksadının meşruiyetine ashab-ı müracatın ikna edilmesi şerefsudur buyurulan irade-i seniyye ...” BOA. İ.HUS. 80/20. 3 Kanun-ı sani 1315/ 15 January 1900. For the archival document see Appendix A.

¹³⁰ BOA.DH.MKT. 2212/87. 29 Mayıs 1315/10 June 1899.

¹³¹ Roderic H. Davison, *Essays in Ottoman and Turkish History*, 146.

that foreigners and the protégés (beratlı) enjoyed were one of the main problems. These privileges led to the erosion of the state's legal sovereignty and hence it was necessary to prevent the acquisition of electric machines unless laws were applied to all equally. The Ottomans had become far more sensitive to the effects of the capitulatory treaties and eager to defend their interests against the capitulatory legal privileges as much as possible.

The Ottomans always gave privileges and granted protection to a limited number of foreign local employees, primarily to embassy interpreters (dragomans) who were recruited mostly from the Levantine (Catholic), but also from Greek Orthodox and Armenian families. The number of these protected Christians remained limited until the late eighteenth century. Afterwards, the Porte recognized privileged Christians officially through the issuance of a diploma (berat) and the number of protégés grew explosively.¹³² Thus, the boundary between Ottoman subjects and foreign citizens residents in the Ottoman Empire had become blurred by the nineteenth century. According to the capitulations, the foreign citizens and the protégés were protected from the Ottoman law and they were exempted from Ottoman taxes.¹³³ In order to meet this challenge, the government had to issue a special set of regulations related to electric consumption. The dangerous nature of electric energy was also another reason for the urgent need of preparing and issuing regulations to ensure the safe and reliable use of electric machines.

In the mean time a discussion regarding the safety of electric power systems was ongoing in America. There was an intense competition between Edison's direct current system (DC) and Serbian inventor Nikola Tesla's alternating current system (AC), which was promoted by the Westinghouse Company.¹³⁴ The two systems

¹³² Erik-Jan Zürcher, *The Young Turk Legacy and Nation Building: From the Ottoman Empire to Atatürk's Turkey* (London: I.B Tauris, 2010), 67.

¹³³ Michelle U. Campos, *Ottoman Brothers; Muslims, Christians, and Jews in Early Twentieth-Century Palestine* (California: Stanford University Press, 2011), 63.

¹³⁴ "Edison's low voltage and narrowly distributed direct current stations were soon to prove inadequate. In the same period, the need for new an approach to respond to the industrial demand and the attempts to transmit electricity over long distances was acknowledged. The inventor of this new approach, Nikola Tesla was a scientist who had initially worked with Edison and supported Edison in solving many technical problems. This approach which was pioneered by Nikola Tesla and George Westinghouse and defined as "alternating current" quickly surpassed the Edison model and prepared the ground for a system that allowed electricity to be centrally produced and transmitted over

battled fiercely until 1893 when the Westinghouse Corporation won the bid for illuminating The Chicago World's Fair by using the advantage of the cost effective AC system. Thus, Tesla defeated his rival Edison by displaying his power system in a public domain, one of the most prestigious fairs of the period.¹³⁵ However, Edison was so stubborn that he did not make transition from direct current to polyphase system and via his articles he launched a propaganda war against alternating current to persuade the public of the superiority of DC. Abdülhamid II read one of these articles published in one of the American electric periodicals in 1892.¹³⁶ In the article Edison emphasized the lack of safety of Tesla's new invention. Abdülhamid II was very concerned of fire and the risks that the illicit and careless consumption of electricity could cause. Thus, the article prompted the sultan to order the inspection and testing of the electric machines located in the Yıldız Palace for their safety. However, the government could not inspect all the electric machines if they freed the private use of electricity free, which would mean a great danger for the society. Moreover, if the government provided special permission to one person or building then others would probably want to gain access to electric energy as well. Thus, Abdülhamid II restricted the privately owned generators.

Until the beginning of the Second Constitutional period in 1908, Abdülhamid's restrictions were implemented regularly apart from a few exceptions and special permissions. For example, doctors and hospitals easily obtained electric appliances, which were very popular in Europe and America for the treatment of several diseases ranging from rheumatism to mental illnesses. The government did not only provide special permission for electric appliances used for medical purposes but it also promoted them by granting tax exemption.¹³⁷ The embassies

long distance by increasing the voltage. "Asu Aksoy, Funda Açıkbaz and Ayşenur Akman, "The Story of the Silahtarağa Power Plant", 6.

¹³⁵ Thoman P. Hughes *Networks of Power*, 106.

¹³⁶ "Amerika'da ve Avrupa'da vukua gelen elektrik tehlikesi Saray-ı Hümayun'da kullanılan elektrik malzemesinin tehlikeli cinsten olmadığı ve Edison'un bu tehlikelerle ilgili neşrettiği makale." BOA. Y. PRK.TKM. 80/20. 13 Temmuz 1308 /25 July 1892.

¹³⁷ "Mekteb-i Tıbbiye-i Şahane adına Almanya'dan vürud eden bir sandık içinde elektrik makinasının bila-resm imrarı mekteb-i mezkur müdüriyetinden bildirildiğinden bahisle istifsar-ı muameleyi havi Rüşumat Emaneti'nin tezkiresi." BOA. BEO. 1850/138730.8. Mayıs 1318/21 May 1902.

were privileged institutions as well. British, Australian, German, French, and Swedish representations were among the first buildings illuminated by electric light.¹³⁸ These consulates also acted as mediators between their subjects settled in the empire and the Ottoman government by facilitating the clearance of electric products from customs. Foreign schools, monasteries, orphanages, merchants and sometimes individuals imported electric machines by means of the embassies.¹³⁹ Robert College, Galata Lazarist Monastery, St. George's Orphanage and Tokatlıyan Hotel were the first buildings of Istanbul lighted with electric power under the patronage of their embassies. Muslim or non-Muslim subjects of the empire who lacked the privileges of European subjects or affiliates rarely applied to the government for special permission. For example, Şaban Pasha and his partners who were the owners of certain flour factories in Skopje and Pristhina asked the government's consent to illuminate their factories with electric energy instead of oil and coal gas in July 1906. They suffered loss of their products because of the numerous fires arising from the flammable liquids they used for illumination. Their demand was to furnish their factories with electric lighting systems in order to reduce the possibility of fire and to prevent their products. They stated their request was also in favor of the public's convenience since their factories were producing the major part of the cereal need of the region. However, their petition was

¹³⁸ "Stockholm Sefarethanesi'nin elektrikle aydınlatılması için mübâyaa edilecek aletlerin esmâni hakkında tezkire." BOA. BEO. 1399/ 104865. 30 Teşrin-i evvel 1315/11 November 1899. "Almanya Sefareti adına gelen elektrik lambasının gümrükten imrarına müsaade edilmesi." BOA.İ.RSM. 12/1318. 12 Teşrin-i sani 1316/25 November 1900.

¹³⁹ "Galata'da Lazarist Manastırı'ndaki ruhani talebeler için getirtilen elektrik ve hikmet-i tabiiye âlât ve edevatının gümrükten geçirilmesinin Fransa Sefareti'nden iltimas edildiği." BOA.Y.A.HUS. 274/19. 6 Mayıs 1309/18 May 1893. "Saint George Eytamhanesi namına gönderilen sandık içinde ortaya çıkan pil ve elektrik makinesinin tababette kullanılması sebebiyle hastahane memurlarına teslimi hususunun Avusturya Sefareti'nden iltimas olduğu ve Rüsumat Emaneti'nin gönderilen tezkiresinde bildirildiği" BOA. BEO. 1474/110505. 9 Nisan 1316/22 April 1900. "New York'tan Rumeli Hisarı'ndaki Robert Koleji için getirilen elektrik edevatının gümrükten imrarına müsaade edilmesi." BOA. Y.A.RES. 126/121. 29 Haziran 1320/12 July 1904. "Tüccar Abud Efendi'nin Beyoğlu'nda inşa ettirdiği han ve mağazaların elektrikle aydınlatılmasını taahhüd eden İngilizlerin mağazalar için Londra'dan sipariş ettikleri iki jeneratörün imrarına müsaade itasının İngiltere Sefareti'nden iltimas olduğu." BOA. BEO. 3041/228055. 14 Nisan 1323/27 April 1907.

rejected.¹⁴⁰ The Ministry of Internal Affairs concluded that Şaban Pasha presented the danger of fire as an excuse to be able to obtain permission for establishing electrical lighting system. The government obliged them to take necessary precautions against fire and to sustain the same illumination method for their plants.

Aforementioned limitations on the import of electric tools and implementing electric lighting systems remained valid until August 1908, slightly after the Young Turk Revolution. A government decree promulgated on 20 August 1908 annulled the current prohibitions. Electronic devices would no longer require the inspection by a technical committee and the passage of any type of electric tool through the customs would be allowed. The citizens who wanted to import electric generators for either illumination or industrial purposes would apply to the municipality that had the authority to implement the related regulations.¹⁴¹ Since the Committee of Union and Progress (CUP) had not yet dethrone the Sultan Abdülhamid II but reduced his powers, we can conclude that the members of CUP were working behind the scenes in the related offices to relax the regulations about the use of electricity and electronic devices.¹⁴²

The Second Constitutional period marks one of the important turning points in the history of the Ottoman state in terms of its economic, sociopolitical and urban scale transformation. The Young Turks were reformers and revolutionaries who were in pursuit of modernizing the old system. Infrastructural modernization projects and city planning works took place in Istanbul when they were in power.¹⁴³ Bernard Lewis states, “Young Turks may have failed to give Turkey a constitutional government. They did, however give Istanbul drains”¹⁴⁴ Anyway, we must still bear in mind that the first steps for the electrification of Istanbul were taken during the reign of Abdülhamid II prior to the Young Turk Revolution. The

¹⁴⁰ “Şaban Paşa ve rüfekasının Üsküp ve Priştine’de tesis ettikleri un fabrikalarının elektrikle aydınlatılmasına müsaade edilmemesi.” BOA. DH.MKT. 1096/68. 20 Haziran 1322/3 July 1906.

¹⁴¹ BOA.DH.MKT. 2613/126. 7 Ağustos 1324/20 August 1908.

¹⁴² M.Şükrü Hanioglu, *A Brief History of the Late Ottoman Empire* (New Jersey: Princeton University Press, 2008), 151.

¹⁴³ Zeynep Çelik, *The Remaking of Istanbul*, 31.

¹⁴⁴ Bernard Lewis, *The Emergence of Modern Turkey* (London: Oxford University Press, 1968), 228.

sultan was keenly aware of the immediate need of electric energy for the illumination of the Istanbul streets and the running of tramcars for the sake of public convenience. Current prohibitions and restrictions on importing any type of electric device increased the discomfort among Ottoman citizens. Lacking the benefits of electric lights, which their European neighbors enjoyed, the residents of Istanbul started to question their rights in the Ottoman state. Electric energy was not a matter of preference but had become a right and hence an obligation for the government to provide. In 1907, the government granted Istanbul's electrification concession to the State Cannon-Foundry (Tophane-i Amire).¹⁴⁵ However this attempt could not become actualized until the Second Constitutional period.

2.6. City and Municipality: Modernization Attempts

Following the declaration of the Tanzimat Edict, the government introduced new codifications, systematizations and centralized control and administration of the city to the residents of Istanbul. The Tanzimat reformers paved the way to modernization with new legislations and control mechanisms. Westernization of urban centers was one of the main projects of the period.¹⁴⁶ In contrast to the classical Ottoman system in which basic municipal services were managed by religious leaders, guilds or waqf administrators and controlled by a *kadı* (judge), modern municipal organizations required new European style ministers, organization and centralized hierarchy of civil servants.¹⁴⁷

During the Tanzimat period new law codes based on European examples were promulgated and new ministries were established. One of the noteworthy events that occurred in the Tanzimat period was the introduction of a new municipal model for Istanbul. It was the disorder that the Crimean War caused, which initiated the establishment of a French based municipality model called

¹⁴⁵ “Elektrikle aydınlanma hususundaki gelişmelerin Dersaadet'te de tatbiki ve elektriğe muhtaç olan müessesat ve sanayiye gerekli elektrik kuvvetinin üretimi ve satılması imtiyazının Tophane-i Amire namına ihalesi ve şerait-i lazıme takrir olunarak ona göre tanzim olunacak mukavele-name layihalarının tedkik için irsali.” BOA. BEO. 2972/222827. 18 Kanun-ı evvel/31 December 1906.

¹⁴⁶ Zeynep Çelik, *The Remaking of Istanbul*, 33.

¹⁴⁷ *Ibid*, 43.

Şehremaneti, in 1855. During the Crimean War French, British and Italian diplomats and soldiers of the allied countries settled in the Galata district and the surrounding neighborhoods. Their number considerably increased in 1855 and they led disorder where they settled. Şehremaneti was established to put the city in order after the war and to modernize the urban space based on the European model.¹⁴⁸

In 1855, the government formed a commission for the order of the city (İntizam-ı Şehir Komisyonu) as an advisory body to improve the urban infrastructure in Istanbul.¹⁴⁹ They would carry out street lighting (tenvir-i esvak), road enlargement (tevessu), embellishment (tezyin) and cleaning (tanzif), which were still handled poorly compared to the capital cities of Europe.¹⁵⁰ By 1857, with the suggestion of the commission, Istanbul was divided into fourteen districts, which gave local municipal power to different districts in order to build a more effective administrative structure. A municipal administration was established on an experimental basis in the Sixth district composed of Galata, Pera, Taksim, Pangaltı, Kurtuluş, Kasımpaşa and Tophane.¹⁵¹ Accordingly, Galata and neighborhoods became first to enjoy certain modern technologies. Coal gas, electricity, and tramcar reached this area before it reached the rest of the city.

Before the nineteenth century, the streets of Istanbul were dark and unsafe at night except special occasions such as the holy month of Ramadan or public festivities when the city was adorned with colorful lanterns in various shapes and sizes. The rest of the time, the only glow, came from the lanterns of a few wanderers or night watchmen who were responsible for the safety of the dark streets. Until the Tanzimat period there were not any serious arrangement related to illuminate the streets except prohibition about going out at night without lanterns. The inhabitants of Istanbul were not permitted to wander in the dark streets of Istanbul without lanterns at night in order to provide security of the city and if anyone acted otherwise, they would be arrested and imprisoned by night

¹⁴⁸ Zafer Toprak, *Dünden Bugüne İstanbul Ansiklopedisi*, vol.2, s.v. “Belediyeler”, 137.

¹⁴⁹ Murat Gül, *The Emergence of Modern Istanbul: Transformation and Modernisation of a City* (London: I.B Tauris, 2009), 44.

¹⁵⁰ Zeynep Çelik, *The Remaking of Istanbul*, 44.

¹⁵¹ Murat Gül, *The Emergence of Modern Istanbul*, 45.

watchmen.¹⁵²

During the Tanzimat period, the illumination of the city was taken more seriously. The government's first edict in the field of municipal illumination issued in 1847, required shopkeepers to post lanterns outside their doors. Before the introduction of petrol, which was discovered in Pennsylvania in 1859, the main lighting products were beeswax for rich families and olive oil or ghee for poor ones.¹⁵³ In 1864, an entrepreneur called Monsieur Heris was granted the rights and privileges to illuminate streets in Istanbul with gasoline. After that, various storehouses were constructed in the remote districts of the city to preserve the petrol distant from the city center to reduce risk of fire.¹⁵⁴ Before this privilege was granted, coal gas lanterns had already illuminated Grand Rue de Pera at nights. These two fossil fuel technologies coexisted as the main products of street lighting for a long period of time until the introduction of electric streetlights in 1914. Beşiktaş, Harbiye, Fındıklı, Galata and Saraçhane were enlightened on one side by street lanterns that used coal gas as fuel from 1865 onwards and with the establishment of additional coal gas utilities in Kuzguncuk (1861), Yedikule (1880) and Kadıköy (1891), Istanbul's nights became brighter and safer.¹⁵⁵

In short, street lighting in Istanbul with coal gas started in 1853, forty-one years after it first appeared in the streets of London. Illumination with gas lamps reached its climax in the first quarter of the twentieth century, when European cities already benefited from the advantages of electric energy for a long time. Street lighting was one of the principal items on the agenda of the municipality in accordance with the modernization ideals of the Tanzimat reforms. However, they were not efficient in supplying illumination service due to lack of resources and funds. When we look at the transfer, implementation and development process of

¹⁵² N. Işık Demirkan, "A Study of Ottoman Modernization on the City: The Sixth Municipal District of Istanbul (1858-1877)"(MA. diss., Bilkent University, 2006), 53.

¹⁵³ Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.2 (İstanbul: İstanbul Büyükşehir Belediyesi, 1995), 918.

¹⁵⁴ Ibid, 919.

¹⁵⁵ R. Sertaç Kayserilioğlu, Mehmet Mazak and Kadir Kon, *Osmanlı'dan Günümüze Havagazının Tarihçesi*, 84-93.

coal gas technology we can perceive that the strategy that lay behind the government's preferences and policies had similar motives as the electrification experience of Istanbul. The long and meandering route of each gaswork concession process suggests that the Ottomans tried to keep power in their hands. For example, Sultan Abdülmecid funded the construction of the first coal gas plant, Dolmabahçe Coal Gas Utility from his private treasury (Hazine-i Hassa) and French engineers constructed the plant in 1853.¹⁵⁶ Afterwards, the Sublime Porte undertook the management of the plant until the concession was granted to the municipality in 1874. In 1853, the plant was erected for the illumination and heating services of the Dolmabahçe Palace, however, the service area of the gashouse extended year-by-year and covered Beşiktaş, Pangaltı, and Tophane. As a result of the increasing numbers of subscribers and broader service areas, the gashouse needed to increase its capacity and equipment. Dolmabahçe Gaswork was not a non-profitable organization any longer and it required a more serious administration for the sustainability of the operations and additional investments for its technical renovation. The Sublime Porte could not afford the requirements and the gashouse was transferred to the municipality in 1874, which meant that the utility's operating rights would be open to private entrepreneurs.¹⁵⁷ After the acquisition, foreign interests competed fiercely to obtain the operation and maintenance rights of the Dolmabahçe Gasworks. Nevertheless, none of them could enjoy the benefits of the concession since the state secured the monopoly of coal gas production. In 1889, the administration of the gashouse was granted to the State Cannon-Foundry, in favor of the national enterprises for the second time.¹⁵⁸ However, upon the compliances regarding high pricing policy of the State Cannon-Foundry and unpaid hand over fees, the Sublime Porte returned the Dolmabahçe Gasworks back to the municipality's responsibility in 1909, only this time for conducting the auction process on behalf of the Ottoman Government. Finally, the Parisian banker Oktav Bezanson and Lui Boer acquired the rights of providing coal gas for the Beyoğlu

¹⁵⁶ R. Sertaç Kayserilioğlu, Mehmet Mazak and Kadir Kon, *Osmanlı'dan Günümüze Havagazının Tarihçesi*, 47.

¹⁵⁷ *Ibid*, 52.

¹⁵⁸ Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.5 (İstanbul: İstanbul Büyükşehir Belediyesi, 1995), 2596.

and Yeniköy districts and the Dolmabahçe Gasworks was rebuilt with foreign capital in 1914.¹⁵⁹

The Yedikule Coal Gas Utility, the first gashouse dedicated to public lighting service, also went through a similar development process. The construction of the plant started in 1873 during the Abdülaziz's reign but could not be completed until the Hamidian Era. In 1880, the French engineers undertook the construction of the gashouse under the supervision of the municipality and the Yedikule Gasworks provided coal gas for street lamps of the historical peninsula between the years 1880-1887 under the responsibility of the municipality. Later, the concession of the Yedikule Gasworks was granted to one of the prominent merchants of the Sirkeci port Hasan Tahsin Efendi, upon his letter in which he stated it would be in favor of the Ottoman Empire if they granted the illumination privilege to a Turkish Ottoman subject. However, in 1887 Hasan Tahsin transferred his privileges to the Istanbul Province Illumination Company (Gas de Stamboul) due to the increased consumption, lack of technical knowledge and inexperience in operation. Finally, a new bidding was held in 1914 for the enterprise and the privilege was granted to the French company for fifty years.¹⁶⁰

The transfer and the development process of coal gas technology show us that the government was eager to improve the public infrastructure despite the financial constraints it faced. The municipality was in charge of ensuring the continuity and efficiency of the illumination service. Hence, in the absence of an appropriate offer from entrepreneurs, the municipality itself undertook the illumination service. The government rejected most of the concession attempts for political or economic concerns and the operating rights of gashouses constantly remained in government institutions; the Sublime Porte, the Municipality and the State Cannon-Foundry. However, none of them had sufficient funds to meet the immediate needs of the city and to keep up with the latest technology. As a result, the government was obliged to grant the gas lighting concession of Istanbul to multinational companies and international finance institutions.

The period, when the electric power systems proliferated in the European and

¹⁵⁹ R. Sertaç Kayserilioğlu, Mehmet Mazak and Kadir Kon, *Osmanlı'dan Günümüze Havagazının Tarihçesi*, 58.

¹⁶⁰ *Ibid*, 87.

American cities coincided with the period of the peak gas demand in the capital city of the Ottoman Empire. The municipal governments had invested heavily in gas lighting and they did not believe they should invest their revenue in electric technology, which had not yet been proven. Also, the relatively low price of gas light discouraged investment in the electrical systems while the government was going through a financial crisis. However, with the turn of the century, the latest developments in the electric industry compensated the price disadvantage of electric illumination systems (with respect to gaslight) and the government acknowledged the immediate necessity of electric technology in 1906 during the reign of Abdülhamid II.¹⁶¹ Abdülhamid II gave authorization to provide and distribute electric energy to the State Cannon-Foundry in the last days of the 1906.¹⁶² It was apparent that the State Cannon-Foundry would need to cooperate with an experienced company to be able to undertake the given task. Thereupon, the Istanbul Tramway Company was committed to construct a 1000-kilowatt electric plant on the account of the State Cannon-Foundry for the illumination of the Galata, Beyoğlu, Nişantaşı, Beşiktaş, Yenimahalle, Yıldız and Ortaköy districts. The total cost was 3.785.000 francs and the tramway company would operate the factory with the State Cannon-Foundry until the government pays the total cost back to them at a seven percent interest rate. Moreover, seventy-five percent of the net income would be allocated to the company's share and the company would hold twenty-five percent for future payments. Officials of the State Cannon-Foundry evaluated the tramway company's bid and rejected them due to disadvantageous provisions of the contract. According to their offer, the electric plant would remain under foreign control until the total cost was paid back to the company. Anyway, an

¹⁶¹ “şehirlerde elektrikle tenvirat ve nakliyat icrası gayet şiddetli cereyana muhtaç olup bunun sebep verdiği mehalik ve muhatarat ise malum bulunduğundan elektrikle tenvirat ve nakliyat için gerek ihsan buyurulmuş olan imtiyazatda.... elektrik mecraların tesisinde ne gibi şerait-i fenniyeye riayet olunmak lazım geleceğinin takrir zımında mahallin garbide...bir nizamname kaleme aldırılması derece-i vücubda bulunduğuna dair emare mukarrer kılınmıştır” BOA. DH.MKT. 1130/ 57. 4 Teşrin-i Sani 1322/17 November 1906.

¹⁶² “Elektrikle aydınlanma hususundaki gelişmelerin Dersaadet'te de tatbiki ve elektriğe muhtaç olan müessesat ve sanayiye gerekli elektrik kuvvetinin üretimi ve satılması imtiyazının Tophane-i Amire namına ihalesi ve şerait-i lazıme takrir olunarak ona göre tanzim olunacak mukavele-name layihalarının tetkik için irsali.” BOA. BEO. 2972/ 222827. 18 Kanun-ı evvel 1322/ 31 December 1906.

electric plant with a 1000 kW capacity would not be sufficient for general illumination and running the electric tramway.¹⁶³ The Istanbul Gas Company was as well among the applicants since they were worried about the introduction of electricity to the city as an important rival. They were rejected as well due to the ninety-nine years concession period they demanded. Finally, the State Cannon-Foundry signed an agreement with Monsieur Gaston de Lomat who applied on behalf of a French electric company on 22 June 1908. Their offer was much more advantageous than the previous ones. In order to ensure the electric plant's rapid turnover to the State Cannon-Foundry, seventy-five percent of the annual revenue would be allocated for the payback of the principal. Fifteen percent of the revenue would be given to the State Cannon-Foundry for the illumination expenditure of public institutions. However this attempt could not be actualized because of the Young Turk Revolution that occurred after the agreement date on 24 July 1908.¹⁶⁴

In conclusion, starting from the Tanzimat period, European style municipalities were established and assigned to undertake some significant infrastructural intended to modernize urban centers. Illumination of streets was among the top items on the municipal works. However, they encountered several problems in the introduction and development of new lighting technologies. The Ottomans were used to transfer and adapt new technologies and to become the sole provider of such technologies or services in the realm. The government's policy on coal gas and electric technology indicates the Ottomans were still insistent on maintaining the state's monopoly over a new technology related to public services. Nevertheless, they could not afford the requirements of the new lighting systems via local monetary fund, knowledge and experience and they applied for foreign capital. During the bid process, the Ottoman officials considered the benefits of the land and tried to assure that foreign companies would not have concessions and privileges that lasted for a long time.

¹⁶³ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 6.

¹⁶⁴ Ibid, 7.

2.7. Electrification of Istanbul During the Second Constitutional Period: Development of the Silahtarağa Power Plant

After the Young Turk Revolution, the trend towards modernization continued under the influence of the Committee of Union and Progress. The Young Turks were faithful followers of the Tanzimat ideology, which aimed to create an urban image based on European technology and city fabric. CUP prioritized the introduction of electric technology since the electric light was the most apparent symbol of modern cities by their time. In 1909, the Ministry of Public Works established a commission to investigate opportunities and to evaluate the various offers made to implement electric power systems in Istanbul.¹⁶⁵ Most of the applicants wanted to obtain electrification rights to sell them to big companies subsequently.¹⁶⁶ The municipality was among the applicants for electric concession as well.¹⁶⁷ However, the Ottoman government under grand vizier Sadrazam Hüseyin Pasha rejected the municipality's offer on 2 September 1909. According to the government, even if the municipality had rights to benefit from the investments that would serve public interest, the Chamber of Deputies (Meclis-i Mebusan) should choose the most suitable offer in terms of the state's profit.¹⁶⁸ The decision of the government marks the policy shift between the Hamidian era and the Second Constitutional period. During the reign of Abdülhamid II, the sultan insisted on keeping the monopoly of public services under government institutions such as the municipality and the State Cannon-Foundry. In contrast, the new government believed the municipality was not competent to fulfill the requirements of an electric power system based on previous experience.

Even though the Ottoman government had been granting concessions to foreign enterprises for sixty years, still there was not a law regulating the conditions to be fulfilled by grant holders. The main consideration of the Chamber of Deputies and the Council of Notables (Meclis-i Ayan) was to set a legal framework for future

¹⁶⁵ BOA.BEO. 3529/ 222827. 24 Mart 1325/ 6 April 1909.

¹⁶⁶ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 8. For detailed information see Appendix B.

¹⁶⁷ BOA.DH.MKT. 2907/14. 9 Ağustos 1325/ 22 August 1909.

¹⁶⁸ BOA.BEO. 3362/ 272379. 28 Ağustos 1325/ 10 September 1909.

concessions that involved public services. A great majority of council members claimed the assembly should evaluate any concession on municipal services in order to protect public interest. During the negotiations, Mehmet Talat Bey, deputy of Ankara, criticized the concessions accorded under the Hamidian regime. According to him, Abdülhamid II granted privileges to foreign ventures to the detriment of Ottoman interests and nobody could say even a word because of the oppressive nature of the regime. Thus, Talat Bey supported the preparation of a law that would authorize the Chamber of Deputies to evaluate and confirm concession offers.

İmtiyazatı havi mukavelenamelerin behemahal Meclis-i Mebusandan geçmesi lazımdır. Bunun lüzumu aşikârdır. Onu teyid etmek için bir kanun yapalım. Bizim yapacağımız kanun, bundan böyle verilecek imtiyazlara teşmil edilmesi lazım geleceği gibi, Hükümeti bir iddiaya sevkedebilir. Yani mâ-kabl şamil olamaz (...) Mukaddema, bu gibi imtiyazlar milletin aleyhine veriliyordu. Fakat tesir-i istibdatta kanımız içimize akardı, söyleyemezdik...¹⁶⁹

After long negotiations, Menâfi-i Umumiyyeye Müteallik İmtiyaz Hakkında Kanun (Law on Concessions Relating to Public Service), enacted on 23rd June 1910, regulated the procedures that the bidding companies should observe during tender, contract and implementation stages. The act restricted the authority of the municipalities in public service concessions because they were not qualified to handle the concession process. Since then, the authority to award concessions on behalf of the state would belong to the Council of Ministers (Meclis-i Vükela) and the Council of State (Şûrâ-yı Devlet) would determine conformity of the contract to the laws.¹⁷⁰

After the promulgation of the act, the Ministry of Public Works established a technical commission in order to prepare a draft contract and technical specification

¹⁶⁹ 16 Teşrin-i sani 1325, *Meclis-i Mebusan Zabıt Ceridesi*, C. I, Devre: 1, İçtima Senesi: 2,142. in Seda Örsen Esirgen, "II. Meşrutiyet Meclis Tutanaklarına Göre Menafi-i Umumiyyeye Müteallik İmtiyazat Hakkında Kanun'un Kabulü", *Ankara Üniversitesi Hukuk Fakültesi Dergisi*, vol.60, no.4 (2011), 938.

¹⁷⁰ Madde 1: (...) vilayet devair-i belediyesinin teşkilatına dair vazedilecek kavanin ile itası hükümet-i mahalliyyenin daire-i salahiyetlerinde bulunmayacak olan menafi-i müteallik imalat imtiyazatı doğrudan kuvve-i icraiye tarafından verilecektir. "Menafii Umumiyyeye Müteallik İmtiyazat Hakkında Kanun", 10 Haziran 1326 / 23 June 1910. <http://www.mevzuat.gov.tr/MevzuatMetin/0.1.6.pdf>

for particular companies that were invited for tender.¹⁷¹ Upon the announcement of the Ministry of Public Works, eight multinational consortia presented their offers. There was intense competition among the German, British and French companies.¹⁷² Budapest-based firm Société Anonyme d'Electricite Ganz outbided the seven rival firms and was awarded the monopoly of Istanbul's electricity generation and supply in 1910.¹⁷³ The Austro-Hungarian Ganz Company would have the rights of generating electricity for the regions from the first to the twelfth municipal districts on the European side and the twentieth municipal district on the Asian side of Istanbul for a period of fifty years. However, the Istanbul Gas Company's service area also covered the first five and the twentieth districts. Because of this overlap, the signing of the contract would be possible only after an arrangement was settled between these two companies.¹⁷⁴ The Ganz Company resolved the conflicts with the Gas Company and founded the Osmanlı Anonim Elektrik Şirketi (Ottoman Electric Company) with other ventures; Banque Generale de Crédit Hongrois, La Banque de Bruxelles, and the Belgian Sofina Group, within six months after the tenancy began.

In 1911, the first power plant at the urban scale with a capacity to generate 13400 kW of electricity began to be built on an area of 120 000 square meters in Silahtarağa along the Golden Horn. Because of the lack of a stream sufficiently powerful to operate a hydraulic plant in Istanbul, a coal-fired power plant would meet the electric requirement of the city range from illumination to transportation and industry. ¹⁷⁵ The most appropriate place for the power plant was Silahtarağa, situated on the northern shores of Haliç, which is a natural harbor at the junction of two streams. The harbor with tranquil, spacious and the deep-water basin would

¹⁷¹ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 9.

¹⁷² Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 9.

¹⁷³ BOA.BEO. 3817/286256. 18 Teşrin-i evvel 1326/31 October 1910. For detailed information see Appendix B.

¹⁷⁴ Asu Aksoy, Funda Açıkbaş and Ayşenur Akman, "Silahtarağa Elektrik Santrali'nin Hikayesi", 21.

¹⁷⁵ Binnur Kıraç, Mevlüde Kaptı and Saadetin Ökten, "The Old Power Plant at Silahtarağa in İstanbul", 1239.

facilitate the coal transportation and supply of cooling water that the plant required. Furthermore, the Golden Horn was an attractive point for industrial facilities and it would be an important advantage for the electric company since they would be able to keep energy losses in electricity transmission to minimum by being situated the plant close to the large industrial establishments.¹⁷⁶ The power distribution network would be completed in 1913 according to the plans. However, such unforeseen conditions as the Balkan Wars and the flood disaster of 1913 delayed the construction period of the Silahtarağa Power Plant.¹⁷⁷

Although, the Ottoman Electric Company had the rights of generating electricity for Istanbul, the electrification of Istanbul's tramways was under the responsibility of the Dersaadet Tramway Company according to the contract signed in February 1914. According to this contract, the Tramway Company was obliged to construct an electric plant in order to run the tramcars or purchase required energy from a company that would be build in Istanbul.¹⁷⁸ The Dersaadet Tramway Company did not prefer to construct a costly electric plant. Instead, they made an agreement signed with the Ottoman Electric Company on holding all the electrification works of Istanbul. Upon this agreement, in September 1911, the Union Ottoman Societe d'Entrepises Electriques a Constantinople (Istanbul Consortia) was established with the contribution of the Tunnel Company, the Dersaadet Tramway Company and the Ottoman Joint Stock Electric Company (SOFINA) in September, 1911 to keep the electric and transportation sector of

¹⁷⁶ Asu Aksoy, Funda Açıkbaz and Ayşenur Akman, "Silahtarağa Elektrik Santrali'nin Hikayesi", 21.

¹⁷⁷ "İmtiyaz ahkâmına nazaran elektrik te'sisât ve tefrişâtı 1329 senesi Haziran'ında hitam bulacak idi. Fakat Silahdarağa'da inşasına mübaşeret olunan elektrik fabrikasının inşaatı Balkan Muharebesi münasebetiyle taahhura uğradığı gibi 15 Eylül 1329'da Dersâadet'de vukua gelen şiddetli bir seylâb fabrika ebniyesinde hasârât-ı mühimmeye bâdi olduğu cihetle fabrika ancak 1330 senesi Mart'ında bi'l-ikmâl işletilmeye başlamıştır." Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediyye*, vol.2, 921-922.

¹⁷⁸ "Kudret-i elektrikiyye istihsâli için Şehremânetiyle şirket beyninde bi'l ittifâk kararlaştırılacak mevâki'a bir veya müte'addid fabrika inşâ edecek veya fabrika inşâ etmemeyi menâfi'ne daha muvaffik addederse ihtiyâcâtına muktezi kudret-i elektrikiyyeyi mübâyaa fi'âtı şerâiti Nâfia Nezâretince tasdik olunmak kaydıyla müesses bulunan veya âtiyen tesis kılınacak olan fabrikaların herhangi birinden mübâyaa eyleyecektir. (Dersaaâdet Tramvay Şirketi Hututunda Kudret-i Elektrikiye İsti'maline Dair Mukavelename 17 Muharrem 1329, İkinci Madde)" Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediyye*, vol.5, 2430.

Istanbul under control. The Istanbul Consortia was consisted of six German, seven French, six Belgian, six Belgian-Hungarian partnerships and one Swiss group. It played an active role in Istanbul's electrification and urban transport projects during the early twentieth century.¹⁷⁹ Eventually, the tramway company decided not to construct a power plant but to acquire the required electric energy from the Silahtarağa Power Plant. The company paid to the Şehremaneti a tax for per kilowatt-hour of electricity it used in addition to the fees it paid to the Silahtarağa Power Plant.¹⁸⁰ However, the company had to establish a temporary electric plant in Kabataş until the completion of the Silahtarağa Power Plant.

Residents of Istanbul suffered from the lack of transportation services since the Ministry of Defense took over all the horses of the trams upon the outbreak of the Balkan War in 1912. In addition, the tramway company faced various obstacles in transferring tramcars from Europe to the Ottoman Empire. Although the permanent electric plant was completed in the last days of 1912, the tram service could not begin without tramcars.¹⁸¹ In August 1913, the first electric tramcar started to operate on the Şişli-Tünel line with two locomobiles powered by a dynamo generating 500-volt direct current until the Silahtarağa Power Plant supplied electricity to the tramway system in February 1914.¹⁸²

The inauguration of the Silahtarağa Power Plant took place slightly before the outbreak of the First World War and the electric company encountered difficulties

¹⁷⁹ Vahdettin Engin, *İstanbul'un Atlı ve Elektrikli Tramvayları*, 136.

¹⁸⁰ "Tramvay şirketi her türlü ihtiyacı için sarf edilecek elektrik enerjisinin kilovatsaat başına İstanbul'da Şehremaneti'ne 1,6 frank aidat verecektir (1 frank 4 kuruş 40 santimdir) "Vahdettin Engin, *İstanbul'un Atlı ve Elektrikli Tramvayları*, 143.

¹⁸¹ "Osmanlı Elektrik Şirketi tarafından bütün İstanbul tramvay hatlarına cereyan verecek olan büyük fabrikanın ikmal edilmesine intizaren tramvay şirketi Kabataş'da muvakkat bir fabrika inşa ve inşaat ve tertibatı da geçen teşrin-i sani'de itmâm etmişti. O vakitden beri bu fabrika niçin faaliyet göstermedi? Beşiktaş hattı üzerindeki tertibat da ikmal olunmuş ve Şişli hattı ikmal derecesine gelmiş olduğu halde bu hatlarda neden tramvaylar işlemedi? Bu hususdaki mania, bizzat müteharrik arabaların Avrupa'dan dersaadete gönderilememesi idi. " Servet-i Fünûn, 26 June 1913, vol. 45, issue. 1151.

¹⁸² Osmanlı Anonim elektrik şirketince Silahtarağa'da tesis edilmekte olan elektrik fabrikasına ait makinelerin büyük bir kısmı yerine konulmuş ve kazanlar ile türbinlerin son olarak yapılan tecrübesi tamamen memnuniyet verici bulunmuş olduğundan şirket İstanbul tramvaylarına gereken elektriği vermeye başlamıştır. Tramvay arabaları birkaç günden beri Silahtarağa Elektrik Fabrikası'nda üretilen elektrikle çekilmektedir." İkdâm 25 February 1914, in Vahdettin Engin, *İstanbul'un Atlı ve Elektrikli Tramvayları*, 178.

in transporting coal and other required materials from its leading supplier in Britain.¹⁸³ Since the Dardanelles straits were closed to traffic, supplying coal and materials via the Mediterranean was not possible either. Furthermore, the company's attempts to transport coal from Zonguldak via the ferries of Şirket-i Hayriye were thwarted when the Russian naval force destroyed one of the ferries on 24 March 1916.¹⁸⁴ The electric company had to find a solution not to suspend the electric production in the plant. Eventually, they decided to build a 62-km long narrow gauge railroad starting from Silahtarağa and reaching Ağaçlı, which had large lignite beds beginning at Kilyos and extending as far as the Lake Terkos. The company would mix the lignite coal coming from Ağaçlı in a ratio of one to three with the coming from Zonguldak and use it for generating electric energy.¹⁸⁵ The construction of the Karadeniz Sahra Hattı (Haliç-Karadeniz Field Railway) started on February 1915. The first part of the line between Kağıthane- Ağaçlı was opened for service on July 1915 and the second part of the line between Kemberburgaz-Çiftalan was completed on December 1916.¹⁸⁶ Even though this solution granted time to the electric company, they still needed more coal and equipment to maintain the electric service for Istanbul. Thus, the company procured coal from Germany and the necessary equipment from Austria, the allies of the Ottoman state during the First World War.¹⁸⁷ The government exported copper wires to Austria and imported the necessary equipment for electric and gas companies to ensure the

¹⁸³ Ayşenur Akman and T. Gül Köksal, "Silahtarağa Nasıl Çalışırdı", in *Silahtarağa Elektrik Santrali 1910-2004*, 73.

¹⁸⁴ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 14.

¹⁸⁵ Ayşenur Akman and T. Gül Köksal, "Silahtarağa Nasıl Çalışırdı", 73.

¹⁸⁶ Emre Dölen, "Haliç'ten Karadeniz Kıyısına Bir Demiryolu: Karadeniz Sahra Hattı", in *Dünü ve Bugünü ile Haliç: Sempozyum Bildirileri 22-23 Mayıs 2003*, Kadir Has Üniversitesi, Ed.. Süleyman Faruk Göncüoğlu, (İstanbul: Kadir Has Üniversitesi Yayınları, 2004), 386.

¹⁸⁷ "Harp münasebetiyle Memalik-i Şahane'nin kömür ihtiyacının Ereğli ve diğer kömür havzalarıyla Almanya'dan yapılacak ithalatla karşılanması ve bununla alakalı kömür tevziat cedvelleri" BOA.DH.İ.UM.EK. 26/57. 24 Kanun-i evvel 1332/ 6 January 1917.

maintenance of public lighting in Istanbul.¹⁸⁸ Simultaneously, the Ministry of Public Works took several precautions to reduce the consumption of electric energy. Electric tramcars would not run after 20:30 in the evening, the hotels and restaurants would minimize their electric consumption and public places such as shops, theatres and cinema halls would be open until sunset in order to minimize electric usage.¹⁸⁹

During the first years of the Silahtarağa Power Plant, Istanbul experienced a relatively slow development of electric supply as a result of the difficult war conditions. After this period, the Ottoman Electric Company accelerated the improvement of the electric distribution network by laying cables firstly on the European side and then on the Asian side of the city. The Silahtarağa Power Plant supplied energy to the European side of Istanbul via seven high-voltage cables bearing 110 000 volt. Distribution centers located in Beyazıt, Pera, Ayaspaşa and İstinye lowered the high voltage to the utilization voltage of 110 volts and distributed the energy to customers from Sarıyer to Yeşilköy.¹⁹⁰ However, the plant could not supply energy to the Asian side of Istanbul until the electric company laid transmission cables under the Marmara Sea to expand the service area up to Üsküdar and Kadıköy in 1927.¹⁹¹ Istanbul's electric network consisted of a 144 010 meters high-voltage cables, 117 230 meters low-voltage cables, 55 220 meters overhead cables and a total of 317 000 meters electric cables by the end of 1919. As it can be seen on the map below, the Asian side of Istanbul still did not have electric service in April 1926. On the other hand, the electric company had already

¹⁸⁸ “Dersaadet Osmanlı Anonim Tramvay ve Elektrik ve Tünel ve İstanbul Gaz Şirketleri için Avusturya'dan ithal edilecek eşya karşılığında yirmi ton eski bakır ihracına müsaade edilmesi.” BOA.MV. 102/205. 8 Kanun-i sani 1332/ 21 January 1917.

¹⁸⁹ “...1)İş‘âr-ı âhîre deĝin tramvaylar saat sekiz buçuĝa kadar tahrîk olunacak işbu saatden sonra tramvaylar hareket etdirilmeyecektir. 2)Oteller ve lokantalar ve saire gibi tenvîri zarûri olan müessesât-ı umûmiyedeki istihlâkât-ı elektrikiyye hadd-i asgarîye tenzil olacaktır. 3)Ticaretle iştigal eden ale'l-umûm mağazalar alış verişlerin gündüz icra ile gecenin hulûlünde sedd olunarak kuvâ-yi elektrikiyye isrâfâtına meydan verilmeyecektir. 4)Sinema ve tiyatrolar dahi geceleri sedd olunacaktır. 5)Tedâbir-i mezkûrenin polis vesâtiyle kat‘iyyen tatbîkine îfâ-yı mu‘âvenet olunması hususu lazım gelenlere emr u tebliĝ buyurulması kemâl-i ehemmiyetle temenni olunur...” BOA.DH.İ.UM. 19-3/1-32. 26. Teşrin-i sani 1334/ 26 Kasım 1918.

¹⁹⁰ *Ameli Elektrik*, vol.1, no:5 (April,1926), 1.

¹⁹¹ Vahdettin Engin and Ufuk Gülsoy, “Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları”, 21.

laid electric cables from Yeşilköy to Sarıyer on the European side.



Map.2.1 The Layout of the Main Cables of Istanbul’s High-Voltage Electric Network, Scale: 1/ 100,000 (İstanbul Âli Tevettür Şebekesinin Kablolarının Şematik Planı Mikyası 1/ 100,000)

Source: Ameli Elektrik, vol.1, no.5 (1926)

Thomas P. Hughes compares the establishment of electric power systems in London, Berlin and Chicago by considering the interaction between technology, politics and society. He argues; “all three had the same pool of technology to draw from, but because the geographical, cultural, managerial, engineering, and entrepreneurial character of the three regions differed, the power systems were appropriately varied as well.”¹⁹² Hughes believes the political structures of these three cities determined the scale and the capacity of their power supply systems. For example, London had the most fragmented electric supply system with more than fifty small electric power plants in comparison to the other two cities, Berlin and Chicago.¹⁹³ The electricity supply of London was under the responsibility of the local government that had a complex structure consisting of twenty-eight municipal boroughs and they kept the scale of the power systems uneconomically small.¹⁹⁴ On the other hand, Chicago and Berlin had centralized power systems supplying the entire city from a half dozen large power plants because in Chicago politicians were pliable and relatively free of traditional constraints. Likewise, in

¹⁹² Thoman P. Hughes, *Networks of Power*, 17.

¹⁹³ *Ibid*, 228.

¹⁹⁴ *Ibid*, 229.

Berlin there was cooperation between political authorities and the system builders.¹⁹⁵ Thus, the political administration of a city is one of the most influential factors in the implementation process of the power systems.

Economic, political and geographical factors came into play during the designing process of Istanbul's power network scheme as well. When the electric network system of Istanbul started to be designed with the contract signed in 1911, European and American inventor-entrepreneurs had already solved most of the technical problems of the electric supply systems. As a result, the Ottoman officers and engineers in the technical commission benefited from the electrification experiences of various cities during the preparation of the contract documents for the electrification of Istanbul. The most economic solution for power distribution for the heavily populated cities like Istanbul was central alternating current generating stations instead of numerous small power plants. Hydraulic power system was not a reasonable alternative for Istanbul since the city did not have a large river or waterfall appropriate for generating electricity. On the other hand, coal mines in Zonguldak, Söğütözü, and lignite mines in Ağaçlı, Tavşanlı, Söğüt, Soma, Nazilli, Uzunköprü could provide the source for a coal-fired thermal power plant built in Istanbul.¹⁹⁶ Eventually, the Ottoman Electric Company built a central thermal power plant with a capacity to generate 13,400 kW to meet the electric requirement of Istanbul. The Silahtarağa Power Plant was designed to allow any capacity to increase in the future. As a result it had the potential to become electric provider of the city until the Çatalağzı Power Center started to distribute energy to Istanbul via newly created interconnected electric system of Turkey in 1952.¹⁹⁷ Apart from the economic, technical and geographical factors mentioned-above, the political structure of the state also shaped the development of an electric power system in Istanbul. The "Law on Concessions Relating to Public Service", which was issued only before the tender process for the electrification of Istanbul, weakened the authority of local governments while it enhanced the centralized authority by delegating regulatory power to the General Assembly. Thus, the power

¹⁹⁵ Thoman P. Hughes, *Networks of Power*, 202.

¹⁹⁶ M. Refik Fenmen, *Türkiyenin Elektrifikasyonu* (İstanbul: Ulus Basımevi, 1935), 21-22.

¹⁹⁷ Hatice Fahrünnisa Ensari Kara, *Dünden Bugüne İstanbul Ansiklopedisi*, vol.6, s.v. "Silahtarağa Elektrik Fabrikası", 555.

system of Istanbul did not evolve according to the requirements of different municipal districts. Instead the city developed a centralized electric supply system managed by centralized authority.

CHAPTER III

Social Meanings of the Electric Technology: Discourse, Politics and Consuming Electric Power

Playwright Anthon Chekhov, in one of his short stories “The Wedding”, written in 1889, touches upon the most popular invention of his era, electricity. In this story, the characters come together for a wedding. During the wedding, a young telegrapher among the guests raises his voice and says the only lack of the splendid ballroom was a glamorous electric chandelier. He believes they had everything apart from electricity, whereas the electric light had already been introduced in every country except Russia. Upon the speech of the telegrapher, Zhigalov, the father of the bride criticizes him harshly. Zhigalov asserts that electric lighting was just a swindle. Referring to electric batteries he says, “They put a live coal in and think you don't see them! No, if you want a light, then you don't take a coal, but something real, something special, that you can get hold of! You must have a fire, you understand, which is natural, not just an invention!”¹⁹⁸

Anthon Chekhov's story reflects well the different social reactions and discourses that a technological development generates, in this case electricity in Russia during the last decade of the nineteenth century. Literary works are essential sources for social scientists, especially for those who want to pursue the social aspects of a historical process. Especially, writing about the development process of a certain technology necessitates dealing with the social actors that evolve a technological system into a social and cultural artifact. Without understanding the expectations, opinions, demands and characteristic features of the “relevant social groups” such as consumers, engineers, intellectuals, bureaucrats, officers and alike, telling the history of a technologic artifact or process will be lacking. In order to avoid this handicap, this chapter aims to explain the electrification process of Istanbul by focusing on human agency via mostly literary sources such as newspapers, periodicals, memoirs, stories and novels. Furthermore, this chapter will supplement the previous chapter since the third chapter approached the topic from

¹⁹⁸ Plays by Anthon Chekhov, Second Series, The Wedding
<https://ebooks.adelaide.edu.au/c/chekhov/anton/plays2/chapter7.html>

the aspects of certain structural actors such as the state and its local branches with reference to archival documents, laws and official regulations.

3.1. Discussions on Electric Technology: Intellectuals, Public Officers and Engineers

During the nineteenth century, Ottoman intellectuals wrote intensively about the rapid advances in science and technology that were occurring in Europe and America and seen as one of the crucial aspects of the “western civilization”. Ottoman intellectuals whether modernist or conservative, sought answers for such questions as “Is westernization appropriate for the Ottoman society?” or “Should we adopt some aspects of western civilization while rejecting others?”¹⁹⁹ For example, Sadullah Pasha, one of the leading intellectuals of the late Tanzimat era (the period of reformation), summarized the views of many Ottoman intellectuals in his poem “The Nineteenth Century”. The poem conveys that, many Ottoman intellectuals believed future would be based on science and progress. “Mecâz oldu hakîkat, hakîkat oldu mecâz / Yıklıdı belki esâsından eski mâ'lûmât (The truth has become figurative, that which was once figurative has become true / The foundations of old knowledge have collapsed)”.²⁰⁰ In his poem, Sadullah Paşa pointed out technological innovations such as steam power, artificial lighting and electricity, which characterized the growing scientific and technological superiority of the “western” world during the nineteenth century. He said, “many impossibilities have become possibilities” by means of these inventions.²⁰¹ Different discourses and opinions shared by Ottoman intellectuals reflected their perceptions regarding the adoption of technological artifacts widely used in European cities. The illumination of night sky with artificial lighting systems

¹⁹⁹ Avi Rubin, “Ottoman Judicial Change in the Age of Modernity: A Reappraisal”, *History Compass*, vol.7, no.1(January, 2009), 122.

²⁰⁰ M. Şükrü Hanioglu, “Blueprints for a Future Society: Late Ottoman Materialists on Science, Religion and Art” in *Late Ottoman Society: The Intellectual Legacy*, ed. Elisabeth Özdalga, (New York. Routledge Courzon, 2005), 34.

²⁰¹ “...Hevâ vü berk ü ziyâ vü buhâr ü mîknâtis / Yed-i tasarruf-ı insanda unsur-ı harekât/ Ziyâ hayâlen iken şimdi bil-fi’îl sâ’î / Zılâl zâil iken şimdi zîver-i mir’ât / Sadâ hesâb-ı mesâfâtta muhbir-i sâdık /Buhâr; zulmeti tenvîrde ebda’-ı âyât ...” see in Sadullah Paşa, “Ondukuzuncu Asır” in *Yeni Türk Edebiyatı Antolojisi II 1865-1876*, ed. Mehmet Kaplan, İnci Enginün and Birol Emil (İstanbul: Marmara Üniversitesi Yayınları, 1993), 651.

became one of the most frequently discussed subjects in the Ottoman press. Because the illumination of nights had a significant impact on the lifestyle of Europeans, public lighting implementations were discussed among intellectuals as a requirement of the modernization program of the state.

Many important intellectuals of the late Ottoman era expressed their opinions regarding westernization. Their views provide clues about their stance towards European technology. However, the confines of the current study restrict us to the views of the Ottoman intellectuals who expressed their opinion either on street lighting or electric technology. These intellectuals include; Münif Pasha, İbrahim Şinasi, Ahmet Midhat Efendi, Ahmet İhsan Tokgöz, Ahmet Rasim, Ahmet Haşim, Refik Fenmen, Nafiz Ziya and Osman Nuri Ergin. This study does not claim to offer an exhaustive account of intellectual discussions on electric technology in the late Ottoman state. Rather, it offers a general overview of ongoing discussions related to street lighting and electric technology as seen in the publications of the period in order to understand the prevalent approach towards the illumination of nights before and after the introduction of electric lamps in Istanbul.

3.1.1. Newspapers, Journals and Travel Books

Starting from the 1850s, municipal reforms were introduced and put into practice in the Ottoman state. Many Ottoman statesmen and intellectuals started to discuss and express their opinions on how to transform the streets of Istanbul in compliance with European style street patterns. According to the leading Tanzimat intellectuals and Ottoman bureaucrats, the creation of a modern, clean and beautifully embellished city was crucial to compete with the European cities. One of the most important steps was the establishment of the Municipality Administration of Istanbul (*Şehremaneti*) in 1855. The municipality would undertake the main municipal services such as expanding and cleaning the streets, street lightening, formation of new roads and inspection of markets. The new institutions and regulations were not fully successful in their attempts to bring radical changes to the streets of Istanbul.²⁰² By 1860, the newspapers started to criticize the municipality harshly for the inadequacy of the current street

²⁰² Zeynep Çelik, *The Remaking of Istanbul*, 47.

improvements despite that the inhabitants of Galata and Pera regularly paid their taxes.²⁰³ Meanwhile, the Ottoman intellectuals who felt responsible for the government's modernization attempts wrote their opinions and suggestions in such periodicals and newspapers of the era as *Mecmua-i Fünûn* and *Tasvir-i Efkar*. They made a general overview of the latest municipal works and offered some advices regarding street lighting works that had to be undertaken as soon as possible. Mehmet Tahir Münif Pasha and İbrahim Şinasi were among the positivist Ottoman intellectuals of the Tanzimat era who wrote about the significance of street lighting for the city of Istanbul.

Münif Pasha (1828-1910) was one of the leading figures of the late Ottoman state. He served as an ambassador, a Minister of Education and a Minister of Trade and Commerce during the reigns of Sultan Abdülaziz and Abdulhamid II. His ideas on literature, education, science and technology influenced the westernization of the Ottoman state. Since he knew many languages, he translated and published the first scientific, philosophical and literary essays from Greek and French into Ottoman Turkish.²⁰⁴ In 1861, he founded the Cemiyet-i İlmiyye-i Osmaniyye (Ottoman Society of Sciences) with the intention of encouraging scientific studies by publishing books, magazines and introducing modern scientific knowledge. In the following years, the institution began to publish the *Mecmua-i Fûnun* (*Journal of Sciences*), which was the first scientific periodical in the Ottoman state.²⁰⁵ In the *Mecmua-i Fûnun* of February 1864 Münif Pasha wrote an article titled "Tanzim-i İstanbul" (Regulation of Istanbul) on the amelioration of urban life and city planning in Istanbul. Münif Pasha criticized the construction of wood houses whereas the Europeans preferred stone houses, which prevented the spread of fires to neighborhoods. He also complained about the lack of firewalls, narrow, badly cobbled, dirty and dark streets. He believed the inferior situation of Istanbul in relation to European cities was embarrassing. According to Münif Pasha, since the

²⁰³ N. Işık Demirkan, "A Study of Ottoman Modernization on the City", 80.

²⁰⁴ Ahmed Hamdi Tanpınar, *Ondokuzuncu Asır Türk Edebiyatı Tarihi* (İstanbul: Dergah Yayınları, 2012), 184.

²⁰⁵ Johann Strauss, "The Millets and the Ottoman Language: The Contribution of Ottoman Greeks to Ottoman Letters(19th-20th Centuries) in *Die Welt des Islams New Series*, vol. 35, no. 2 (November, 1995), 219.

nights were an important part of human life, people should benefit from the night as they benefited from the day to prolong their lives. A proper street lighting service would not only save time for the citizens but also well-lit streets would facilitate and secure strolling after sunset.²⁰⁶ He believed the necessity of enlightened nights since anyone could want to spend some relaxing and enjoyable time at night in lively districts that were flooded with light. He asserted that in the absence of such leisure opportunities and activities, the citizens who did not have any pastime activities such as reading a books and the like, would be addicted to a life of pleasure (*ıyş u işret*).²⁰⁷ Munif Pasha imagined Istanbul with its streets full of people of all ages and social backgrounds; walking, shopping and enjoying the day as a whole. The non-Muslim neighborhoods of Galata and Pera had already been enhanced with gas lamps but the other regions continued to suffer from the dark and unsafe streets at night. Thus, he emphasized the immediate need for street lighting within the Muslim populate districts as well.

Another Ottoman intellectual who wrote his concerns about the dark streets of Istanbul was İbrahim Şinasi (1826-1871). A contemporary of Munif Pasha, he nourished positivist ideas regarding the modernization of the Ottoman state and society. Şinasi was an Ottoman bureaucrat, writer and journalist. He went to Paris to study government finances under the patronage of Grand Vizier Mustafa Reşid Pasha and the intellectual atmosphere of Paris influenced him profoundly.²⁰⁸ In 1860, Şinasi and Agah Efendi published the first Turkish private newspaper,

²⁰⁶ "... ömr-i insâninin nısfı leylen mürûr eylediğinden imtidâd-ı eyyâm-ı hayat arzusunda olduğumuz takdirde ...leyâliden dahi mümkün mertebe rûz-i rûşen gibi istifade olunması vesâitinin istihsâli müvâfık-ı kâide-i akl ü hikmet olacağı emr-i bedidârdır. Leyâlîde sokaklar tenvir olunmadığı hâlde uzak mahallere gidip gelmekle derkâr olan külfet ve zahmet bi-t-tab'ı sedd-i râh-ı azimet olarak herkes âftâb-ı cihan-tâb arz-ı didâr edinceye kadar herkes bulunduğu mahalde sükûn ve âramâ mecbur olur..." see in *Mecmua-i Fünûn*, 28 Kanun-i sani 1279 (9 February 1864), vol.2, no.21, 373.

²⁰⁷ "... Şu hâl melâlet-i iştimâl ise hâriççe olan umûr ve masâlihi ferdaya terk etmek ve metâib-i rûzinenin def'i için biraz uzak olan mecâlise ve eğlence mahâllerine gitmekten mahrum olmak gibi mahâziri dâi olup bunlardan kat'ı nazar herkes mütâlâa-ı kütb ve emsali bir meşğûliyet-i nâfia bulamayacağından ekser halk dûçâr-ı kesâlet ve batâlet olup bazıları dahi mücerred işbu ümm-ül-fesâd olan batâletin sû-i te'siriyle ıyş u işrete mübtela olurlar..." see in *Mecmua-i Fünûn*, 28 Kanun-i sani 1279 (9 February 1864), vol.2, no.21, 373.

²⁰⁸ Selçuk Akşin Somel, *Historical Dictionary of the Ottoman Empire* (Oxford: Scarecrow Press, 2003), s.v. "İbrahim Şinasi", 127.

Tercüman-ı Ahval. Two years later Şinasi began publishing his own newspaper *Tasvir-i Efkar*, which had immense impact on Ottoman intellectual life.²⁰⁹ In *Tasvir-i Efkar*, Şinasi issued an article in June 1864, in which he expressed his opinions about the embellishment (*tenvir*) and cleaning (*tathir*) of the Istanbul's streets.²¹⁰ The article began with an epigraph that evoked the symbolism of "light". He used "light" as a metaphor for progress, reason and scientific truth; so, he interpreted street lighting as an indication of wisdom and knowledge;

Mâsiva sâibesinden dili tathîre çalıř,
Pertev-i hikmet ü irfan ile tenvîre çalıř
(Distance your heart from the things of earth and keep it clean, Use the
light/torch of wisdom and knowledge to enlighten)²¹¹

In the article, he emphasized the importance of the government's direction (*tenbihnâme*) in the field of municipal lighting promulgated on 20 April 1864. The government required Ottoman officials and loyal subjects (*bende-gân*) to hang two lanterns outside their doors until the municipality provided gaslight for the streets of Istanbul, which was not acquainted with a proper street lighting service yet.²¹² Şinasi highlighted the second article of the directive, which encouraged all the inhabitants of Istanbul to post a candle in front of their home and he explained the necessity of enlightened, secure and well-lit streets for security, social life and civilization.²¹³ According to him, the illumination of Istanbul's dark streets would primarily serve the purpose of security since streetlights facilitated identification and apprehension of criminals. Public lighting would also provide self-confidence and reassurance to the citizens. Besides, illumination would increase the use of

²⁰⁹ Balázs Trencsényi and Michal Kopeček, ed., *Discourses of Collective Identity in Central and Southeast Europe 1770–1945*, vol.1, (Budapest: Central European University Press, 2006), 188.

²¹⁰ Münif Pařa, "İstanbul'un Tenvir ve Tathiri Hakkında" *Tasvir-i Efkar*, 23 Nisan 1280 (June 5, 1864), no.192.

²¹¹ Ibid.

²¹² "Havadis-i Dahiliye: Madde-i Resmîye," *Tasvir-i Efkar*, 8 Nisan 1280 (April 20, 1864), no.188.

²¹³ "...Saniyen ahaliden dahi bu usule riayetle hanesi önünde kandil yakmasına herkes me'zun bulunacağı cihetle ol vechle ahaliden kendi arzu ve hâhiřiyle kandil yakanlar olur ise işbu hareketleri nezd-i hükümette tahsin ve takdir olunacaktır." "Havadis-i Dahiliye: Madde-i Resmîye," *Tasvir-i Efkar*.

public spaces of the residents during the night. They would be able to visit each other, open their shops and continue their works. The nights of Istanbul would be enhanced with candles as in the festive days. “Then, who would not want streets to be illuminated?” asked Şinasi.²¹⁴

As a leading figure of the Young Ottomans, Şinasi considered lighting of the streets as a crucial development in urbanization. However, instead of accepting the European model of city planning without any hesitation, he placed emphasis on increasing European domination in the Ottoman municipal service. He approved European style changes so long as they were implemented without losing Ottoman identity.²¹⁵

A similar sensibility could also be seen in the writings of another contemporary Ottoman intellectual Ziya Pasha (1825-1880). Ziya Pasha wrote articles about increasing foreign control on the Ottoman economy and commerce in the *Hürriyet* newspaper, which was an oppositional weekly journal published by the Young Ottomans to criticize the Ottoman government and the authoritarian regime of the Tanzimat bureaucrats. According to him, the European style of municipal reform would force the Ottomans to leave Istanbul into their hands. He reflected his fears as follows;

Istanbul’s filthy streets are torn down and replaced by stone buildings and boulevards like those of Paris. The streets are lit with gas until morning and various theatres amuse us in the evening. (...) These things were not accomplished by Ahmet Efendi and Hasan Aga but by the wealth of Europeans.²¹⁶

Apart from the discussions on street lighting with coal gas, the latest developments associated with electric technology started to find a place in the daily

²¹⁴ “Sokaklarda aydınlık olduğunu kim istemez; meğer gece karanlığından istifade eyleyen ehl-i fesad ola...” Münif Paşa, “İstanbul’un Tenvir ve Tathiri Hakkında,” *Tasvir-i Efkar*.

²¹⁵ “During its early years, the Sixth District gave foreign names to some streets, some of which are even vulgar words. If the District wants to make European style changes, these improper names should be changed with names of those known persons from among people of the Ottoman Empire, who are the rulers and owners of this land. Only by this way the European style changes would have been fully applied.” *Takvim-i Vekayi*, 2 Eylül 1279 (September 14, 1863), no.23 in N. Işık Demirkan, “A Study of Ottoman Modernization on the City, 82.

²¹⁶ *Hürriyet*, 4 Teşrin-i sani 1264 (November 16, 1868) in Steven T. Rosenthal, *The Politics of Dependency: Urban Reform in Istanbul* (Westport Conn.: Greenwood Press, 1980), 173-174.

news and debates. Early examples of these articles were mainly regarding the nature of electric energy. For example, Daniş Bey described electric energy “*Kuvve-i Elektrikiyye*” in detail in *Mecmua-i Fûnun* in 1864.²¹⁷ Another article from the periodical *Hafta* defined electricity as a bizarre and astonishing new source of energy. It stated electricity could be neither seen nor smelled but its power could be observed via electronic devices.²¹⁸ During the following years, new electric devices and the diverse usage areas of electricity became a popular topic among the journals of the period. “Nev İcad Bir Elektrik Testeresi” (A New Invention; Circular Saw), “Elektrik ile Tahrik olan Vapur” (The Ship Moved by Electricity), “Kuvve-i Elektrikiyye ile Bir Şey Tabetmek” (Printing with Electricity), “Elektrikle Teshin” (Heating with Electricity), “Debbagat-ı Elektrikiyye” (Tanning with Electricity), “Elektrikle Kakmacılık” (Electric Marquetry), “Elektrik Şimendüferleri” (Electric Trains), “Elektrikle Tedavi” (Electric Treatment) were examples of articles that introduced the new developments in the electric industry.

International exhibitions were also among the popular topics of periodicals that were especially concerned with science, technology and current affairs. Especially, the World’s Colombian Exposition (1893) and the International Exhibitions in Paris (1878,1889,1900) were followed by great interest since one of the most attracting parts of the exposition was the new developments and inventions in the field of electricity. In *Maarif*, Ali Nusret issued an article giving news from the World’s Colombian Exposition. He expressed his admiration for American inventor Edison and praised the advancements in electric technology with great enthusiasm.²¹⁹ In 1884, during the planning stage of the Paris World’s

²¹⁷ Daniş, “Kuvve-i Elektrikiyye,” *Mecmua-i Fûnûn*, 19 Mayıs 1280 (May 31,1864), no.24, 483.

²¹⁸ “Tabiatda görülen ahvâlin en garibi elektriktir. Elektrik dahi hararet ve ziya gibi âsârı meşhud ve kendisi meçhul birşeydir.(...)Elektriğin kuvvetiyle izhâr ettiği acâib günden güne keşf olunmakta ve teksir etmekte olduğundan, bunun erkân-ı tabiat-ı başlıcalarından olduğu anlaşılışdır.” “Elektrik,” *Hafta*, 8 Teşrin-i evvel 1297 (October 20, 1881), no.10, 149.

²¹⁹ “...Günden güne fevkalâde bir terakki gösteren elektrik gittikçe umûmen kesb-i ehemmiyet ediyor. Fûnûnun hal-i hâzırına ve sûret-i terakki ve tevessü’ü hususuna atf-ı nazar-ı dikkat olunursa âti için edilecek tahminlere ve ümid olunan terakkیات-ı fenniyyeye hemen kamilen elektrik esas olacağına itmînân hasıl olur. Bilhassa Edison gibi bir hârîka fitratın ihtirâat-ı cedidesi şimdîye kadar âlem-i fende gösterdiği âsâr fevkalâde olmak

Fair of 1900, *Servet-i Fünûn* handled the latest speculations about the forthcoming Paris exhibition with the article titled “Paris’in 1900 Sergisi ve Makinalar Asrı” (The Exposition Universal of 1900 and the Age of Machines).²²⁰ The anonymous article discussed the ongoing debate over the question “which label marks the nineteenth century best?”

The Paris World’s Fair would open its doors by the turn of the century. The organizers of the exhibition discussed how the fair would represent the nineteenth century best. The interior design of the fair would represent the leading technological development of the century they left behind. However, they could not come to an agreement about the most important advancement of the nineteenth century. The age of science, the age of invention and the age of progress were among the suggestions, however, the real competition was between two types of energy; steam and electricity. The article argued that due to the introduction of the steam engine into a great range of machines from locomotives and steamboats to spinning machines, steam powered machines were more common than the electronic ones. Notwithstanding, it was electric technology, which marked the second part of the nineteenth century with its unprecedented rapid progress and successive inventions.²²¹ The article asked “if it is already apparent that the electricity would be the leading source of energy for the following century, why should they wait in the following century to mark the era as the age of electricity?”. The article shared similar thoughts with French scientists and entrepreneurs who decided to construct a particular building, Palais d’Electricité (Palace of Electricity) that would be allocated to the exhibition of numerous products of electric

hasebiyle umûm-ı erbab-ı fen tarafından sabırsızlıkla beklenir...” Ali Nusret, “Şikago Elektrik Sergisi,” *Maarif*, 13 Haziran 1310 (June 25, 1893), vol. 4, no.100, 340.

²²⁰ “Paris’in (1900) Sergisi Ve Makineler Asrı,” *Servet-i Fünûn*, 28 Temmuz 1310 (August 9, 1894), vol.7, no.178, 337-339.

²²¹ “... buhar kuvvetinin icâdı üzerine ortaya çıkan makinaların yani vapurlardan şimendüferlerden tutarak en büyük işlerden en küçük işlere kadar top dökmekten iplik bükmeğe varıncaya kadar bütün imâl-i beşeriyeyi mükemmel surette kuran, yapan çarhların, fabrikaların bu asırda gösterdiği ehemmiyet elektrikden ziyadedir. Tuttuğu mevki onunkinden çok geniştir. Mâmafih şu “asr-ı fenni”nin ortaya çıkardığı kuvvetlerin en ziyade mahir-i ukul olacak surette âsâr göstereni elektriktir. Elektrik bu asrın bir hassa-i mümeyyizesidir... Asr-ı miladi içinde bi-hakkın terakkiyatı temin eden makine ise de 1900’de küşad olunacak meşhur asırda gözleri kamaştıracak pertev-i elektriktir.” “Paris’in (1900) Sergisi Ve Makineler Asrı,” *Servet-i Fünûn*.

technology. The building would be entirely lit and decorated with electrical bulbs to herald the “age of brightness”.

The debates about the relative advantages of steam and electricity in the new era were not restricted to the discussions mentioned above. In 1892, another article published in the *Servet-i Fûnun*, “Elektrik Terakkiyatı” (The Advancement of Electric) had already put forward its explanations to justify the speculative label of “the age of electricity”. The anonymous article argued that especially with the latest inventions of Tesla, there would not remain any place in the world where electric energy is not welcomed.²²² Electric energy was used extensively in almost every branch of industry. Thus, Europe and America were correct in marking the century as the age of electricity. In 1909, another article issued in *Şehbal*, “Elektrik Devri” (The Age of Electricity) participated in the ongoing debate from a different point of view putting the Ottoman state at the center of it.²²³ In contrast to the articles mentioned above, this article, written at a rather later date, was against labeling the nineteenth century as the age of electricity from the point of the Ottomans. According to the author, it was early for the Ottoman state to recognize the nineteenth century as the age of electricity when the steam industry was yet in its early stages. Thus, considering that they lived in an electric age would be a delusion for the Ottomans. Even in Europe, electric energy did not dominate various sectors where steam power, wood and coal remained effective. Thus, until electricity superseded other natural sources of energy it would not be able to mark the century.²²⁴ The author’s comments and assertions were probably a reaction against the government’s unsuccessful attempts to transfer electric technology to the Ottoman state. The comparison he made between the Ottoman state and Europe reflected the current situation of Istanbul, where the streetlights were still fuelled by coal gas and petroleum, tramways were pulled by horses and the houses were

²²² “Elektrik Terekkiyatı,” *Servet-i Fünûn*, 5 Mart 1308 (March 17, 1892), vol.3, no.53, 1-9.

²²³ “Elektrik Devri,” *Şehbal*, 1 Haziran 1325 (June,14 1909), vol.1, no.6, 106.

²²⁴ “İçinde bulunduğumuz asra “elektrik devri” denilir, bilemem ki bu tavsiflerinde yanılmıyorlar mı? Biz Osmanlılarca buhar devri bile henüz bütün kuvvetiyle hulûl edemediği için tayy-i zaman gibi bir atlayışla kendimizi elektrik devrinde zanetmekliğimiz şüphesiz yanlış olur. Lakin acaba bizden daha mütemeddin milletlerce de elektrik öyle koca bir devri nüfuz-ı nâmı altına alacak kadar her yerde ta’min her hizmete tahakküm etmiş midir?” “Elektrik Devri,” *Şehbal*.

illuminated by candles. The advances in electric technology were exciting but without practical application they were useless for the general population of the state.

Electricity was not solely a technological advancement but further, it was a vivid symbol of modernization, development and progress for the leading Ottoman authors such as Ahmed Midhat Efendi and Ahmet İhsan (Tokgöz) who met electric light for the first time in the European cities. Both authors conveyed the observations they made during their visit to Paris, London, Stochkolm, Lyon and Frankfurt in their travel writings.²²⁵ During their journey, they encountered various products of electric technology in almost every corner of the European cities. For example, according to observations of Ahmet İhsan (1868-1942), the Ottoman publisher and the founder of the Ottoman magazine *Servet-i Fünun*, the citizens of Frankfurt enjoyed the benefits of electricity via the lighting, transportation and communication systems in the 1890s. Ahmet İhsan recognized “electricity” as the soul of civilization (*rûh-ı medeniyet*), which marked the nineteenth century with its rapid advance.²²⁶ Likewise, Ahmed Midhat Efendi (1844-1913), one of the first Ottoman novelists and journalists, was fascinated by electric lights used for the illumination of the Paris World’s Exposition during his visit to Paris in 1889.²²⁷ Further, the use of electricity in the theatres of Stochkolm impressed Ahmed Midhat Efendi during his visit to Stochkolm the same year. Electric lights were

²²⁵ For detailed information see: Ahmed Midhat Efendi, *Avrupa’da Bir Cevelan* (İstanbul: Tercüman-ı Hakikat Matbaası, 1889), Ahmet İhsan Tokgöz, *Avrupa’da Ne Gördüm* (İstanbul, Âlem Matbaası, 1891).

²²⁶ “Elektriğe müteallik her şey burada mevcut idi; bir yandan elektrik tramvayları işliyor, bir yandan elektrik ile müteharrik arabalar dolaşiyor; ortadaki cesim havz derununda elektrik vapurları yolcu taşıyor; her taraf elektrik ile münevver elektrikten şelale yapılmış; elektrik ile icrâ -yı muhtelif tayin olunuyor; elektrik ile telgraf işliyor, çingiraklarla teati-i haber olunuyor; elektrik ziyalarıyla işaret veriyorlar” Ahmet İhsan Tokgöz, *Avrupa’da Ne Gördüm*, 321.

²²⁷ “...serginin bahçesi binlerce gaz lambaları ve yüzlerce elektrik ziyalarıyla tenvir edildiği gibi bahçe etrafındaki birahaneler, lokantalar ve orta yerdeki Kutan Havuzu ve yine orta yerdeki gezinti çardakları hep kalıplı lambalar ile tezyin edilir. Ayena Köprüsü ile Turukadero Bahçesi ve Sarayı da binlerce lambalarla tezyin edildiğinden Kutan Şelalesi yanında durup Turukadero’ya bakan insan sergi derûnunu bir derya ateşine benzetir. Büyük şehir ayinleri de işte bunun üç misli gaz ve elektrik ile envarından mâadâ pek büyük bir mikyâsta sanayi-i nâriye dahi icra olunmakta ve kule büsbütün donanmakta imiş ki şehir ayinleri bizim gördüğümüz derecesine bakarak şu büyüklerini tahayyül etmek hakikaten insana dehşet verir.” Ahmed Midhat Efendi, *Avrupa’da Bir Cevelan*, 528.

bright enough to imitate the sun, the stars and the moonlight on the theater stage.²²⁸ Consequently, their writings on electricity based on their observations in various European cities shaped the image of “modern and urbanized” city in the minds of the Ottomans during the late nineteenth century. The nights of the European cities lit up with colorful electric lights were totally different from the dark nights of Istanbul. As a result, the Ottoman intellectuals interpreted electricity as an important indicator of civilization just like their European counterparts.

As indicated above, most of the articles published in the press and literary works of the period supported the improvement of street lighting and the introduction of the electric technology in Istanbul. However, contrary to the prevailing perception, Ahmet Haşim (1884-1933), one of the most outstanding representatives of the symbolist movement in Turkish literature, believed that the electric light was not appropriate for the Ottoman society.

As the most important symbolist poet of the period, many poems of Ahmet Haşim were replete with striking images and metaphors such as the “night”, “light” and “time” as in the “Havuz (The Fountain)”²²⁹ Especially “light” was the most used symbol in his poems since he believed that light had been decisive for the evolution of civilizations throughout the history of mankind. According to him, the means of illumination such as fire, candle, oil, gas and electricity lamps was intricately interwoven with human activities and they played a crucial role in the evolution of civilizations whether for better or worse.²³⁰ He wrote an essay titled as “Elektrik Işığında” (Under the Electric Light) for the newspaper *Akşam* in 1922, when the streets of Istanbul had recently started to be illuminated with electric

²²⁸ “Elektrik ziyası pek çok güzel şeylerde işe yaradığı gibi tiyatro sâha-i temaşaları üzerinde dahi ziyadesiyle işe yaramaktadır. Mehtâb göstermek, yıldızlar ve güneş irae eylemek veya gayet süslü giyinmiş ve elmaslarla müstağrak olmuş bir kızı garîk-i envâr ederek bir kat daha şaşaa-pâş bir hale koymak için şu elektrik ziyasından büyük istifade ediliyor.” Ahmed Midhat Efendi, *Avrupa’da Bir Cevelan*, 209.

²²⁹ *Evening is gathering once again/ My darling laughs at her old place/ Who shuns the daylight and at night / Above the fountain shows her face. / Girdled by moonlight, now, she stands, / The sky above her secret veil— / The stars are roses in her hands* (Translated by Nermin Menemencioğlu) in Talât Sait Halman, *A Millennium of Turkish History: A concise History* (New York: Syracuse University Press, 2011), 84.

²³⁰ “Ziyalar, nevi nevi devirlerin, medeniyetlerin, saadet ve felâketlerin ayrı ayrı alâmetleri hâlinde, tarih-i beşeri muhtelif derecelerde aydınlanmış, muhtelif sahalara taksim ederler.” Ahmet Haşim, “Elektrik Işığında,” *Akşam*, 29 Haziran 1338 (June 29, 1922).

lamps. In his article, he classified the stages of civilization on the basis of the means of illumination. He suggested that torch was the first stage of the human development. Then, gas and oil lamps were introduced in the cities and they lit our homes with its dim light. Finally the electric lighting systems were invented and since then nights lost its meaning. Electric light was different from the previous lighting mechanisms producing relatively gloomy light, since it competed with sunlight and turned nights into day. According to the poet, the eastern world had not discovered the electric light yet and thus, they could keep themselves away from the miserable soul of the “electric civilization”.

Gaz lambası medeniyetinin insanları, ruhlarının süflî alâkalardan tecerrüdü itibariyle alelâde insandan ziyade ananevî enmuzecine daha yakındır. Şark medeniyeti henüz bu medeniyettir. Şarklılar henüz elektrik ziyasını keşfetmediler ve ona göre bir ruh edinmediler. Bu onların bütün şerefi, bütün kuvveti, bütün güzelliği ve bütün asaletidir.²³¹

Ahmet Haşim touched upon the architectural consequences of the electric lighting systems as well. Daylight no longer controlled the design of the buildings, as it became only a supplemental source of light with the introduction of electric light into houses. He said; the “night architecture” superseded the “sun architecture”. This was the new interpretation of architecture based on the illuminated nights of the electric civilization. As a result, nights became more glamorous than day for people who were surrounded by electric lights and they forgot to stare at the stars.

Elektrik ziyası medeniyetinde, güneş mimarîsi ölür ve gündüz gözüyle bakıldığı zaman, düz, hendesî ve manâsız görünen mebani ancak gece olunca, ziyadan nakışlarıyla, asrın yeni anâsırından vücut bulmuş mimarîsi olmak haysiyetini iktisap ederler. Yeni mimari leyîdir. Gaz lambası medeniyetinde, gece gündüzden güzeldir; kamer gayr-ı mahsûs, yıldızlar gayr-ı mer'ûdir.²³²

Ahmet Haşim was aware of the transformative power of the electric technology over societies as well as the other Ottoman intellectuals mentioned above. However, unlike the others, Ahmet Haşim asserted that the members of the “gas-light civilization” could not adapt themselves to electric light unless they

²³¹ Ahmet Haşim, “Elektrik Işığında,”

²³² Ibid.

embrace the soul and the lifestyle of the ones who live in the “electric civilization”

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...gaz lambasının saf, ürkek ve güzel insanları, devler âlemini tenvir için yakılan bu şeytanî ziyada beceriksiz, iğrenç ve gülünçtür. Fes, sarık ve çarşaf için bu ziya artık lâzımsa, o ziyayı yakmış olanların da ruhunu benimsemeli.²³⁴

3.1.2. Treatises on Electricity

General information about electric technology was not limited to newspapers, brochures, magazines and advertisements for the public. Beginning from the 1880s, various books were published for those who were interested in the science of electricity. The primary consideration of the authors was to present the theoretical aspect of electric technology to educate students, technicians, engineers and ordinary people who were curious about this significant development of the century. Some of these books were translations of technical books written in foreign languages and the remaining were written by Ottoman electrical engineers, admirals and telegraph officers who were already familiar with electric machines. One of the earliest examples of these studies is Ahmed Rasim’s *Elektrik (Electricity)* published in 1888.²³⁵ This reference book provided a brief history of electricity from the times of the Greek philosopher, Thales. Moreover, he also provided detailed information about the benefits and application areas of electric energy. Apart from the technical information he offered, he interpreted the stance of the Ottoman government towards this new technology.

Ahmed Rasim (1864-1832) was an important figure of the late Ottoman intellectual circles thanks to his memoirs, short stories, newspaper articles and technical books. He received his formative education at Darüşşafaka in 1876-83. In those days, the Imperial Lycée (which was then transformed into the Galatasaray Lycée) and Darüşşafaka were the only places where courses about telegraphy and electricity were offered to pupils in order to train qualified telegraph experts to serve the state. The graduates of Darüşşafaka were employed in telegraph offices

²³³ Ahmet Haşim, “Elektrik Işığında,”

²³⁴ Ibid.

²³⁵ Ahmet Rasim, foreword to *Elektrik* (İstanbul: Mihran Matbaası, 1887), 1.

and Ahmet Rasim was one of them.²³⁶ He worked as a post officer at the Ministry of Post and Telegraph as most Darüşşafaka graduates did. Thus, Ahmed Rasim's *Elektrik* presents the knowledge and experience he gained during his education and working life.

In his preface, Ahmet Rasim said that the book could only cover a small portion of the field, as the science of electricity is a comprehensive discipline.²³⁷ Rasim explained the numerous advantages of electric energy, especially after the invention of telegraph for military purposes. According to him, the Ottoman government was aware of the crucial need for following the latest advancements regarding the electronic devices used in the navies such as steamboats and torpedoes and the Ottoman Ministry of Navy took the necessary steps accordingly. Rasim also pointed to the increasing number of electric courses in the curriculum of Darüşşafaka and the newly assigned professor of electricity Emile Lacoine, who was the head of the ministry's office of telegraphic science.²³⁸ In the last quarter of the nineteenth century, as an Ottoman statesman and intellectual, Ahmet Rasim was satisfied with the government's effort to transfer and implement of electric technology into the state and hopeful for the future. Most probably, his positive outlook was a result of the successful adaptation of the telegraph system of which he was a close witness.

In the meantime, the Ottoman Naval Institute Press issued various treatises providing general knowledge about electricity, to educate the Ottoman Naval staff and to train technicians who utilize electrical equipment that were widely used in the naval forces.²³⁹ For example in 1892, the Scientific Committee (*Fen Komisyonu*) of the Ottoman Naval Institute Press ordered 1000 copies of *Nazari ve Ameli Elektrik (Theoretical and Practical Electric)* at a cost of 7602 *guruş* for the

²³⁶ Roderic H. Davison, *Essays in Ottoman and Turkish History*, 143.

²³⁷ "Arz ve takdim ettiğim şu elektrik serlevhalı eser-i acizanem ilm-i mezkurun bazı kavaid-i fenniyesi ile tatbikat-ı umumiyesinin bir kısm-ı aşgarisini havidir. Bu kitaba mükemmel denemez. Yalnız elektrik gibi bir fenn-i celilin noksan bir fihrisi makamında tutulabilir." Ahmed Rasim, *Elektrik*.

²³⁸ Roderic H. Davison, *Essays in Ottoman and Turkish History*, 143.

²³⁹ "Neşrolunan elektrik risalesinin Donanma'da okutulması" DMA (Deniz Müzesi Arşivi), Şura-ı Bahriye, 267/87a, 5 Teşrin-i sani 1302/17 November 1886.

Erkan-ı Harbiye-i Bahriye Kütüphanesi (The Library of the Ottoman Navy).²⁴⁰ As mentioned before, the advent of electric equipment used in the naval forces pushed the Ottoman government to the training of the needed technical personnel. The first electric engineers and technicians were educated in the Imperial Dockyard. In addition to translate works and compilations, some naval officers as well wrote textbooks used in the Imperial Dockyard. Lieutenant Talat Efendi, for instance, lectured in the Naval Engineering School and wrote a textbook for his students in 1907 titled *Sefain-i Harbiye'de Tenvir-i Elektrik (Electric Lighting on Warships)*.²⁴¹ There were lectures on electricity in the curriculums of Darülfünun and engineering schools. In 1912, one of the first Ottoman electric engineers and the Minister of the School of Engineering Mehmed Refik (Fenmen) published *Fenn-i Elektrik ve Tatbikât-ı Sınâiyesi (The Science of Electric and Its Industrial Application)* as a textbook for the graduates of high schools (idadis*) and the students of technical schools.²⁴²

Born in an elite family, Refik Fenmen studied mathematics and physics at Lausanne University. He, then, received the *Degree of High Distinction* in electrical engineering from Liège University in Belgium in 1906. Upon his return to Istanbul, he lectured on physics and electricity in the School of Engineering and Darülfünun.²⁴³ As opposed to other authors, Refik Fenmen used a simpler mathematical language relying on international symbols accepted by the last

²⁴⁰ DMA, Şura-ı Bahriye, 398a/84, 11 Teşrin-i evvel 1308/ 23 October 1892.

²⁴¹ “Mekteb-i Bahriye-i Şahane Elektrik Muallimi Yüzbaşı Talat Efendi'nin Sefain-i Harbiye'de Tenvir-i Elektrik adlı eserinin takdimi.” BOA.Y.MTV. 304/6. 5 Teşrin-i sani 1302/17 November 1886.

*“İdadis are “schools that are higher than rüşdiye’s and lower than the sultani’s. The regulations of 1869 established the idadis as 3 year schools for Muslim and non-Muslim rüşdiye graduates.” Gábor Ágoston and Bruce Alan Masters, *Encyclopedia of the Ottoman Empire* (New York: Infobase Publishing, 2009), 203.

²⁴² M. Refik Fenmen, *Fenn-i Elektrik ve Tatbikât-ı Sınâiyesi* (İstanbul: Matbaa-i Ahmed İhsan ve Şürekası, 1912).

²⁴³ Meltem Akbaş, “Mehmet Refik Fenmen: A Turkish electrical engineer and dedicated intellectual”, 103.

international electricity congress.²⁴⁴ Refik Fenmen was an influential figure in the engineering and scientific community of state bureaucrats. He was instrumental in recognition of electric engineering as an important profession. He made several contributions to the development of electrical engineering during his assignment as a director in Hendese-i Mülkiye Mektebi (Civil Engineering School) and Mühendis Mekteb-i Âlîsi (The Imperial School of Engineering). Fenmen was also the founder of the popular science magazine Fen Alemi (World of Science) in which he published several articles related to the latest developments in electric technology.²⁴⁵

During the First World War, fiscal problems interrupted publications.. Süleyman Tevfik, Mehmet Emin (Kalmuk) and Salih Zeki (Ünver) were among the professors whose books were taught at imperial schools and Dürüşşafaka as textbooks during war years.²⁴⁶ Nafiz Ziya, the Commissar of the Ministry of Public Works waited the end of the war to publish his book *Elektrik (Electricity)* in which he criticized the government harshly for its negligence in training scientists and teaching the sciences.²⁴⁷ According to him, especially in the field of electricity, there was not a reference book including the latest advances in electricity and magnetism. As a result of the government's negligence of science and technology, even those who were interested in technologic innovations remained unaware of the great scientific developments in neighboring Europe. According to the author, this negligence was the greatest obstacle the Ottomans had to overcome to be as civilized as European countries. Under these circumstances, *Elektrik* was a humble attempt to provide information for engineers, professors and other interested

²⁴⁴ “Evvelce taş basmasıyla tab’ olunan ders notlarında olduğu gibi burada dahi beynelmilel elektrik kongrelerinde takarrür eden rumûzat ve hurufat tercihen istimal olunmuştur.” M. Refik Fenmen, *Fenn-i Elektrik ve Tatbikât-ı Sınâiyesi*, 3.

²⁴⁵ Osman R. Bahadır and H. Günhan Danişman, “Late Ottoman and Early Republican Science Periodicals: Center and Periphery Relationship in Dissemination of Knowledge” in *Turkish Studies in the History and Philosophy of Science*, ed. G. Irzik and Güven Güzeldere (Netherlands: Springer, 2005), 302.

²⁴⁶ Serhat Küçük, “Osmanlıların Modern Teknoloji ile Karşılaşması: Elektrik Örneği”, *Hacettepe Üniversitesi Türkiyat Araştırmaları*, no.18 (Spring, 2013), 177.

²⁴⁷ Nafiz Ziya, *Elektrik* (İstanbul: Mahmud Bey Matbaası, 1919).

readers.²⁴⁸

3.1.3. Mecelle-i Umûr-ı Belediye

The last book that will be addressed within the scope of this study is Osman Nuri Ergin's *Mecelle-i Umûr-ı Belediye*, published in five volumes in 1922. Even though the book is not devoted to the science of electricity, it deserves attention since the author's opinions on the electrification of Istanbul became the primary reference for historians and served the main assumptions prevailing in the literature. Osman Nuri Ergin is the initiator of studies regarding the modern municipal services of the state. The book offers extensive collection of primary sources such as agreements, contracts, specifications, regulations and correspondences related to municipal practices of the state. The content of the book is not restricted to a corpus of law and regulations. The author also presents additional information on related topics and expresses his opinions as a statesman, city historian and the founder of the Istanbul Municipality archives.

Osman Nuri Ergin gives a historical background of the street lighting in Istanbul from the 1850s, when oil lamps lit the streets to the proliferation of electric lamps all over the city in the 1920s. Ergin points out the late arrival of electric energy to Istanbul whereas some of the other provinces of the Ottoman state such as Thessaloniki and Damascus had already had electric lighting. He interpreted the electrification process of Istanbul as follows:

The use of electricity for transportation and illumination purposes in the capital city of the state was postponed for more than 30 years due to the decisions taken during the reign of Sultan Abdülhamid. It was only after 1908 when the Young Turk revolution occurred, that appropriate steps were taken to create a modern city by the Committee of Union and Progress. After thirty-three years of autocratic rule of Abdülhamid, the establishment of the second constitutional era opened the way of fundamental rights and freedoms.²⁴⁹

He believed the biggest obstacle in transferring electric technology was the

²⁴⁸ “Memleketimizde erbab-ı fenne olan lakaydi ve kitabsızlık yüzünden bir çok fenni ihtiyaçlarımızın noksan kalmasına sebebiyet verdiği gibi fen meraklılarının kesr-i şevkine badi olmaktadır. Her ne zaman fenni bir risale veya kitab tab ve temsiline mübaşeret edilse mutlaka bunların tesirat-ı maneviyesi neticesi olarak adem-i muvaffakiyetle neticelenir ve bir çok müşkülât muvacehesinde bulunduktan sonra bizde ciddi risale veya kitabı kim okur denilir...” Nafiz Ziya, *Elektrik*

²⁴⁹ Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.2, 921.

autocratic nature of the rule of Sultan Abdülhamid II. Because of the prohibitions of the sultan, the residents of Istanbul did not have access to electricity until 1914 when the efforts of the constitutional government made this shift possible. Even though Osman Nuri Ergin was grateful to the new government for their attempts to improve the infrastructure of Istanbul, he believed the privileges granted to the gas and electric companies were in favor of foreign capital and at the same time a heavy burden on the residents of Istanbul. He criticized the constitutional government for being incompetent in defending the rights of its citizens;

Gaz ve elektrik şirketlerinin gerek meccânen fener yakmak ve gerek hâsılâtta bir miktarını ifraz ve i'tâ etmek suretleriyle Emanet'e irâe ettikleri menfaat ise hükümetçe kendilerine temin edilmiş olan fâidelere nazaran lâ-şey mesabesindedir. Esasen bu gibi şirketlere hükümetçe imtiyaz verilirken öteden beri her nedense nef'-i belde asla hatıra getirilmez. Hiç olmazsa millet hakk-ı hakimiyetini ihraz etmiş olduğu bir devirde bu gibi şeyler ihmal edilmemek lazım gelir.²⁵⁰

He stated “in the European capital cities one could reach each corner of the city by electric trams at a cost of only 30 *para* whereas the cost of travelling by electric trams is 20 and 15 *para* per km in first and secondary classes respectively, in Istanbul. The high tariffs of the electric trams needed amendments in favor of public convenience.”²⁵¹ Unfortunately, the problem was not only in the field of transportation. The citizens suffered from the inadequate street lighting as well although they all paid the fees for illumination (*rüsûm-ı tenvirîyye*). 8437 lamps provided by the electric company were capable to light only the primary and the secondary roads of the Bilâd-ı Selâse (Galata, Eyüp and Üsküdar). The other streets remained in dark at nights. However, even if the municipality had allocated the major part of its revenue for street lighting it would be still inadequate to illuminate the streets of Istanbul due to their insufficient revenue. According to Ergin, increasing the municipality revenues would not be a practical solution since the current tax rates were already high for the residents. He argued, this heavy burden must be laid on the shoulders of the foreign companies, which were earning more than they deserved.²⁵²

²⁵⁰ Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.2, 924.

²⁵¹ Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.5, 2439

²⁵² Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.2, 924.

Osman Nuri Ergin presents a general overview of the electrification process in Istanbul based on the extensive municipality archives in which he had access as a municipal officer who witnessed the last decades of the Ottoman state and the first decades of the newly established Republic of Turkey. Ergin presents historical information based on primary sources and his own experiences gained during his tenure in the municipality. He believes unless a study is national, local and comparative, it would be merely an adaptation or imitation of previous studies but not an original piece of work. Accordingly, he tells the history of street lighting in Istanbul by comparing it to leading European cities.

Osman Nuri Ergin separates the Hamidian Era and the Second Constitutional period from each other sharply in terms of their recognition of rights and liberties. According to Ergin, the electrification process of Istanbul was suspended in an environment of political oppression and could not be accomplished until 1908 along with the revival of the Ottoman parliament after the Young Turk Revolution.²⁵³ This precise distinction between the two periods, contributes to the dominant discourse that marks the Hamidian era as a period of oppression whereas the Second Constitutional period is recognized as the end of the despotic regime that lasted thirty-three years.

Osman Nuri's differentiation of the two periods as a dichotomous contrast between oppression and liberty dominated the literature on the electrification of Istanbul. However, Osman Nuri's position may be misleading in that it simplifies the complexities of the period and electrification process. It is necessary to bear in mind that Osman Nuri was an actor involved in the politics of his age and he supported CUP policies. While appreciating the policies of CUP, he overlooked the continuities between these successive periods, as it is not possible for him to explain the meaning of the electrification attempts after 1908 without reference to Abdülhamid II's skeptical stance. We should make the effort to understand the

²⁵³ “İstibdat döneminde telefon, otomobil gibi elektrikli alet edevat kati suretle men edilmiş hatta son zamanlarda Şam ve Selanik gibi vilayet merkezlerinde elektrik tesisatına müsaade olduğu halde İstanbul gibi mağbut-ı cihan bir beldenin elektrikle tenvirine ve tramvay gibi vesait-i nakliyenin elektrikle cerrine müsaade olunmamıştı.(...) 1 Temmuz 1324'te millet hukuk-ı hâkimiyet istirdad edince bu memnuiyet tabiatıyla kalktı. Mamafih İstanbul'da elektrik imtiyazının verilmesi tramvay ve gaz şirketlerinin şeriat-i imtiyaziyyesiyle taarruz etmesi hasebiyle hayli müşkülâtı mucip olmuştur. Fakat bilahare bu müşkülât refedilerek 1326 tarihinde Belçikalı bir şirkete imtiyaz verilmiştir.” in Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.2, 921.

motives behind the policies of Abdülhamid II towards the electrification of Istanbul. Osman Nuri Ergin blamed Abdülhamid II regarding his policy, which allowed the electrification of such provincial centers as Damascus, Beirut and Thessaloniki while Istanbul was still lacking an electric power system. He did not express the possible reasons for Abdülhamid's different policies implemented in different regions of the state whereas he justified the high tramcar tariffs in Istanbul for which he criticized the new government.

First of all, the narrow street fabric of Istanbul was not suitable for double lined electric tramcars. According to the seventh article of the agreement signed between the government and the Dersaadet Tramway Company in 1911, the grant holder would pay the major part of the estimated cost of the expropriation price.²⁵⁴ Secondly, unlike the European cities, there was not alternative means of transportation such as buses, omnibuses or the subway, which could compete with the electric tramway service in Istanbul thereby bringing down its tariffs. Thirdly, European cities had higher populations than Istanbul and their municipalities were much more prosperous than the Şehremaneti. Lastly, the electric tramway line had been in operation for nearly thirty years in Europe so the initial investments of the companies had already returned back to them. However, the electric tramway system was only in its earliest stages of development in Istanbul.²⁵⁵ If Osman Nuri made a similar careful analysis of the possible motives of Abdülhamid II's policy of Istanbul's electrification as he did for the justification of the high costs of tramway trips in Istanbul, his assertions about Abdülhamid II could have been more satisfying and informative.

Mecelle-i Umur-i Belediye is one of the main sources for researchers especially for those interested in Istanbul's urban history thanks to its rich content

²⁵⁴ “Altıncı madde gereğince yapılacak istimlak muameleleri Şehremaneti tarafından gerçekleştirilecek, fakat tramvay şirketi aşağıdaki şartlar dairesinde masraflara iştirak edecektir. Şöyle ki; 30.000 Osmanlı lirasına ulaşınca kadar sarf edilecek paranın tamamı şirket tarafından ödenecektir.(...) Şirket, nihayet 50 bin Osmanlı lirasını geçmemek üzere, 30 bin Osmanlı lirasından fazla olarak sarf edilecek meblağın yarısına iştirak edecektir. Bundan başlıca toplam istimlak bedeli olarak tahmin edilen 130 bin liradan Şehremaneti hissesine isabet edecek istimlak masrafını karşılayabilmesi amacıyla şirket Şehremaneti'ne 50 bin Osmanlı lirası avans verecektir. Söz konusu 50 bin lira faizsiz olacak ve istimlak yapıldıkça şirket tarafından peyderpey ödenecektir” in Vahdettin Engin, *İstanbul'un Atlı ve Elektrikli Tramvayları*, 142.

²⁵⁵ Osman Nuri Ergin, *Mecelle-i Umûr-ı Belediye*, vol.5, 2439.

of municipal documents. Besides, Osman Nuri Ergin is one of the most critical first-hand observers of cultural, political and social changes from the period of Abdülhamid II to the early Republican era. His works in which he compares Istanbul to European cities synchronically reflect the institutional and cultural transformation of the Ottoman regime towards the formation of the Turkish Republic. At the same time, his comments especially on the Hamidian era and the Second Constitutional period represent the dominant outlook of his period, which promoted liberal political principles that curiously mixed with statist orientations. İsmail Kara suggests that Osman Nuri Ergin had an inner world full of contradictions and struggles as many other Ottoman intellectuals living during the transition period from the late Ottoman state to the republican regime.²⁵⁶ His judgments should be evaluated within the context of the prevailing political environment and positivist approach to history. It is necessary, therefore, to discuss the stance of Abdülhamid II towards electric technology with due attention to the complex political, economical and social dynamics that prevailed in his era.

3.2. The Stance of Abdülhamid II Towards Electricity: Abdülhamid's Strategy of Giving Concessions for Electrification of Istanbul

The policies adopted by Abdülhamid II about the electrification of Istanbul bears high significance in explaining the economic, political and social reasons of the belated arrival of electricity in Istanbul. Since the Hamidian era, the most common explanation of the delay has been the paranoia and safety concerns of Sultan Abdülhamid. The writings of certain influential authors such as Osman Nuri Ergin, Refik Halit Karay, Halit Ziya Uşaklıgil and Prince de Bülow played a major role in shaping this prevailing opinion among historians.

Halit Ziya Uşaklıgil asserts that Abdülhamid II lived in perpetual fear of death by dynamite and since the word “dynamo” had a similar connotation with “dynamite” he refrained from electricity.²⁵⁷ Similarly, Refik Halit Karay says; Abdülhamid was obsessed with the paranoia of electricity because he believed that

²⁵⁶ İsmail Kara, *Şeyh Efendinin Rüyasındaki Türkiye* (İstanbul: Dergah Yayınları, 2002), 50.

²⁵⁷ Halit Ziya Uşaklıgil, *Kırk Yıl* (İstanbul: İnkılâp Yayınevi, 1987), 474.

his opponents could blow up the Yıldız Palace by electric power.²⁵⁸ In his "Mémoires du Chancelier" Prince de Bülow, who came to Istanbul in 1898 as a companion to Wilhelm II, states that Wilhelm II could not persuade the sultan for the electrification of Istanbul by the Siemens & Halske Company during their visit to Istanbul.²⁵⁹ These views reflect the unionist intellectuals and bureaucrats' dislike of Abdülhamid II whose long reign had become autocratic and worrisome for the younger generations who wanted to be hopeful for the future.

Engin Deniz Akarlı states "... Abdülhamid II had come to the throne in the midst of a grave political crises. Financial bankruptcy, intense foreign pressure, social strife between Muslim and Christian subjects, and grievance against the central government in the provinces had almost brought about the total collapse of the state"²⁶⁰ While evaluating such a critical period, it is apparent that any attempt of Abdülhamid II should be evaluated based on various internal and external factors. Even if Abdülhamid's suspicious character had an impact on the restrictions regarding electricity usage as mentioned above, this simplistic explanation does not present the complete picture. Thus, this part of the study aims to make a contribution to the existing literature regarding the role of Sultan Abdülhamid II in the electrification of Istanbul as one of the essential actors of the process. Abdulhamit Kırmızı remarks that one of the crucial mistakes in history writing is to approach historical characters as if their personality does not change and remains constant throughout their life span. The personality of Sultan

²⁵⁸ " Sultan Abdülhamit bir gece uykusundan çırpınarak uyandı; kendisini yere attı. "İstemem ! İstemem ! " diye haykırıyordu (...) Padişahın uykusunu kaçırın bu şey neydi ? Elektrik! O gün bir ecnebi şirket İstanbul'un elektrikle aydınlatılması için imtiyaz talebinde bulunmuştu. Abdülhamit elektriği niçin istemiyordu? Yıldız Sarayı'nı havaya uçururlar diye. Kendisinin künhüne akıl erdiremediği bir esrarlı kuvveti ahvalin eline veremezdi. Düşününüz; iki tel dolana kıvrıla havadan veya yer altından geliyor. Taa yanı başınıza yatağınızın başına akrep gibi kuyruğunu büküp yapıyor. Bu öyle bir akrep ki zehirli iğnesini, herhangi bir adam, yüzlerce binlerce metre uzaktan kilometrelerden harekete geçirebilir, bir bombayı, bir barut lağını patlatır." in Adnan Dinçel, "Türkiye'de Elektrik'in ilkleri ve Silaharağa, Santralistanbul" *Kaynak Elektrik* (2007), 61.

²⁵⁹ "II. Abdülhamid iki şeye karşı çok büyük bir ürküntü içerisindedir. Bunlardan biri donanma diğeri de elektrik kıvılcımıdır. Ziyaretimiz sırasında Siemens tarafından İstanbul'un elektrikle ışıklandırılması teklifini hatırlattık, bunun sanayiye olan faydalarını anlattık, fakat başarı elde edemedik" in Gökhan Akçura, "Elektrik Ne Kuvvetli Bir Hizmetçi!", *Radikal*, September 8, 2007, 12.

²⁶⁰ Engin D. Akarlı, "Friction and Discord within the Ottoman Government under Abdülhamid II (1876-1909)," *Boğaziçi Üniversitesi Dergisi* vol.7 (1979), 4.

Abdülhamid is often seen as rigidly fixed rather than a construction open to fluctuations and change across its different stages of life.²⁶¹

In order to avoid this methodological trap, possible differences in his policy towards electric energy under changing circumstances and motives will be taken into consideration. It should also be noted, this thesis only covers the introduction of the electric power system in Istanbul and excludes the electrification of the other provinces of the state. Unless making a comparative study analyzing the implementation of electric systems in Damascus, Beirut, Thessaloniki and İzmir during the reign of Abdülhamid II, discussing the sultan's policy will not be convincing. Nevertheless, the electrification experience of Istanbul still gives several clues about the government's position on electric technology.

Sultan Abdülhamid II had not been aloof to developments in artificial lighting technologies since the representatives of the latest technological developments such as entrepreneurs, companies, different financial groups and even governments competed harshly to market their products in the Ottoman Empire. For instance, international exhibitions offered a visual representation of the new scientific advancements and the latest inventions. Although Abdülhamid II never attended any of these expositions, he was informed by the official committees sent to the exhibitions as representatives of the government. Moreover, Abdülhamid II was interested in foreign press in which he could track down the recent news and innovations from Europe and America. He paid special attention to articles related to inventions in the field of electricity, which were unprecedented for him as for the rest of the world. For instance, in 1887, an article published in a German journal drew his attention so much so that he marked it with red ink. The article introduced a new electrical medical equipment used for confirming whether the patient was still alive or not.²⁶² The mentioned device was most probably the blood pressure

²⁶¹ Abdulhamit Kırmızı, "Sultan II. Abdülhamid'in Kişiliğinde Süreklilik ve Kopuş" in *Sultan II. Abdülhamid ve Dönemi*, ed. Coşkun Yılmaz (İstanbul: Sultanbeyli Belediyesi, 2014), 21.

²⁶² "Berlin'de tab ve neşr olunmakta olan " *Illustrierte Zeitung* " nam müsavver gazetenin manzur-u ali-i cenab-i padişahi buyurulmasıyla leffen irsal kılınan nüshasındaki bazı resimler meyanında sürh ile işaret kılındığı vechle kan tutmuş olanların hakikaten vefat etmediğini bade'l defn keşf ve tayine mahsus elektirikli bir alet resmi nazar-ı dikkat-i aliyyi celb etmiş olmasına mebni mezkur nüshanın meclis-i tıbbiyece bilmütala zikr olunan aletin menfaat ve ciddiyeti hakkında istihsal olunacak malumatın ve bu babda olan mütalanın arz-ı atabe-i aliyye kılınmak üzere işarı emr u ferman buyurulmuş olmağla ol babda emr u

apparatus that had been invented by Scipione Riva Rocci in 1886.²⁶³ The sultan was so impressed that he assigned a committee of doctors to learn more about the device and its benefits. His interest in medical technology corresponds to his policy in importing electric devices, which was discussed in the previous chapter in detail. During the reign of Abdülhamid II, the usage of electricity was banned except in hospitals and embassies and the government allowed importing of electric machines only if they had medical purposes. Another article that attracted the sultan's attention was about an electric car. In 1888, he ordered an electric car and an electric boat from Magnus Volk, a pioneer British electrician who constructed the oldest electric railway, Volk's Electric Railway. According to the contract signed between the Ministry of Civil List (*Hazine-i Hassa Nezareti*) and Volk of the Electric Railway (Brighton), the company agreed to construct and deliver to the porte of Istanbul an electric carriage for the sum of 200 pounds and an electric boat for the sum of 450 pounds in eight to ten weeks from the contract date, 1 November 1888. The total cost of the orders for packing and freight to the Port of Istanbul was 650 pounds (715 Ottoman lira).²⁶⁴ It was the first and the rare example of electric cars in Istanbul since the import of any kind of motor vehicle to the Ottoman lands was not allowed until the end of Abdülhamid II's reign. The reason was the narrow, crowded and crooked street fabric of Istanbul, which was not suitable for automobiles. Moreover, because the residents of Istanbul were not accustomed to automobiles, their movements within the city could cause accidents. Likewise, the irregular street pattern of Istanbul was one of the reasons for the skeptical stance of Abdülhamid II towards electric street lighting. The imperial decree dated 28 January 1889 limited electric lighting to the Yıldız Palace although the sultan recognized the necessity of a more effective and improved lighting system along with regulated and restricted streets.

“...tenvirat-i umumiyyenin elektrik ile icrâsı henüz Avrupaca dahi takarrür etmemekle beraber mahdut ve tanzim mahalleri o suretle tenvirindeki muhassenat teslim edilmiş olmasına nazaran şimdilik

ferman hazreti veliyyü'l-emrindir” BOA.İ.DH. 1051/ 82541. 12 Eylül 1303/ 24 September 1887.

²⁶³ Herbert Dingle, *A Century of Science 1851-1951* (London, New York : Hutchinson's Scientific and Technical Publications ,1951), 262.

²⁶⁴ BOA.HR.SFR. 341/76. 6 Teşrin-i sani 1304/18 November 1888.

yalnız Yıldız Saray-ı Hümayun'una mahsus olmak üzere emr u ferman buyurulacak mevaki'nin muhtera'-ı cedideden olan elektrik ziyasıyla tenviri usulünün icrası münasib-i mütala'a olunduğundan olbabda..."²⁶⁵

Ongoing competition between the electric systems of Thomas Edison and Nikola Tesla was another reason that made Abdülhamid II wait until one of these systems proved to be more suitable, economical and reliable than the other one. The war of currents started in the late 1880s when Tesla's polyphase AC induction motor financed by the Westinghouse Company began to compete with Edison's direct current system for electric power distribution. DC and AC power stations co-existed for many years, but the superiority of the alternating current was acknowledged during the 1890s and it dominated the electric industry. In the last decades of the twentieth century, electric lighting technology was in its developmental stage and inventor entrepreneurs were competing with each other in solving critical problems such as supplying electric energy at a price that would be compatible to gas. While inventor entrepreneurs were dealing with economical and technical problems as system builders in Europe and America, the Ottoman government was a close follower of the latest advancements. Before the imperial decree mentioned above was issued, Abdülhamid II obtained information about the cost of electric lighting in comparison to gas from the prime minister of the British Empire Lord Salisbury and British diplomat Sir Julian Pauncefoot by the mediation of Rüstem Pasha, the Ottoman ambassador in London.²⁶⁶ In London, electric lighting was almost thirty-three percent more costly than gas lighting.²⁶⁷ Even though electric arc lamps replaced plenty of gas lamps, gas lighting technology still

²⁶⁵ BOA.İ.DH. 1129/ 88218. 18 Şubat 1304/ 2 March 1889 in Emine Erol,"Türkiye'de Elektrik Enerjisinin Tarihi Gelişimi: 1902-2000, 64.

²⁶⁶ "Lord Salisbury presents his complement to the Turkish Ambassador and has the honor to inform his excellency that the request contained in his letter of the 7th instant to be furnished with some information in regard to the cost of electric lighting as compared with gas has been referred to the proper Department of Majesties Government" BOA, HR.SFR. 346/70. 28 Teşrin-i evvel 1304/ 9 November 1888.

"Sir Julien Pauncefoot presents to his compliment to Rüstem Pasha, and with reference to his letter of the 22nd instant has the honor to inform his excellency that the attention of the ? commissioners of the Treasury has been called to the fact that the information asked for in regard to the comparative cost of lighting of electricity and gas is required as soon as possible." HR.SFR. 346/78. 12 Teşrin-i sani 1304/ 24 November 1888.

²⁶⁷ HR.TO. 65/53. 4 Teşrin-i sani / 16 November 1888.

maintained its competitiveness with electricity in London. The demand for electricity was generally limited to the richer parts of the city.²⁶⁸ In order to make a detailed cost study, Ottoman ambassadors corresponded with several electric companies in Paris and Berlin as well. In Paris, electric lighting was approximately thirty-five percent more expensive than gas lighting.²⁶⁹ On the other hand, in Berlin the price difference between the two sources of energy was less than the other two European capital cities. The cost of electric consumption was four pfennig per hour whereas the cost of gas lighting was three pfennig. A twenty-five percent price difference existed between the two.²⁷⁰ The imperial decree, issued immediately after the comparative cost study of the government, reveals that supplying electric energy was not affordable due to the high cost rates. In this context, the hesitation of Abdülhamid II regarding the use of electricity to lighten Istanbul could be associated with his economic concerns. As the Ottoman Empire was going through a profound political and economic crisis, Abdülhamid II did not want to choose an expensive alternative for public lighting; hence, the use of electricity was limited to the Yıldız Palace. The sultan was not against electric energy but his preference was in favor of a cheaper and reliable artificial lighting system. His main consideration was not brighter but a more economic and safer public lighting system.

With the turn of the twentieth century, Sultan Abdülhamid II opened the way for the supply of electricity in the urban areas of the empire and the Ottoman provinces started to be illuminated by electric lights one by one. The streets of Tarsus were lit by electric power in 1902 with the efforts of an Austrian subject of the empire, Dörfler, who was working in the municipality as an officer. The water mill placed in the Berdan River produced two kilowatts of electric energy for Tarsus. The earliest example of electric supply for public lighting was not a foreign investment but a private attempt. Unlike Tarsus, Damascus, Thessaloniki, İzmir and Beirut were electrified via multinational enterprises in 1904, 1905 and 1906, respectively. Mersin, Beirut, İzmir and Thessaloniki, which met electricity before Istanbul, were important port cities of the empire. Especially during the nineteenth century when the trade routes shifted largely to the ports away from the traditional

²⁶⁸ Stephen Inwood, *City Of Cities*, 325.

²⁶⁹ HR.SFR. 345/68. 14 Teşrin-i sani 1304/ 26 November 1888.

²⁷⁰ HR.TO. 33/101. 26 Teşrin-i evvel 1304/ 7 November 1888.

inland trade centers, small-fortified port cities changed into cosmopolitan trade capitals.²⁷¹ As a result of intense trade relations and a mixed population, western influence penetrated into the port cities more than any of the other cities of the empire. The increasing European influence accelerated the transfer of transportation, illumination and communication technologies from Europe. Meanwhile, the government rejected all offers given for the electrification of Istanbul, including the proposal of the Siemens & Halske Company. It can be concluded that Abdülhamid II followed a different policy for Istanbul in terms of granting concessions of supplying electricity.

Istanbul was the administrative center of the empire where the Ottoman sultans were located. It accommodated the central bureaucracy and the main body of the central army as the capital city of the empire. Because of the strategic position of Istanbul, Abdülhamid II wanted the rights of generating and distributing electric energy for Istanbul to be secured by governmental institutions. Having the monopoly of electric production had great importance since electricity would become the essential energy source for a broad range of fields including illumination, heating, transportation, communication and manufacturing. The imperial decree promulgated in 1907 reflects the Hamidian regime's policy in establishing state dominance over Istanbul's electric service. According to the decree issued during the negotiations for the electrification of the Istanbul tramway system, the Tramway Company was not allowed to generate electric energy with its own resource but had to buy it from the Ottoman State;

...ileride Hükümet-i Seniyyece tramvay arabalarının kuvve-i elektrikiyye ile cerrine müsaade buyrulduğu halde tramvay arabalarının cerri ve vapurların tenviri için iktiza eden kuvveti Tramvay Kumpanyası'nın araya diğer bir vasıta dahil olmaksızın doğrudan doğruya Hükümet-i Seniyyeden alması icab edip çünkü Dersaâdet elektrik imtiyazının Tophane-i Amire namına ihsanı kuvve-i elektrikiyyenin Hükümet-i Seniyyece istihsaliyle bu kuvveti taliblerinin bila vasıta doğruca Hükümet-i Seniyyeden iştirâ etmesi maksad-ı adiyesine matuf bulunmuş olmasıyla mazbata-i mezkureye melfuf mukavelenâmenin buna müteallik maddesinin ona göre tahriri lazımeden bulunduğundan bugünkü Meclis-i Vükelaca ona göre müzakere ile keyfiyetin bugün bâmazbata arz-ı hak-i pay-i âlî kılınması

²⁷¹ Pelin Kihitir Öztürk, "Urban Transformation of Ottoman Port Cities in the Nineteenth Century: Change From Ottoman Beirut to French Mandatory Beirut"(MA diss., Middle East Technical University, 2006), 1.

We need to take Abdülhamid II's political concerns as well into account in order to understand the standpoint of the sultan towards electric energy. Abdülhamid II pursued a strategy that aimed to balance the interests of the major European powers against each other. The Austro-German, Hungarian and Belgian capital groups were more advantageous than the British and French Companies according to the political equilibrium policy of the sultan.²⁷³ The Société Anonyme Ottomane des Tramways et de l'Électricité de Beyrouth (Beirut Tramway ve Elektrik Osmanlı Anonim Şirketi), which was granted the exclusive rights to establish, develop, and operate both the tramway and the electric systems in Beirut, was established with Belgian and French capital.²⁷⁴ Société Anonyme Impériale Ottomane de Tramways et d'Eclairage Electriques de Damas (Şam-ı Şerif Elektrik Tramway ve Tenviri Elektrik Anonim şirket-i Osmaniyyesi) was another French-Belgian venture, which had the rights of electrifying Damascus for ninety years. On the other hand, the Hamidian government delayed the electrification of Istanbul by granting the concession for the electrification of Istanbul to the State Cannon-Foundry.²⁷⁵ However, the Foundry had neither the necessary technical knowledge nor the investment funds needed in such a costly infrastructure venture. Hence, the Foundry sought the support of a consortium, which could finance the project and provide technical expertise. Nevertheless, the technical commission of the State Cannon-Foundry did not approve any of the proposals, including offers from the

²⁷² BOA. IH. 55. 16 Kanun-i Sani 1324/ 29 January 1907 in U. Duygu Aysal Cin, "Tracing the History of Transportation in the Ottoman Empire: Electrification of Istanbul's Tramways (1898-1914)", 341.

²⁷³ Asu Aksoy, Funda Açıkbaş and Ayşenur Akman, "Silahtarağa Elektrik Santrali'nin Hikayesi", 25.

²⁷⁴ Jacques Thobie, "L'électrification dans L'aire Syro-Libanais des Origines à la Fin du Mandat Français" *Outre-Mers. Revue d'histoire*, vol. 89, no.334-335(2002), 527.

²⁷⁵ "Elektrikle aydınlanma hususundaki gelişmelerin Dersaadet'te de tatbiki ve elektriğe muhtaç olan müessesat ve sanayiye gerekli elektrik kuvvetinin üretimi ve satılması imtiyazının Tophane-i Amire namına ihalesi ve şerait-i lazıme takrir olunarak ona göre tanzim olunacak mukavelename layihalarının tedkik için irsali." BOA.BEO. 2972/ 222827. 18 Kanun-ı evvel 1322/ 31 December 1906.

Istanbul Tramway Company and the Istanbul Gas Company.²⁷⁶ The technical commission considered the benefits of the country as well as the costs of the project in order to determine the most suitable company for the electrification of Istanbul in the decision making process. For instance, the proposal of the Istanbul Gas Company was rejected because it requested a concession period of ninety-nine years whereas the privilege for the electrification of Damascus was already granted to a French-Belgian venture for ninety years.

In conclusion, it seems European powers competed to dominate the electric industry in Istanbul by pushing Abdülhamid II to authorize them to establish an electric power system in Istanbul. I suggest, initially the sultan had economic concerns rather than political ones because the scientific knowledge still could not minimize the cost of electric lighting. Accordingly, he preferred to invest in coal gas technology for public lighting instead of electricity, which was still in the developmental stage. Moreover, the Ottoman industry was weak and hence not need of electric power. As a result, introduction of electricity came relatively later than the railway investments, which was a part of an attempt to increase the Ottoman government's ability to control the far-flung and troubled provinces of the empire. However, when the superiority of electricity over gas for lighting and over steam as a motive agent was accepted, the Hamidian administration recognized the necessity of electric energy for urbanization. At this point, the prevailing political atmosphere shaped the decisions of Abdülhamid II on the electrification of the Ottoman state. The government pursued a two-fold strategy in terms of political concerns. The Hamidian regime secured the government's monopoly on energy service of Istanbul by granting the rights of electric supply to the State Cannon-Foundry whereas multi-national companies had already electrified Beirut, Damascus, Thessaloniki and İzmir. Abdülhamid II delayed the demands he deemed contrary to state interest until the Second Constitutional period.

²⁷⁶ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 6.

3.3. Public Lighting As a Display of Order: The Increasing Role of the Istanbul Police During the Electrification of Istanbul

Since the beginning of humankind, darkness and light became the most important symbols that represent opposing forces of nature such as day and night, good and evil, knowledge and ignorance in various cultures. According to symbols and myths of most cultures, darkness and night represent chaos, fear and terror whereas day and light tend to express a positive and divine affirmation. On the other hand, the nights have sanctity as times of rest and intimate prayer in Islamic tradition. The Quran, the primary source of Islam indicates that God created nights for rest and days for work²⁷⁷ According to Ahmet Rasim, the Muslim part of the Ottoman society return to their homes after sunset to rest and spend time with their families and they worship and pray during the night.²⁷⁸ Ahmet Haşim depicts the “the Muslim day” as follows;

The beginning of the Muslim day was set by the glowing of sunrise and the evening’s last rays (...) We had an easy, light, day of twelve hours which began and ended with light, an easy-lived-day. Times, which had been times of happiness for Muslims were measured in such days.²⁷⁹

As a consequence of the different connotations on day and night, such means of illumination as fire, candles, lanterns, gas lamps and electric light bulbs become symbols in various cultures, religions or social, cultural and even political

²⁷⁷ “He it is that hath made you the night that ye may rest therein, and the day to make things visible (to you). Verily in this are signs for those who listen (to His Message).” Qur’an 10:67.

²⁷⁸ “Güneşin batımına göre tertiplenmiş olan ezani saat yürürlüktedir. İş ve dinlenme vakitleri buna göre ayarlanmıştır...sabah namazında evinden çıkan memur ve esnaf, akşam ezanına doğru işinden dönünce, üstünü değiştirip sırtına entarisini, ayağına terliğini geçirir; fesini ve sarığını çıkarıp takkesini giyer. Namazını kıldıktan sonra ailesiyle sofraya oturur.” Agâh Sırrı Levend, *Ahmed Rasim*(Ankara,1965), 13-17 in Şerif Mardin, *Bütün Eserleri: Türk Modernleşmesi, Makaleler 4* (İstanbul: İletişim Yayınları,1991), 42.

²⁷⁹ “ Ecnebi saati iptilâsından evvel bu iklimde, iki ucu gecelerin karanlığıyla simsiyah olan ve sırtı, muhtelif evkatın, kırmızı, sarı ve lâcivert ateşleriyle yol yol boyalı, azîm bir canavar hâlinde, bir gece yarısından diğer bir gece yarısına uzanan yirmi dört saatlik “gün” tanılmazdı. Ziyada başlayıp ziyada biten, on iki saatlik, kısa, hafif, yaşanması kolay bir günümüz vardı. Müslümanın mesut olduğu günler, işte bu günlerdi; şerefli günlerin vakayini bu saatlerle ölçtüler.” Ahmet Haşim, “Müslüman Saati”, *Dergah*, vol.1, no.3 (1921) in İnci Enginün, Zeynep Kerman, ed., *Ahmet Haşim, Bütün Eserleri III: Gurabahâne-i laklakan Diğer yazıları* (İstanbul: Dergah Yayınları, 2004), 19.

movements. This section does not offer a general review of different connotations of lighting but it presents some selected examples about the relationship between public lighting and security concerns of the states from a comparative perspective for a better understanding of the Ottoman case.

The German cultural historian Wolfgang Schivelbusch, who works on the history of perception, explains how street lanterns were associated with state authority in Europe during the seventeenth and eighteenth centuries in *Disenchanted Night: The Industrialization of Light in the Nineteenth Century*. Schivelbusch points out that destroying lanterns became a collective movement that offered symbolic satisfaction from unseating authority during the French revolution. Every attack on a street lantern carried a highly symbolic significance and meant a small act of rebellion against law and order.²⁸⁰ The darkness that spread as lanterns were smashed through the streets of Paris allowed rioters to hide from government forces.²⁸¹ Similarly, in Moscow, thousands of streetlights were destroyed during the 1812 war.²⁸² Those particular cases show how public lighting served the government apparatus to map out its territory of authority and to control the communal areas. After the introduction of gas and electric lamps, this control mechanism permeated into the domestic areas as well. Because while the oil lamps were self-contained, gaslight and electric lighting systems were centralized as a part of big industrial complexes. As a result, the exact solution for putting the lights out was to shut down the power stations.²⁸³ This possibility appeared as a threat immediately after the end of the First World War in Istanbul. Upon complaints of public about repeated electricity outages, the Interior Ministry (Dahiliye Nezareti) asked the General Directorate of Police (Polis Müdüriyeti Umumiyesi) to investigate the potential causes of power blackouts that had been occurring with increasing frequency. When the lights went out, the daily works in public offices and shopping districts were interrupted and the power shortages had a severe impact on security in the streets of Istanbul. On 16 November 1918, the General

²⁸⁰ Wolfgang Schivelbusch, *Disenchanted Night*, 98.

²⁸¹ *Ibid*, 106.

²⁸² Alexander M. Martin, *Enlightened Metropolis: Constructing Imperial Moscow, 1762-1855* (Oxford: Oxford University Press, 2013), 200.

²⁸³ Wolfgang Schivelbusch, *Disenchanted Night*, 112.

Directorate of Police wrote to Salih Pasha, the minister of Public Works and asked him to give precise instructions to the Dersaadet Electric Company to eliminate the service failures. The answers given by the electric company did not satisfy the Directorate of Police. The company attributed the stoppage of the plant operations to lack of coal and motor breakdowns. The Directorate of Police claimed that the blackouts could be part of a sabotage resulting from the hostile climate that emerged with the eruption of the war, since most employees of the electric company were from the Ottoman Greek community.²⁸⁴ According to the archival documents this suspicion was not confirmed. On the contrary, the Council of State decided to pay compensation to the electric company for its loss of revenue during the First World War.²⁸⁵ Even though the Police's suspicion proved unwarranted, it shows how strong the relationship between the state authority and public lighting was.

There was not a regular public lighting system in Istanbul until the Tanzimat era. It was only the lanterns of night watchmen and a few night wanderers illuminated the streets with their dim lights. The Ottoman police force became much better organized especially, after the first attempt to install permanent public lights in 1847 via an imperial edict, which urged affluent citizens to hang lanterns or oil lamps in front of their houses and shops. With this proclamation, the sphere of police activity enlarged and comprised inspection as well as surveillance. Identifying those who were not complying with the decree was the responsibility of the Ministry of Police and Security Forces (Zaptiye Müşiriyeti), the highest authority for public in those days.²⁸⁶ The Zaptiye Müşiriyeti dealt with the concession of public lighting as well. In 1864, Monsieur Heris applied to the Zaptiye Müşiriyeti to provide gas lamps along the Bosphorus on the Asian side, in

²⁸⁴ BOA.DH.İ.U.M. 19/1. 16 Teşrin-i sani 1314/ 16 November 1918.

²⁸⁵ “Dersaadet Elektrik Şirketi'nin harp sebebiyle uğradığı zararların telafisi için uygulanacak bazı tedbirlerin zarar telafisinden sonra asıl mukavelename şartlarına dönülmesi zımında şirket murahhası ile yapılan mukavele zeylinin yürürlüğe konulmak üzere arzı.” BOA.MV. 249/221. 7 Kanun-ı evvel 1334/ 7 December 1918.

²⁸⁶ “Büyük konakların kapıları üstüne çifte fener konulması Devr-i Mecid-i Sâni'de usul ittihaz olundu. Hatta istekli olanların hane ve dükkanlarının önüne de birer fener konulması ve mesarifi mahallat imamları marifetiyle tahsil olunarak Zaptiye Müşiriyeti veznesine teslim olunması taht-ı karara alınmıştır.” Balıkhane Nazırı Ali Rıza Bey, *Eski Zamanlarda İstanbul Hayatı*, ed., Ali Şükrü Çoruk (İstanbul: Kitabevi Yayınları, 2007), 22.

Üsküdar and the historical peninsula. The monthly payment would be 22.5 *guruş* and the Zaptiye Müşiriyeti would determine the locations of each gas lamp since public lighting was accepted as a matter of safety.²⁸⁷

After the street lamps started to be fueled by electric energy, the role that the Istanbul Directorate of Police played in ensuring the maintenance of street lighting increased. The government had no tolerance even for one-night of power outage. The only electric power center of Istanbul was coal based. There was not any alternative source other than coal to meet the energy requirements of Istanbul. Restricted coal reserves, especially during warfare, forced the company for energy saving. They offered cutting down power after midnight when electricity usage was at its lowest. The Interior Ministry refused this suggestion rigorously for safety concerns and asked the company to find different ways for efficient use of electric energy.²⁸⁸ In the last days of 1918, the Ministry of Public Works issued a set of regulations to reduce electric consumption and the police force was charged to the implement the regulations. Instead of cutting power after midnight, the electric lights would be turned off in commercial and entertainment districts. These measures failed although many police officers were sent to several regions of the city to ensure the implementation of the regulations. Most shopkeepers switched the lights on as soon as the police officer that warned them to turn the lights off was out of sight. Because of the disobedient behaviors of the shopkeepers, the number of police officers proved insufficient to keep the lights off at night. Moreover, the policemen failed to fulfill their other daily assignments because their time wasted in trying control the lights. It was impossible to keep a close watch over all workplaces unless a police officer was assigned to each shop. On 28 December

²⁸⁷ “O zamanlar sokakların aydınlatılması kentin güvenliğiyle ilgili bir sorun olarak görülüyordu. Heris adında yabancı bir müteahhit 1864'te dönemin güvenlik işlerine bakan en yüksek mercii olan Bab-ı Zaptiye Nezareti'ne başvurarak sokakları gazyağıyla aydınlatma imtiyazını aldı. Görüşmeler sonucu teklif uygun görülmüş ve yapılan anlaşma gereğince müteahhit firma, İstanbul, Üsküdar ile Boğaziçi ve Marmara kıyılarındaki köylerin aydınlatılmasını taahhüt etmişti. Müteahhide her ay için lamba başına 22,5 kuruş ödenecek, gaz lambalarının yerleri Zaptiye Nezareti tarafından tespit edilecekti.” Zafer Toprak, Düünden Bugüne *Istanbul Ansiklopedisi*, vol.1, s.v. “Aydınlatma”, 476.

²⁸⁸ “Elektrik şirketinin maden kömürü tedarikindeki müşkülâtından dolayı alınan tedbirler gereği, gece yarısından sonra elektrik kesintisinin İstanbul'un asayişinin temini bakımından uygun görülmediği ve bu konuda İstanbul Polis Müdüriyeti'nin görüşünün alınması gerektiği” BOA.DH.EUM.6.Şb. 45/1. 7 Teşrin-i evvel 1334/ 7 October 1918.

1918, the Istanbul Police Directorate conveyed their complaints to the Interior Ministry and asked them to take necessary precautions.

Upon complaints, the Ministry of Interior issued strict orders regarding the illumination of shops, hotels, coffee shops and beerhouses with gasoline instead of electric lamps after a particular time at night. Only printing houses and bakery shops were allowed to use electric lighting.²⁸⁹ However, the government's decision to prohibit the use of electricity contradicted the terms of the agreement signed with the electric company. Thus, the prohibitions did not last so long. Despite all the troubles in providing electricity, the number of subscribers increased from 12.894 in 1918 to 17.207 in 1920.²⁹⁰ In the early days of 1922, the Ottoman Electric Company warned its subscribers such as shopkeepers and manufacturers individually to reduce their consumption of electricity again. When this attempt was unsuccessful the government accused of the company of being negligent. Against the risk of remaining in darkness, the Directorate of Police asked the company to warn its customers not personally but via advertisements and publications in order to reach more people.²⁹¹

The above-mentioned cases that occurred in different cities such as Paris, Moscow and Istanbul show how public lighting assured the security and control mechanism of cities, thereby reinforcing the recognition of state authority. Street lighting was a tool for the states for being visible even in the backstreets of the city at nights. As a result, industrial lighting systems became an urgent necessity for governors since streetlights both facilitated surveillance and created a public perception of security.

In Istanbul, even after the introduction of artificial illumination fueled first by oil and coal gas and then by electricity, the strategic importance of public lighting maintained for the government apparatus. In the first half of the nineteenth century, as outdoor lighting became increasingly prominent and the streets became brighter with electric bulbs, illuminated districts became more crowded after sunset. With the proliferation of artificial lighting, the efficiency of night watchmen reduced

²⁸⁹ BOA.DH.İ.UM. 19-3/1-63. 16 Kanun-i sani 1338/ 16 January 1922.

²⁹⁰ Vahdettin Engin and Ufuk Gülsoy, "Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları", 14.

²⁹¹ BOA.DH.İ.UM. 19-19/1-44. Kanun-i sani 1338/ 16 January 1922.

whereas the role of the modern police forces increased. Identification of nightwalkers that posed potentially dangerous was not any longer the only concern of the security apparatus. Instead, police officers were responsible for maintaining public lighting in order to secure city dwellers, who wanted to spend relaxing and enjoyable time at night. As a complementary part, the following section will evaluate the changing meaning of the night and nightlife that began to change along with the implementation of an artificial public lighting system in Istanbul.

3.4. Breaking the Day, Taming the Night: Electrical Appliances and the Making of the Ottoman Consumer

In its early years, the electric production in Silahtarağa Power Plant was marred by the outbreak of the Great War in 1914. During the Great War and the War of Independence, electric consumption had to be restricted due to lack of coal, increases in the prices of materials and adverse war conditions. Therefore, electric consumption was not so common and the plant supplied electric energy only for tramcars and a few especially significant streets and buildings. It was not until the 1920s that the city's streets were fully illuminated with electric lamps.²⁹²

With the inauguration of the Silahdarağa Power center, electric power brought fundamental changes in the fabric of Istanbul. The extension of electric tramcars to various districts around Istanbul including Bebek, Feriköy, Edirnekapi, Yedikule and Eminönü increased local mobility in the European part of the city. This new means of transportation changed the social strata of particular regions. Streetcars opened up new areas to real estate development particularly for the middle class who could now move out of the congested city center. Distance was no longer an obstacle for residents who could afford moving to relatively remote but more westernized neighborhoods, because electric trolleys gave them a chance to reside in houses that were far from their workplaces. For instance, urbanization in the Nişantaşı, Şişli, Teşvikiye and the Harbiye districts accelerated with the introduction of streetcars and the construction of apartment buildings.²⁹³ As a result, the working class often walked and the middle class usually rode the

²⁹² Asu Aksoy, Funda Açıkbaş and Ayşenur Akman, "Silahtarağa Elektrik Santrali'nin Hikayesi", 2.

²⁹³ Ibid, 35.

streetcar to work. Yakup Kadri Karaosmanoğlu depicts the crucial role of streetcars in the transition period towards a modern lifestyle and the development of the new suburban areas in his novel *Kiralık Konak* that takes place in Istanbul in a timeframe of 1908-1917. Each character in *Kiralık Konak* represents a type of characteristics of the period and the houses depicted in the novel reflect the personalities of its leading characters. Naim Efendi, a retired pasha and an Ottoman gentleman who had served as a minister under Abdülhamid II, lives in an old, traditional mansion in Kanlıca and refuses to move out of the mansion into a new, modern apartment in Şişli with his family. On the other hand, his son-in-law Servet Bey, a forty-five year old dandy, is an enthralled follower of western culture and values. He hates the old mansion located in Kanlıca whereas the modern and fully equipped apartments of Şişli that the electric tramcars pass by fascinate him.²⁹⁴ Yakup Kadri uses the Şişli apartments as a metaphor of Ottoman modernization since Istanbul had developed towards Şişli with solid apartment buildings and straight and wide avenues.²⁹⁵ The westernized upper class Muslims were eager to live in neighborhoods where minorities and foreigners enjoyed the modern way of life in concrete buildings that were equipped with electric, heating and running water systems. Servet Bey was instantly complaining about the primitive conditions of the old mansion in compliance with the apartments on the European side. Şişli was especially fashionable because it could be reached by an electric tram and was the second area of Istanbul after Beyoğlu to have electric service.²⁹⁶

Şişli'nin yeni usul, elektrikli banyolu, apartmanları Servet Bey'i gittikçe çekiyordu. Arasına bunlardan birkaçını görmek onun için en müstesna zevklerden biri yerine geçti... Hele yeni işlemeye başlayan elektrikli tramvay arabalarının çıkardığı sesler ona bando mızıkası gibi geliyordu.²⁹⁷

Another novel that emphasized the increasing differences between the two symbolic districts is Peyami Safa's *Fatih- Harbiye* written in 1931. In *Fatih-*

²⁹⁴ Yakup Kadri Karaosmanoğlu, *Kiralık Konak* (İstanbul: İletişim Yayınları, 2004), 141.

²⁹⁵ Esra Akcan, *Architecture in Translation: Germany, Turkey, & the Modern House* (North Carolina: Duke University Press, 2012), 108.

²⁹⁶ Carel Bertram, *Imagining the Turkish House: Collective Visions of Home* (Texas: University of Texas Press, 2008), 120.

²⁹⁷ Yakup Kadri Karaosmanoğlu, *Kiralık Konak*, 141-142.

Harbiye, the electric tram route between Fatih and Harbiye ties two different modes of life, west and east or traditional (*alaturka*) and modern (*alafranga*) to one another. The neighborhood of Beyoğlu, Harbiye and Galatasaray is accepted as the symbol of a westernized lifestyle. On the other side, Fatih, in the center of the historic peninsula represents what is traditional, non-Western, devout and impoverished. The same dilemma between east and west could be seen among the characters of the story as well. The protagonist of the story Neriman lives with her father Faiz Bey and their servant Gültür in an old fashioned wooden house in Fatih. Neriman is from a conservative family but she is attracted to the modern way of life. One day she visits Beyoğlu and spends her day among luxurious shops, bright lights and the excitable crowd. Neriman considers the difference between these two quarters as “the distance was not even an hour by tram but as long as the way to Afganistan”²⁹⁸ After this enjoyable visit, she constantly states her dissatisfaction against the traditional way of life and complains of the backwardness of her neighborhood Fatih and the western and eastern binary is depicted. Peyami Safa uses the night and darkness as a metaphor that represents the traditional way of life in contrast to the enlightened nights of the westernized Beyoğlu.

Darkness falls on these mahalles early. Neriman couldn't bear being at home at this hour of night... She was looking at the darkness that thickened in the small openings of those window-grills [kafes] that brought night early to the room.²⁹⁹

Electric energy was a crucial actor in the process of imagining a polarization between a materially superior west and a spiritually superior east. Illumination, transportation and home appliances marked the differences. Especially in the last quarter of the nineteenth century this polarity began to crystallize with the common use of electric energy in particular districts of the city. In the early Republican era, electric invaded the daily life of citizens and city life irreversibly. This penetration of modernity by electricity transformed not only the rhythms of life and perception of time but also habits and expectations. The electric streetcar and illumination of nights expanded the possibilities of citizens about spending time in the particular districts of Istanbul that enjoyed the electric lights during the night. The classical

²⁹⁸ Peyami Safa, *Fatih- Harbiye* (İstanbul: Ötüken Yayınları, 1999), 29.

²⁹⁹ Carel Bertram, *Imagining the Turkish House*, 154.

Ottoman daily rhythms that shapes social life from sunrise to sunset were dissolving gradually. For example Neriman in *Fatih-Harbiye* “couldn’t stand being at home at night” anymore.³⁰⁰ Because the night no longer signified silence, darkness and peace within the security of one’s house. Rather, it represented vitality, entertainment and electric lights in the glamorous streets of the city.

The introduction of electricity in Istanbul bears importance in terms of the capitalist market relations as well. The electric trolley systems emerged at the same time as the modern advertising agency in Europe.³⁰¹ Streetcars encouraged a largely visual comprehension of the city along its route and the electric tramcars integrated the historical peninsula with Beyoğlu, which offered a western life style with shops, patisseries, restaurants, banks, theatres and clubs. As the electric trams provided an easier transportation between the remote areas of Istanbul, shoppers found a great variety of material goods, perfumes, clothes and technological products in shops enhanced with the neon electric lamps. From an advertisers point of view electric tramcar service transformed the urban population into a consumer market.

With the formation of the Republic of Turkey, the Ottoman Electric Company renewed a contract with the new government on 17 June 1923 and assured its position with a different name, Turkish Electric Company.³⁰² Since the electric company could not fulfill its obligations during the war, it accelerated the electrification projects in the early Republican era. The electric generating units of the plant were renewed, electric street lighting proliferated, private use of electric energy increased and began to power domestic utilities. The rapid dissemination of electrical kitchen, cleaning and maintenance appliances cultivated a process in which capitalist market relations penetrated homes in new ways and to an unprecedented extent.³⁰³ SATIE (Societe Anonyme Turque d’Installation

³⁰⁰ Peyami Safa, *Fatih- Harbiye*, 39.

³⁰¹ David. E. Nye, *Electrifying of America: Social Meanings of a New Technology* (Cambridge: MIT Press, 1992) , 111.

³⁰² Asu Aksoy, Funda Açıkbaş and Ayşenur Akman, “Silahtarağa Elektrik Santrali’nin Hikayesi”, 28.

³⁰³ Alan Duben and Cem Behar, *Istanbul Households: Marriage, Family and Fertility, 1880-1940* (Cambridge: Cambridge University Press, 1991), 47.

Electrique) signed a contract with the republican government in 1924 to buy and sell any kinds of imported or locally manufactured electric appliances. According to the contract, SATIE would also deal with trade and installation of electrical receptors, engines and materials but on the condition of avoiding interference in the concession of the Turkish Electric Company.³⁰⁴ Tesisat-ı Elektrikkiye Türk Anonim Şirketi (SATIE) promoted the symbolic association among electricity, modernism and capitalism in its advertisements which depicted modern houses with electric appliances.³⁰⁵ In October 1924, the cooperation of SATIE and the Turkish Electric Company published the manual called *Umûr-ı Beytiyyede Elektrik (Usage of Electricity in Household)*. According to the manual, electric energy powered not only tramcars, factories or street lighting but home appliances as well to affect a real reform in the household.³⁰⁶ The manual provided detailed explanation on principal electric housewares such as heaters, radiators, pillows, fans, irons, curling irons, vacuum cleaners, lighters, stoves, ovens, samovars and clocks. The booklet also provided information for each appliance regarding how much kilowatt energy it would spend and how much it would cost. In 1924, the monthly fee of electric energy for illumination was fifteen *guruş* per kilowatt-hour and the expenditure of the electric home appliances would be added to current fee at the end of the month. However, nearly all of the electric home appliances that were introduced in the manual were a great burden for the electric bill as can be seen in the table below.

Table 3.1: Operating Costs of Electric Appliances per Month

Electrical Home Appliances	Electric consumption per hour (guruş)	The minimum cost of the appliance (guruş)	Average monthly cost (hour/guruş)
Electric Iron	250 watt (4 <i>guruş</i>)	400	5 hr/ 20

³⁰⁴ Asu Aksoy, Funda Açıkbaz and Ayşenur Akman, “Silahtarağa Elektrik Santrali’nin Hikayesi”, 39.

³⁰⁵ Sibel Bozdoğan, *Modernism and Nation Building: Turkish Architectural Culture in the Early Republic* (Washington: University of Washington Press, 2001), 128.

³⁰⁶ *Umûr-ı Beytiye-i Elektrikiyye* (İstanbul: Matbaa-i Ahmed İhsan ve Şûrekası, 1924), vol.1, no.1, 3.

Hair Dryer	300 watt (5 <i>guruş</i>)	1200	5 hr / 25
Electric Stove	300 watt (5 <i>guruş</i>)	4000	15 hr /75
Electric Fan	300 watt (5 <i>guruş</i>)	1000	15 hr / 75
Electric Kitchen Stove	900 watt (14 <i>guruş</i>)	5000	20 hr /280
Electric Boiler	250 Watt (4 <i>guruş</i>)	450	5 hr / 20
Water Heater	660 Watt (11 <i>guruş</i>)	1600	15 hr /165
Thermosiphon	300 Watt (5 <i>guruş</i>)	5000	15 hr / 75
Electric Lighter	Insignificant	200	–
Electric Eggcup	300 Watt (5 <i>guruş</i>)	600	5 hr / 25
Electric Pillow	30 Watt (20 <i>para</i>)	450	12 hr / 6
Electric Foot Heater Pad	150 Watt (2.5 <i>guruş</i>)	7	12 hr/ 25

Source: Umûr-ı Beytiye-i Elektrikeye, no.1 (1924).

Prices increased dramatically during the First World War.³⁰⁷ A decline in wages resulted in a decline in purchasing power and the households were forced to reduce their consumption levels.³⁰⁸ For example, the daily wage of an unskilled

³⁰⁷ “Her şey müthiş baş döndürücü, aklın selametine hanel verecek bir sür’atle yükseliyor! Her gün hatta her saat bir tereffü’ var... Zannedersiniz ki her dakikanın hâsıl ettiği tahavvülü onlara haber veren bir şirket-i hafiyeye var yahut hepsi el ele verip her malı saatinde şu kadara çıkaralım diye aralarında ittifak etmiş olmalıdırlar. Yalnız hububat değil, sirke de öyle, ekme de öyle edviye de öyle, bütün levazım öyle, her şey öyle... Çıkıyor çıkıyor” *Yeni Gazete*.12 Kanun-ı evvel 1334/12 December 1918 vol.11, no.13, 1577.

³⁰⁸ Süleyman Özmucur and Şevket Pamuk, “Real Wages and Standards of Living in the Ottoman Empire, 1489-1914” *The Journal of Economic History*, vol.62, no.2 (June, 2002), 294.

worker was 1351 silver coins (*akçe*) in 1914. It corresponded to approximately 300 *guruş* per month. On the other hand, the average monthly salary of skilled workers was 720 *guruş*, 2.4 times greater than that of the unskilled workers.³⁰⁹ The costly wars period of 1914-1922 and the process of building a new nation state were not easy. The purchasing power of an unskilled worker declined 87 percent from 1.15 to 0.15 in the war years.³¹⁰ In 1922, the monthly wage of an unskilled worker was approximately 2.500 *guruş* (25 *lira*) and the wage of skilled worker was 6000 *guruş* (60 *lira*). Even though wages were, approximately 15 times greater than the salary rates on the eve of the First World War, the purchasing power of the Ottoman lira decreased as the price level increased.³¹¹

Table 3.2 The Increase in Fuel Prices in Istanbul During the First World War (*guruş*)

	Jan. 1914	Jan. 1917	Sept. 1917	Jan. 1918	Sept. 1918
Gas oil	1.5	50	110	125	160
Charcoal	0.5	2.75	5.5	10	13
Wood	45	150	320	380	540
Ghee	20	100	210	260	400

Source: Zafer Toprak, *İttihad-Terakki ve Cihan Harbi: Savaş Ekonomisi ve Türkiye’de Devletçilik* (1914-1918), İstanbul: Homer Kitapevi, 2003. Quoted from Esenduran, 49.

When we look at the cost of electric energy we could see a parallel increase. According to the agreement signed between the government and Ganz Company, the maximum fee (*hadd-i azami tarifesi*) of the electric distribution service was four *guruş* for private buildings and two *guruş* for industrial facilities

³⁰⁹ Şevket Pamuk, *İstanbul ve Diğer Kentlerde 500 Yıllık Fiyatlar ve Ücretler, 1469-1998* (Ankara: Devlet İstatistik Enstitüsü Matbaası, 2000), Tablo 4.1, 69-74.

³¹⁰ Ibid.

³¹¹ “Fasulyeler nohutlar ve ilaç gibi şeylerin fiyatı her gün yükselir, miktar-ı mahdud erbab-i ihtikâr ceplerini, kasalarını doldururken öbür taraftan herkesin kazancı aylığı da artmıyor ki mümkün merteye muvazene hâsıl olabilsin, dün elli lira alan belki yaşardı, bugün efkâr-i fukaradandır, bununla bir aile yaşar mı? Hatta bir fert bile yolunda geçinemez sonra bu keşmekeş-i ihtiyaca bir de öteki mahrumiyetleri ilave ediniz. Vapurlar karmakarışık, demir yolları yolsuz, tünel yok, tramvaylar yok, bazen elektrik yok, ekseriya su yok ...” *Yeni Gazete*. 12 Kanun-ı evvel 1334/12 December 1918 vol.11, no.13, 1577.

per kw/ hour. During warfare, the company applied for a raise in the set maximum fee due to the shortage of coal and dramatic increases in prices but its request was rejected.³¹² However, in 1920, the government approved the company's request for an exigent price increase in the electric services. The new price was fixed to fifteen *guruş* per kw/ hour.³¹³ The new tariff was maintained until March 1926. Electric was still a luxury for ordinary families in the post-war years. Because, if a family desired to enjoy the benefits of electric energy for illumination and different types of electric appliances they had to pay a minimum of fifteen-twenty liras per month. As mentioned above, the monthly income of an unskilled worker was twenty-five and a skilled worker was sixty liras. Thus, they would have to pay thirty to seventy percent of their salary to pay the electricity bill. On the other hand, Turkish Electric Company and SATIE encouraged the inhabitants of Istanbul to obtain electric service by offering tariff amendments and discounted prices.³¹⁴ We could also learn what did obtaining electric service mean for the residents of Istanbul from the memoirs of Haris Spataris, a Greek-Orthodox Ottoman citizen who spent his childhood in Fener in the years of 1907-1922. Spataris tells the story of the electrification process of the house of Kirios Panayotakis, one of the prominent merchants of their neighborhood. Panayotakis resided in a huge and ostentatious mansion. Spataris writes that their wealthy neighbor was very eager to display his fortune and show off his luxurious furnished house to others. To be able to stand out from the other wealthy residents of the district he applied to the electric company and furnished his

³¹² “Dersaadet Anonim Elektrik Şirketi tarafından hadd-i azami târifinin tezyidine dair yuku bulan talebin reddi hakkında Meclis-i Vükela kararının tebliği. “BOA. BEO. 4405/330319. 10 Mart 1332/ 23 March 1916.

³¹³ “Osmanlı Anonim Elektrik Şirketi'nin giderlerin artması sebebiyle tarifeye zam yapılması isteğinin uygun görüldüğü.” BOA.MV. 252/61. 15 Ağustos 1336/ 15 August 1920.

³¹⁴ “...Bâlâda mezkur echize için irâe olunan kudret-i elektrikkiye sarfiyatı bedel-i târife-i asliyeye göre tanzîm olunmuşdur. Şirket echâz-i elektrikkiye istimalini teshîl ve tevsi' gayesiyle muhtelit bir târife tanzîm etmişdir. Bu trârife mucibince aboneler echâz-i mezkurenin isti'mâli nisbetinde târife-i asliye sarfiyatı ücreti üzerinden yüzde %30 ve %40 kadar bir tenzîlâta mazhar olacaklardır. Aboneler 9. ve 11. sahifelerde târif ve tavsîf olunan ? hararet aletlerden birini istimal edecek olurlarsa şirketin tanzîm edeceği diğer bir târife mucibince, ister echize-i teshîniye ister tenvîrât için olsun, kudret-i elektrikkiye sarfiyatı için günün kısım-i a'zamında târife-i asliyenin dörtte biri nisbetinde bir meblağ te'diye edecekler.” *Umûr-ı Beytiye-i Elektrikiyye*, 20.

house with 100-watt lamps that were bright enough to illuminate not only the interior but the streets of the neighborhood as well. This was a great event for the neighbors since it was very costly and challenging to illuminate a house with electric lamps due to the shortage of coal and other necessary materials. In the end, he succeeded in drawing attention to his fortune.³¹⁵

The memoirs of Said Bey, an Ottoman official, is another evidence demonstrating that the electric consumption was a luxury for the general part of the society in Istanbul during the early twentieth century and only the wealthier people could afford electric consumption. Said Bey preserved six blue almanacs corresponding to the years 1901, 1902, 1904, 1906, 1908 and 1909, in which he noted his daily activities. These almanacs provide us precious knowledge about the household budget of a upper middle-class urban family in Istanbul before and during World War I.³¹⁶ Said Bey translated detective stories into Turkish for Abdulhamid II as a palace translator and taught French at the School of Commerce for a minimum monthly income of 10 000 *guruş*.³¹⁷ As a westernized upper middle-class Muslim family, their house was supplied with all the equipment of modern comfort; water distribution, city gas for cooking, and electric service to lit the rooms. Most probably, their home was among the first in Istanbul to have electric lighting.³¹⁸

³¹⁵ “Panayotakis bakır telleri, direkleri ve izolatörleri buldu. İdareden izin de aldı ve hemen şebekeye bağlandı. Böylece evi elektrikle aydınlandı. Eski konak, gaz lambalarının donukluğu içindeki karanlık yolda ışıl ışıl parlıyordu. Ama Panayotakis’in ihtirasını en çok tatmin eden 100 mumluk dış ışık oldu. Lamba yandığı zaman mahalleyi aydınlatıp diriltti, geceyi gündüz yaptı... Muhlio’nun bütün dedikoducu hanımları, çocuk ve yaşlıları da yanlarına alarak yataktan fırladılar ve olanları anlatmak için sokaklara döküldüler. Erkekler bile işlerinden dönünce sokağa bir iskemle çıkararak kapıların önünde Panayotakis’in ışığında gazetelerini okumaya başladılar. Bir yandan bu durumdan çok hoşlanıyor diğer yandan yolu aydınlatmak için bu kadar para harcanmasına söyleniyorlardı...” Haris Spataris, *Biz İstanbullular Böyleyiz! Fener’den Anılar 1906-1922* (İstanbul: Kitap Yayınevi, 2004), 151.

³¹⁶ Paul Dumont, “Said Bey: The everyday Life of an Istanbul Townsman at the Beginning of the Twentieth Century”, *The Modern Middle East*, ed., Albert Habib Hourani, Philip Shukry Khoury and Mary Christina Wilson (Berkeley and Los Angeles: University of California Press), 271.

³¹⁷ François Georgeon, *Sous le Signe des Réformes: État et Société, de l’Empire Ottoman à la Turquie Kémaliste, 1789-1939* (İstanbul: Isis Press, 2009), 197.

³¹⁸ Paul Dumont, “Said Bey: The everyday Life of an Istanbul Townsman at the Beginning of the Twentieth Century”, 271.

Umûr-ı Beytiyyede Elektrik was the predecessor of periodicals and advertisements associated with the electric energy. By December 1925, the Turkish Electric Company started to publish a monthly periodical named as *Ameli Elektrik* for the residents of Istanbul. In this way, the advertisements for a wide range of electric power home appliances reached to the homes of Istanbul.³¹⁹ *Ameli Elektrik* and then *Ameli Elektrik Almanacağı* with the modified name, was published in Turkish and French from December 1925 to 1937. The main concern of the company was to inform the subscribers about electric technology and attract the attention of citizens who was not benefitting from electric service yet. The annual subscription fee of the periodical was sixty *guruş* for the general reader and thirty *guruş* for subscribers of the Turkish Electric Company.³²⁰ A significant part of the magazine was allocated to publicity. Advertisements were not solely about electric devices. They included advertisements on banks, automobiles, bicycles, typewriters, printing houses, hotels, restaurants, textiles and pharmacies as well. Primary companies that reached the readers of *Ameli Elektrik* were SATIE, AEG, Osram Lampes, Thomson Houston, Fiat, Peugeot, Ottoman Banque, Tokatlıyan Hotel, Bomonti Factory and Fazilet Printing House. *Ameli Elektrik* had a rich context including; useful information for subscribers, tariff schedule of the company, detailed information about electric home appliances, short stories, funny articles, fashion trends for women, technological news and reviews, award winning questions, information about coal, cotton and tobacco market, data about import and export rates. In each issue, there was an article to inform the subscribers of the electric service about their obligations according to the terms of the agreement.

The Turkish Electric Company suffered from the customers who benefited of electric service without paying fee. For this reason; in the second issue of the journal they issued information about the customers that the company had prosecuted for abuse of subscription rights and exposed them as a warning.³²¹

³¹⁹ For one of these advertisements see Appendix E.

³²⁰ *Ameli Elektrik*, vol.1, no.5 (April,1926), 1.

³²¹ “Bazı dar düşünceli müşterilerin te’diye etmeksizin ceryan istihlâk etmeğe çalıştıkları görülür. Bu türlü hilelerle bir emtianın sirkat edilmesi beyninde hiç bir fark yoktur.

Moreover, the subscribers were informed about the terms of their agreements, price policies and technical points that could facilitate their daily usage of electric appliances. On the other hand, a serial short story named as “Küçük Selma Elektrik Sayesinde Zevcenin Kalbini Tekrar Nasıl Elde Etti” (How electricity helped little Selma rewon her husband’s heart) started to be published from the fifth issue onwards.³²² As a young and beautiful woman, Selma constantly complains about how exhaustive housework prevent her from devoting time to her husband and herself. In the evenings, she shows her hands, which hurt after washing clothes for hours, and she easily persuades her husband to purchase a washing machine. The Story continues with an emphasis on the darkness of the young couple’s home at night in the absence of electric lights. It is dangerous and frightening to go down the stairs to look for a match and to heat some water in a dark and cold night. Selma states; “If we had an electric heater and stove and lamps, everything could have been easier, safer and more comfortable”. Moreover, when her husband Fikret talks about the high price of the electric service, Selma asserts that they could obtain the electric service with the money they have been paying for the maid, because the devices powered by electricity are the best servant of all.

Consequently, the target audience of the electric company was affluent housewives since they were the main consumers of electric appliances. In increasing number of pages were allocated to women to attract their attention by giving them information about new fashion trends from Paris. *Ameli Elektrik* periodical was a tool for social construction to create a modern housewife in order to fulfill the needs of the evolving modern society. The women of Istanbul were told that they had to use electric appliances in order to cope with the norms

Binâenaleyh ber-vech-i âtî hükümlerin dahi isbat edeceği veçhile mahkemeler bu cürümleri kemâl-i şiddetle tecziye etmektedirler.

Costi Pétro ve Youvan: Unkapanında, Azablarda Elvanzade Sokağında 20 Numara, Sultanahmet Sulh Mahkemesi tarafından 1/7/25 tarihinde 3 ay hapse mahkum edilmişlerdir.

Artine Ohannés, Pangaltında Serpossian Sineması, Beyoğlu Sulh Mahkemesi tarafından 3/8/25 tarihinde üç ay hapse ve şirkete 140.50 lira te’diyeye mahkum edilmiştir.

Madam Zoi ve Cotcho,: Beyoğlu’nda Cemil Bey Hanı’nda Küçük Kabristan Sokağı, Numara 16, Beyoğlu Sulh Mahkemesi tarafından üç ay hapse mahkum edilmişlerdir”

Ameli Elektrik, vol.1, no. 2 (January, 1926), 17.

³²² *Ameli Elektrik*, no.5. See Appendix E.

of being more modern, rational and efficient. ³²³

Electric displays were yet another way to introduce electric appliances to the public. One of the earlier exhibitions organized by SATIE displaying all kinds of electric machines took place in Haçopulo Khan in Beyoğlu in April 1914. The publicity of the exhibition was appealed to potential audiences such attracting wordings as “ You don’t need coal for an iron and samovar for tea anymore. Maids and servants are unnecessary anymore to fan. Let the electric begin!” ³²⁴ Electric displays continued periodically in the Taksim district. Daimi Elektrik Sergisi that was organized by Satie in 1934 was one of the biggest of these displays. The kiosk was open to everyone, everyday. Curious clients had a chance to see a great range of electric devices from slimming machines to sewing machines and to examine them freely. The Electric Company also offered long-term installment payments from twelve to twenty-four months in order to attract clients from different levels of income. ³²⁵ Interest in electric energy increased day by day. According to the *Ameli Elektrik* periodical, 48.700 electric appliances were sold between the years 1924 and 1936.³²⁶ Consequently, the introduction of electric energy in the city sow new seeds for an expanding consumer society and it made a significant impact on the shaping of new woman and types of family in a gradually changing society.

³²³ “Tarik-i terakkiyi takib hususunda pek müstaid ve anlayışlı olan aziz karielerimiz, Türk hanımları her ay başında risalemizi okurlar iken oradan bazı malumat-ı müfide ve mülhazat-ı ameliye iktifat edecekler ve bu vesileyle elektrikle ünsiyet peyda ederek etraflarındaki aile hayatının refah ve istirahat, zinet ve letafetini tezyid edebileceklerdir.” *Ameli Elektrik*, vol.1, no. 3 (February, 1926).

³²⁴ " Bu hafta Dersaadet’te küşad olunan elektrik âlât ve edevat-ı muhtelifesi sergisi münasebetiyle. Bundan sonra evlerimizde ütüye kömür çaya semaver lazım değil. Yelpazelenmek için cariyelere gerek yok. Başlasın elektrik." *Servet-i Fünûn*, 8 Mayıs 1330 (May 21, 1914), vol.8, no:1198, 337-339.

³²⁵ Vahdettin Engin and Ufuk Gülsoy, “Elektriğin İstanbul'a Girişi, Teknolojik ve Toplumsal Katkıları”, 23.

³²⁶ Gökhan Akçura , “Elektrik Ne Kuvvetli Bir Hizmetçi!”, *Radikal*, September 8, 2007, 12.

CONCLUSION

This study endeavored to investigate the transfer and development process of electric power systems in their appropriate social, political and economic contexts in Istanbul. Historians of technology debated the proper approach to understand how technological change fits into the overall process of historical change. Social constructivists rejected technological determinism and linear perception of history as a theoretical approach. Instead, they developed diverse methodologies and approaches to analyze technological systems in relation to economic, political, and scientific factors. Accordingly, this study aimed at reframing the discussions on the electrification of Istanbul in the present literature in terms of systems approach and social constructs.

This study paid close attention to choices, preferences and priorities. Governors, politicians, engineers, state officials, entrepreneurs and consumers all made choices to frame the development of the electric power grid in Istanbul. Furthermore, geographical factors, urban morphology and the spatial organization of Istanbul were considered as the inanimate actors shaping the introduction process of electric technology. In addition, instead of interpreting the late arrival of electric technology in the Ottoman state as a failure, this thesis aimed to understand the characteristic of the electrification process, which differs from region to region. Thomas P. Hughes argues; “The interaction between region and technology was more notable than that between nation and technology”. In a similar vein, I concentrated on the electrification of Istanbul in order to shed light on the stance of the Ottoman government towards electric technology.

During the last quarter of the nineteenth century, the rapid development of electric technology in America and Europe led to the growth of regional power systems in the industrial world. Because of the rapid advance of electric light and power systems, such leading cities of Europe and North America as Paris, Berlin and Chicago welcomed the electric lighting systems in the formative years of the electric industry. Unlike their western counterparts, the Ottoman authorities were slow to invest in electric technology. The streets of Istanbul first began to be illuminated with electric lamps and the electric trams started to replace the horse trams in 1914. In this context, I question the underlying reasons and motives behind

their choice and offer some insights into the experience of the electrification of Istanbul. Besides, I evaluate the transfer and development stages of electric telegraph and coal gas lighting technologies since they provide some clues about the policies of the government for the electrification process of Istanbul. At this point, the distinctiveness of the electric technology was taken into account. This was not a simply material change based on a new technologic artifact entering the country. Rather, electric power systems had the ability to effect economic and social transformations. Moreover, Europeans saw electricity as a powerful symbol of modernity and progress.

This study revealed that there were multifaceted reasons behind the delay of adopting the early electric lighting technologies in the Ottoman state. The various factors including the economic, social and political concerns of the Ottoman government and their preferences, priorities and cultural considerations influenced the delay of the implementation of a power supply system. Therefore, we need to have better grounded findings to explain the issue than a “discourse” of backwardness or the perpetual fears of a ruler.

The accumulation of capital and the market-based economies of the industrial world, which led to the explosive growth in the industry, also underpinned the rapid penetration of electric technology among the European cities. The culture of capitalist enterprise encouraged private sector development of electric power systems. Meanwhile, the Ottoman state had already been in the early stages of steam industry due to the limited nature of export markets and capital accumulation in the state. In other words, the Ottoman state did not have a human source corresponding to the capital owners that promoted the electric industry in America and Europe. Because of limited capital accumulation in the state, either the central government would fund the costly electric power systems or the rights of electric supply would be granted to the foreign companies and finance institutions. Accordingly, the development stage that the European industry went through did not occur in the same manner in the Ottoman industry neither for the first nor for the second Industrial Revolution.

The Ottoman state was successful in adapting the electric telegraph technology into their system and they became self sufficient to manage and maintain the telegraph service with their own sources and manpower. On the other hand, they were not as successful in the transfer and development of artificial

lighting systems. The political priorities were essential at this point. For the Ottoman state, improvements in the military technology had long been a prerequisite for all other types of progress. They were quick to deal with their own military shortcomings and were a close follower of the technological innovations especially in the military field. For instance, when electric telegraph system became an urgent requirement for the state during the Crimean War, they expeditiously transferred the electric telegraph system from Europe. Furthermore, they nationalized the telegraph service in a short period by training Ottoman technicians and financing the establishment of a telegraph factory in order to control telegraph network, which also meant to dominate information. The rapid innovations in naval technology with the introduction of electric equipment into the warships and steamboats attracted their attention in a very short time as well. Consequently, the first electric factory of Istanbul, opened in 1888 within the Imperial Dockyard served to the military purposes. In the formative years of the electric technology, the electric works in Istanbul was not shaped in the same manner as the European cities that illuminated with electric lamps. Rather, the Ottoman government invested in electric technology for the military purposes since they suffered falling behind their European counterparts in terms of military technology. However, this does not mean that the Ottomans were aloof to the technological innovations in other fields. The illumination of the dark streets of Istanbul was among the top items on the municipal works since the Tanzimat period.

The period in which the coal gas street lights were replaced by the electric lighting systems in the European cities coincides with the period when the Ottoman government invested heavily in gas lighting. Accordingly, I suggest that the relatively cheap price of gaslight and the ongoing debates regarding reliability of electric energy discouraged them to invest in electric technology. Notwithstanding, electricity proved to be more suitable, economical and reliable than the gas lighting with the turn of the century. Thus, Sultan Abdülhamid II opened the way for the supply of electricity in the urban areas of the state. At this point, this study underlined that Abdülhamid followed a different policy for electrification of Istanbul in comparison to other provinces of the state. He gave his consent for the electrification of cities such as Beirut, Thessaloniki, Damascus and Izmir by the foreign companies whereas he was insistent on assigning the governmental institutions such as the municipality and the State Cannon-Foundry for undertaking

the electric supply of Istanbul. The policy of the Hamidian regime about establishing state dominancy over Istanbul's electric service suggests that he intended to keep the energy and transportation sector of Istanbul under control.

Abdülhamid was the most important actor of the process with his policies in order to overcome the tough conditions of his period, which had almost brought about the total collapse of the state. Historians usually connect the late arrival of electricity to the Ottoman lands to oppression and perpetual fears of Abdülhamid II. I argued that the safety concerns of the sultan were not a motive underlying his decision or choice on prohibiting the private use of electricity in Istanbul. On the contrary, electricity assured the security and control mechanism in cities and served the recognition of state authority with its bright light turning nights into day. While electric lighting was the most crucial tool of the state authorities in controlling the communal areas, offering/submitting the fears of the sultan as a reason of his hesitation towards electric technology would not be a convincing explanation. On the other hand, he had concerns about the fire danger, which might result from the illicit and careless consumption of electricity since the city lived with the constant threat of large scale and destructive fires due to its residential fabric in wood. Another obstacle that the government faced was the legal position of the protégés and the foreigners settled in the Ottoman lands. Unlike the European governments who had the right to judge both inhabitants and foreigners for any problems under the same regulations it was not possible in the Ottoman state while foreigners were enjoying the advantages of capitulations. Hence, the sultan banned the import of electric devices until the issuance of a set of legal codes in which punishments, bans and permissions would be regulated.

The members of the Committee of Union and Progress were also significant actors of the process since Istanbul welcomed the electric supply system when they were in power. There was a (strict) policy shift between the Hamidian era and the Second Constitutional period. Unlike Abdülhamid II, who believed that the monopoly rights of the electrification of Istanbul should be given to the state, the new government argued that the municipality was not competent to fulfill the requirements of the electric power systems based on the previous experiences. Eventually, the rights of generating electricity for Istanbul was awarded to Austro-Hungarian Ganz Company with the consent of the Council of Ministers in 1910.

This research also aimed at addressing the social actors such as engineers,

intellectuals, state officials and consumers in order to understand social reactions and different discourses on electric technology. Advancements in the electric technology was among the popular issues that placed in the periodicals and newspapers of the period such as *Mecmua-i Fûnun*, *Hafta*, *Şehbal*, *Tasvir-i Efkar*, *Servet-i Fûnun* and *Fen Alemi*, *Hürriyet*, *Akşam* and *Amelî Elektrik*. In the early years of the electric technology, the public regarded electricity with respect as well as a bit of suspicion. In one of the periodicals, electricity was defined as a bizarre and astonishing new source of energy that could be neither seen nor smelled but its power could only be observed via electronic devices. During the following years, brand new electric devices and the diverse usage areas of electric energy became a popular topic among the magazines of the period. A major part of the articles praised the advancements in electric technology with great enthusiasm. The leading Ottoman intellectuals such as Münif Pasha, İbrahim Şinasi considered streets lighting as one of the crucial developments in terms of urbanization. Moreover, the Ottoman authors such as Ahmed Midhat Efendi and Ahmet İhsan (Tokgöz) who met electric light for the first time in the European cities wrote their impressions of brightly lighted night sky with the electric lamps. While the streets of Istanbul were still illuminated with the dim light of gas lanterns, the writings on the enhanced cities with electric lights shaped the image of “modern and urbanized” city in the minds of the Ottomans. On the other hand, Ahmet Haşim was a sound opponent of electricity. He handled the issue from a different perspective and discussed how the means of illumination had been decisive for the evolution of the civilizations throughout history. According to him, electricity was such a power that characterized the soul of the civilizations. The materialistic essence of this new worldview shaped with electric industry was not suitable for the Ottoman society, which was still a “gas-light” civilization. In conclusion, the discourse on electricity among the Ottoman intellectuals of the period mostly had positive connotations except a few opposite voices such as Ahmet Haşim.

Throughout this thesis I also touched upon the relation between social and technological by concentrating on the residents of Istanbul as the consumers of the electric industry in Istanbul. It is indisputable that; analyzing “what electric technology meant to Ottoman society” is such a broad area that this study could not cover. Moreover, because it was not until the 1930s that the streets of Istanbul were fully illuminated with electric lamps, this study only covered the early impacts of

electric lighting to the social sphere. Murat Güvenç asserts it was not only architecture, means of production & transportation and medical technology that changed with the distribution of electrical energy via networks but also the perception of time and space was transformed during the period. Accordingly this study focused on the changing perception of nights with the introduction of electric streetlights and electric tramcars in the certain parts of Istanbul, based on the literary works of the period. As the nights were illuminated and electric tramcars provided an easier transportation between remote areas, the classical Ottoman daily practices such as to fit the social life between sunrise and sunset was dissolving gradually. Because the night was not signifying silence, darkness and peace within the borders of safe houses anymore. Rather, it represented vitality, entertainment and electric lights in the glamour streets of the city.

This study argues that the introduction of electricity in Istanbul bears importance in terms of the capitalist market relations as well. As the electric trams provided an easier transportation between the remote areas of Istanbul, shoppers found greater variety of material goods, perfumes, clothes and technological artifacts that were associated with the modern life in the shops enhanced with the neon electric lamps. Further, the rapid dissemination of electrical home appliances from the 1920s onwards, cultivated a process in which capitalist market relations penetrated into the homes in a way and to a degree that had not been experienced before. Notwithstanding; during the growth of the electric industry in Istanbul of the 1920s, electric consuming was still a luxury for the ordinary families of Istanbul. On the other hand, possessing any electric appliances was an explicit indication of being wealthy and making a display of fortune. In conclusion, electricity became a crucial actor through the process of forming a consumer society in Istanbul.

This research will become more meaningful for Ottoman historiography if additional studies on the introduction of electric power systems in other provinces become available. Unless making a comparative study analyzing the implementation of electric systems in Damascus, Beirut, Thessaloniki and İzmir during the reign of Abdülhamid, talking about the stance of the Ottoman government towards electric technology will be lacking. Further, as Murat Güvenç emphasizes, reviewing the impact of electricity through transformation of the urban morphology and the spatial organization of Istanbul would provide new

perspectives in the narration of the social history of electrification in the Ottoman state.

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DH.İ.UM	Dahiliye Nezareti İdare-i Umumiye Evrakı
DH.MKT	Dahiliye Mektûbî Kalemi
HR.SFR	Hariciye Sefareti
HR.TO.	Tercüme Odası Belgeleri
İ.DH.	İrade Dahiliye
İ.HUS.	İrade Hususi
İ.MMS.	İrade Meclis-i Mahsus
İ.RSM	İrade Rüşumat
MV.	Meclis-i Vükela Mazbataları
Y.A.RES.	Yıldız Sadaret Resmi Maruzat Evrakı
Y.A.HUS	Yıldız Sadaret Hususi Maruzat Evrakı
Y.EE	Yıldız Esas Evrakı
Y.MTV.	Yıldız Mütenevvi Maruzat Evrakı
Y.PRK.ASK	Yıldız Perakende Evrakı Askeri Maruzat
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Deniz Müzesi Arşivi (DMA)

DMA. Şura-i Bahriye

Periodicals/ Newspapers

Akşam

Ameli- Elektrik

Hafta

Hürriyet

Maarif

Mecmua-i Fünûn

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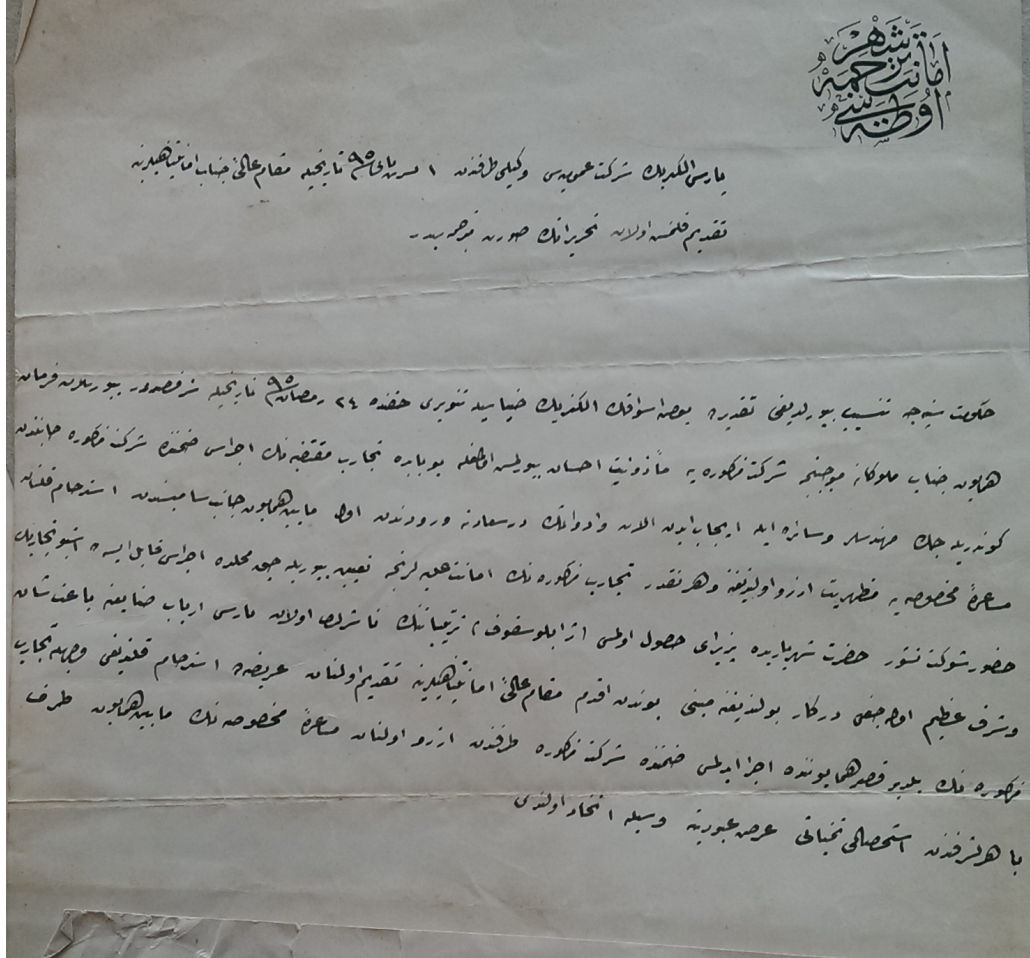
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APPENDICES

Appendix A. Related Correspondences from the Ministry Ottoman Archives

Y.PRK. ŞH. 1/ 21



The letter written by the representative of the Société Générale d'Electricité de Paris to the sultan's secretariat (Mabeyn-i Hümayûn) asking for making a demonstration of Jablochhoff candles for the sultan Abdülhamid in the municipality building. (22 Ağustos 1295/ 3 September 1879)

دولتو اقدم حضرتي
القدرتي نفي برمدتدندرد دول اجنيدج نظر اعصاب الذره برچونه جيم لراجا سيد بونلك جيت بره دجيم جومحناء اكليلدرنه اليوم والرا فخره ايلقار
دول جيم دونتاريخ اشكال استعمال اولحق وسام مطونويه حضرت ياد شريج دونماي هاپونلك دول جيم ساج دونتاريخ سلاو هالي انتق ماصاله ذره
جيم جوم صرف رعي واهتم ايدلك اوديني ورك لايجاب دونماي هاپونلك برلام سونه دارسي حانك طور سوي تربك سنده سالم ودارسه اولريك لاشفت
ايدجك طبع وسانا نسا انه نك نظره ان تصادف ايدريك وسفندك هر جوي لايقبه وهي ايدلك ايجيم اقدرتيه فمارريك دونماي هاپونكي وهي
اشكال استعمال درج ووجوب بونديكي سيع معارفوايه جناب جوبانايض ضابطه جيم نك موجب محضات عظيم اولاضه نهوري تعلم وتخييل ايلاري
لازمه اولوب وبونلك ايجوم برنك مخصوص ناسيه حاجت ايلويب طور سيدو بكني اتحاد اولنه مخبر سرور فريته هاپونك اقتضائده الات وادوانده
ايدري موجود لويبي وابدوم ايجاب ايدرك ميايم ايدجك بيانله سميلك موجود اول الات ايله هقه م اكي توبه فريته نهوريه ضابطه جيم به
ضه نهوري تعليم وتديس ايتك اوزره سرري بيك بيوز عريش معان ايد ريزس موسوا ميل لاخوانك معلم وفته نهكيه وفتب ومعلومات جديلا ايف
افنديك وهي بيوز عريش ايلقه معاده نصب وتبيندي فضوضه دار جيم نك جيلد سنده وارد اولده نك فاعصه وتقيم قنن اولده ادب باره
هذه راجه اراه سبه حضرت خلافتي سرقتعاه سويوز ايف نفاذ نكوه عاليه ايدريك ايل بيانله نك شاورى تقيم اولده اقدم
اجماده الاصله ايل ايل

A letter written by the Ottoman Ministry of Navy to the sultan's secretariat (Mâbeyn-i Hümayûn) asking authorization of the sultan Abdülhamid to finance of electric education for the naval personnel and for an assignment from Emile Lacoine and Raif Efendi for electric training in the torpedo school of the Imperial Dockyard (Tersane-i Amire). (26 Mart 1301/7 April 1885)

ظفر المظالم
ع

عالم مدینه فواله عظیم و سعادت مرخصه ای در اندیشه منی بر طرفه زرقانی تزیید و در کید جانان در محنت و فوایدی هر چه تعریف میکند
اولی از جمله صفتی جریبک توری مرزیه دربار او آهسته بنی سینه جریب مولانا جم از منی و تو اندیشه فناء در ملک او در دیار
سابعه جیبی مرزیه با لفظ در جیبی فائز او صفا و لفظه بر لبه ای ه جیبی و وجودها بوی مویز که ملک و منته بطنه مخصوصه
ایه اولی ذات فاروقی صفات هفت مویز فی مازالم لزار و لیسال بریم رای سوکت و اجمل و ممالک محروسه ه ه نوع
یا مع و محاسنک زرقانی جبار مدینه جویز نموده کمال فله جویز بر در حد عالی لغاه ایصال بویز سوره میه بوم جویز میامه نوس هها بویز برود
کونا کورد انار هم توایا باره نامی فواله لفظه بویز که استوانه کدیوم فنک دفع نظایات و عیبای مکتد قصل بیه لافه آلان و اردی
بویز هم اعمال ای ملک و زره مقدا اور و باب کوز طبعه اولی اوج لفظه بویز که ه انکال قصل بیه عورت ایسه او در قنده بویز ایجود
رود و تسبق عامه اقتضایه فایز بقه نک تاسینه بیستون ایسه ای سیه توفیقات ویه هفت بایز ه مکتد فایز بقه
است آق رسیده هضام ایسه و مکانه که دفع دفع ایسه اول لفظه زرقانی یار به کس ریم مکتد ماکه لایسته بویز
زرقانی فناء درک و سایر آلات دار و ملک اعانه ای و مباشرت ای بر بویز بقه عرض و افارجه ایسه و بو تاسیس نافع دفع مجر
محاسنه عصبه مویز در و طبعه مکتد صده عبت عبوریت اولی دعوات فزق ایام عود سوکت و اجمل هفت هفت هفت هفت هفت
دفع بکار قنده ای طبعه اولی و فومار هفت مده اولی که ای مع اولی بقه

ناظر
حسین

A letter written by the Ottoman Ministry of Navy to the sultan's secretariat (Mâbeyn-i Hümayûn) to inform Abdülhamid II about the completion of the construction of the Tersane Electric Factory. (29 Teşrin-i Sani 1304/11 December 1888)

نظاره امین

سید ترقیاتویہ عفت ہار ہدیہ رونمای ہلویہ موغانہ اچیمہ التدیویہ یالیموہ اوزرہ ترسہ عادیہ
تاسین افیہ فاریقمہ مسرور اولادہ آثار ترقیاتہ بنی ہوتل کبہ بوسہ اینہ تہبیرک مکلو فاریقمہ
مکانہ اعمال و وضع و ذوقہ التدیقمہ تویری اچیمہ خارجہ راجعت و اظہار خواہش و رجعت و لطف
بہنہ ایہی بولایہ ارڈارہ نیہ عفت خلافتہ ہنہ وجہہ شرف و مہ در بیورایہ
منظورہ مہینہ ترقیہ و کتہ لطفہ رفاہ بولفندہ اوطاہہ اروفندہ عفت و لطفہ
ناظرہ
صالحہ لایہ

A letter written by the Ottoman Ministry of Navy to the sultan's secretariat (Mâbeyn-i Hümayûn) asking the decision of Abdülhamid II on the demand of some of hotels and apartments to obtain electric equipment that manufactured in the Tersane Electric Factory. (15 Teşrin-i sani 1310/ 27 November 1894).

دخالتی اتم کلیدی
بیدار شده و در اداره علم تجدد انجمن دولت و در اینک انجمن کتب معاینه سه حاجت فاندی و رسیده اولی و دوم
ایجاباً بدین جهت هر چه در این باب در رساله کتبی نظاره و در این باب بنیفاً خوب اجرائی در این کون تواریخ اجرائی کون
صافیاً در این باب در رساله کتبی در این باب در رساله کتبی در این باب در رساله کتبی در این باب در رساله کتبی
بدین جهت اولی و دوم در این باب در رساله کتبی در این باب در رساله کتبی در این باب در رساله کتبی
والله اعلم بالصواب

A letter written by the Administration of Customs (Rüsumat Emaneti) to the Interior Ministry (Dahiliye Nezareti) to set the passage of any type of electric tool through the customs free. (22 Temmuz 1324 / 4 Ağustos 1908)

ذافعی نظارتی
 تاجیکان
 ۶۹

۲۰

مضوریہ فی باب حدیثیہ

مدد سے چاکر کینہ لریہ۔

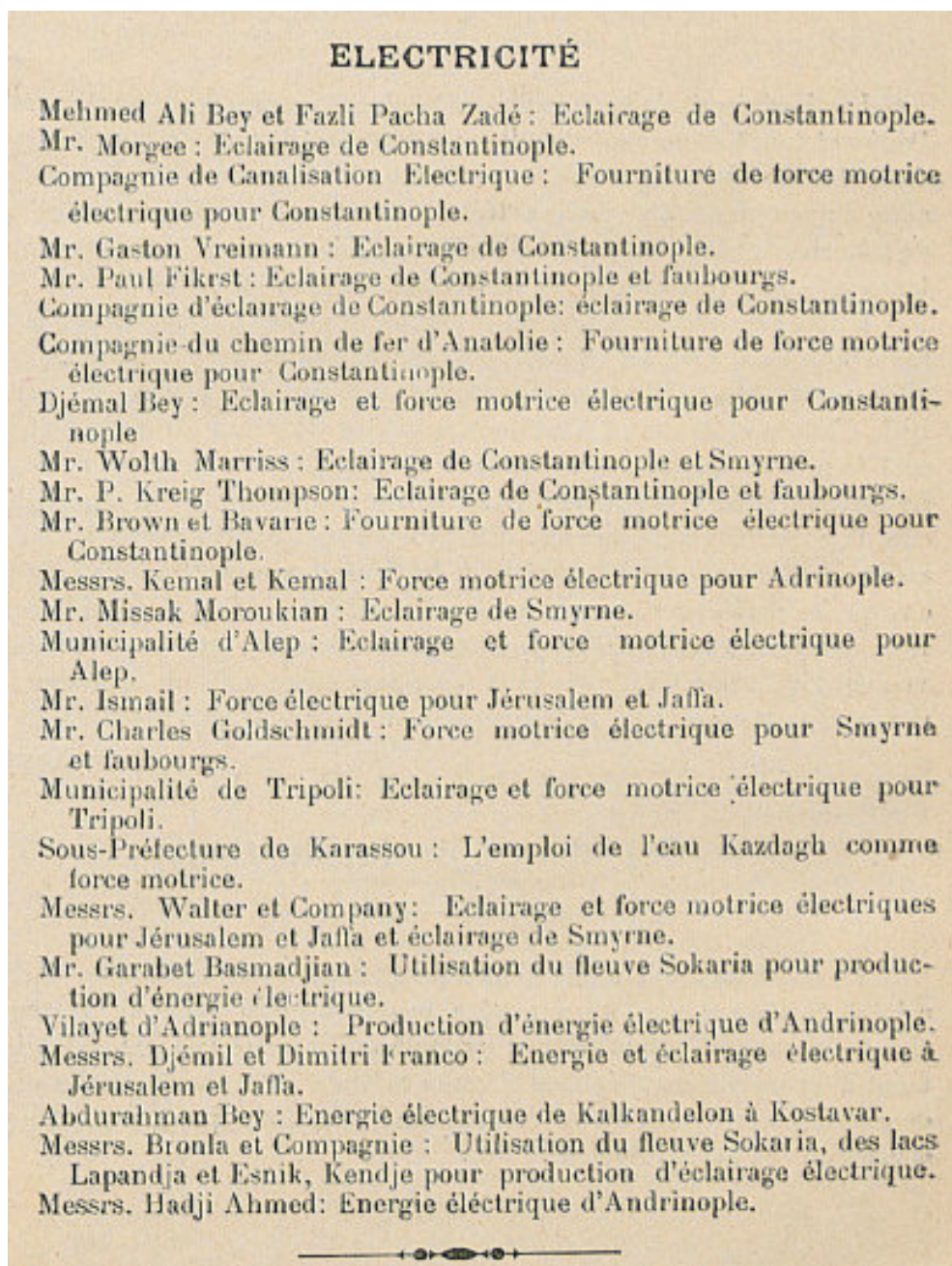
تشریح عمیری و ترمولیک تحریک و قدرت الذی فیہ ایدہ تحریک برہیویہ موسسات عکبر ایدہ اعانتہ دگر مندی کی حیثیت مکتلہ تعالیٰ ایدہ
 موسسات و ضمایع مختلفہ تاسیساتک ایسکوس تاسیساتک ایلکتریک اولادہ در سعادت الذی فیہ شرکتی ایسکوسک تدریسیہ برہیویہ ہوتے قدر
 آگاہہ کوری استحالہ ایلکتریک و ضعیفہ حاضرہ جبکہ تدارک نہ امکانہ فاصلین کی ایلکتریکہ فاریقہ سنک بوی جزو ایلکتریکہ اولادہ
 کما نہ طوبہ مقدار نہ ہی کورک یا نہ نہ تدارکی ذی غیر قابل ہولند بقدرہ ہوجالہ برہیاریہ عاقل ہولندہ یعنی تقدیرہ فاریقہ تک دتار
 تعطیل و خصوصیات مجموعہ سکتہ در اولرہ حیثیت شہرک و ضمایع عمومیہ تک خلیلہ اولرہ ہی آتکار در شرکتک احتیاجی اولادہ کورک
 ایکی در و نغولہ کہ معدہ کورلر نہ تدارکیم تاسیساتک مقصد اولرہ مقصد کورلرک ہا بہ وہ دساتر نقلیم تک مقصد و بندہ ہی لڑوی اولادہ
 کور شرکتی نقل ایدہ بہ جیلند نہ ہوجسودہ شرکتہ بر و یورخصی ایلکتریک و یا خود ہی اولمازسہ بر و یورک نصف جھیلند شرکتہ کورینہ
 جہری و شرکات سارہ ہر جمعی مجموعہ معدہ کورلر نہ ایلکتریک شرکتہ مقصد مقدارہ کور و بر و یورک خصوصیتہ ساعدہ ساعدہ
 فی باب حدیثیہ لریہ اولادہ واجری ایجابک و در سلفہ امر و بطریق جو سلسلہ مالکیتہ عقیقہ مبارکہ خلقیہ اولادہ لریہ زمانہ جھتہ و لا اولادہ

۱۳۳۷
 ۲۸
 ۱۳۳۷
 نافذ نالوہ

A letter written by the Ministry of Public Work to the Sublime Porte regarding the immediate need of coal that required by the electric company in order to maintain electric production, which is crucial for the public convenience. (28 Teşrin-i evvel 1334 / 28 Ekim 1918)

Appendix B. Announcements from La Gazette Financière & Le Moniteur Orientale

La Gazette Financière (30 November 1909)



The announcement of the applications that were made since the establishment of the Second Constitutional regime in order to obtain the rights of the electrification of the Ottoman state's different provinces.

Le Moniteur Orientale (3 Juin 1910)

Eclairage électrique de Constantinople

L'adjudication relative à l'éclairage électrique de Constantinople a obtenu le plus vif succès et le ministère des Travaux Publics peut être fier à juste titre de l'empressement avec lequel les représentants des plus grandes maisons financières et électriques du monde entier, se sont donné rendez-vous Samedi dernier au dit ministère pour remettre leurs projets respectifs.

Nous comptons tenir nos lecteurs au courant des différentes phases de ce concours; nous nous contentons quant à présent de donner les noms des soumissionnaires parmi lesquels figurent 3 groupes purement français:

- 1o MM. Schneider & Cie (Creusot) en association avec le Crédit Mobilier de France, la Société des Grands travaux de Marseille et la Société Industrielle des téléphones;
- 2o MM. Fouquiau et Warnant, agissant au nom de différentes maisons françaises;
- 3o La Cie Française d'Eclairage électrique;
- 4o Une Maison Anglaise: «Westinghouse»
- 5o Deux groupes allemands;

L'«Union Ottomane» Consortium formé d'un grand nombre de maisons Allemandes entre lesquelles se trouvent; La Siemens Schukert, et l'Algemeine Electricitæts Gesellschaft, de Berlin, La Continentale Gesellschaft für Electricische de Nuremberg etc.

- 6o Un syndicat suisse.
- 7o Une maison Autrichienne, «Ganz» de Budapest;
- 8o Un groupe Franco-Suisse représenté par MM. Giros et Loucheur de Paris;

The announcement of the international ventures applied for electrification of the certain districts of Istanbul and the winner of the adjudication in one of the local French newspapers Le Moniteur Orientale published in Istanbul. 21 Mayıs 1316/ 3 Juin 1910.

Appendix C. An Example of the Subscription Bill Issued by the Turkish Electric Company

Tenvirat ve Havayic-i Beytiyyede İstimal ve Muaddit Vasıtasıyla Mesaha Edilen Kuvve-i Elektrikkinin Beyanına Dair Abonman Senedi, 1926.

تورک آنونیم الکتریک شرکتی
مشترک داتر مسمی

تنویرات و حوایج بتییهده استعمال و معدد واسطه سیله مساحه ایدیان قوه الکتریکیه تک
یعنه داتر آبونمان سندي شرایط خصوصیه سی

تأسیسات نومروسی
آبونمانک اسمی
بنانک نوعی
طلب ایدیان اعظمی قدرت : وات
آبونمانک مدت دوامی
تعدد ایدیان اصغری استهلاكات سنویه : کیلووات ساعت
استهلاكات اوزرندن آوالس لیرا
تأدییه ایدیان حصه نصیبه لیرا
شعبه مصارفی شهری بدل ایجار غروش
ممددک شهری بدل ایجاری غروش
(بودلات اجاره مرسته شرکت طرفندن تعیین و حکومت طرفندن تصدیق ایدیلور)

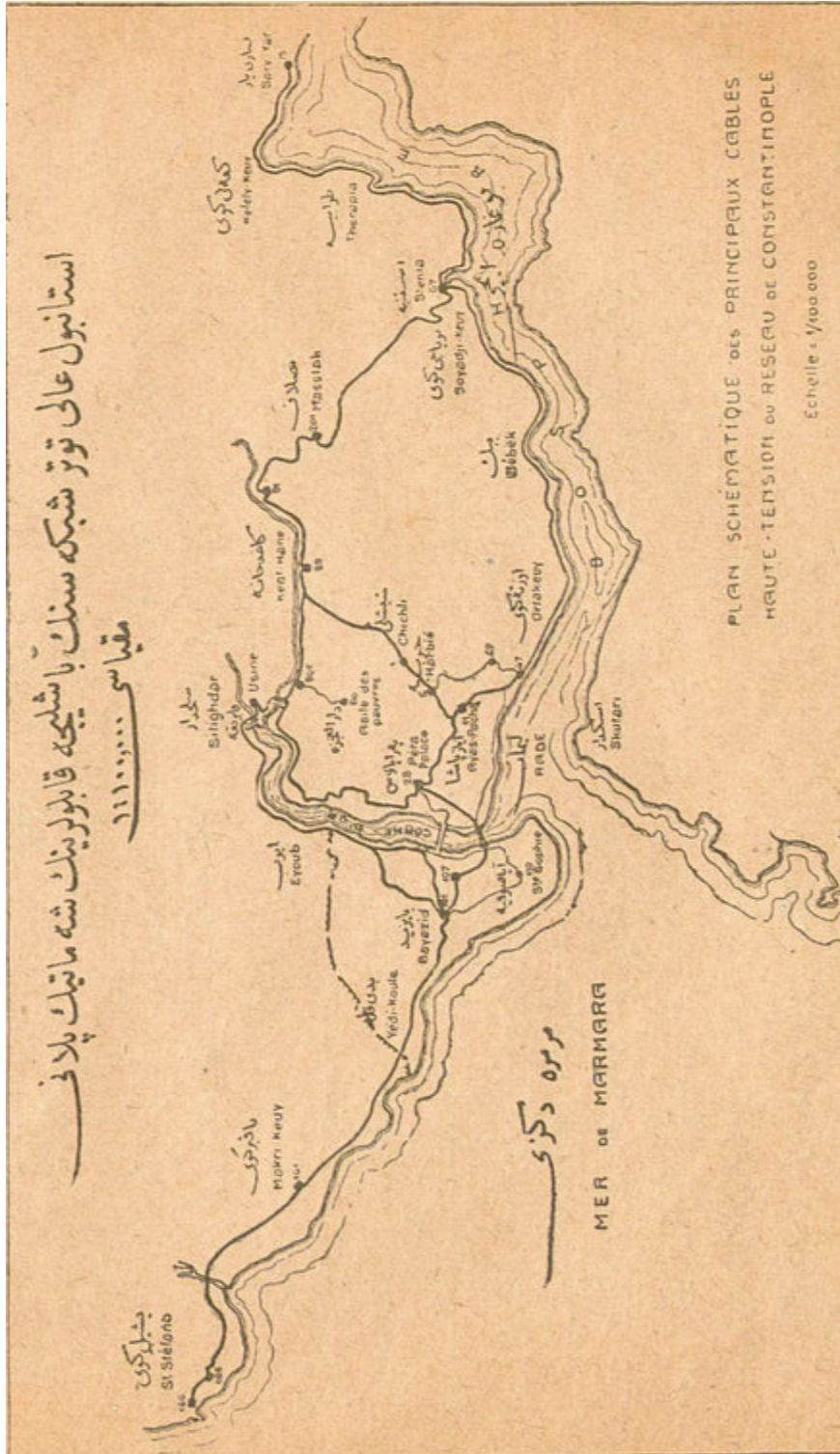
شرائط خصوصیه

آونیه اشبو آبونمان سندي امضا ایتمک بالاده مندرج شرایط عمومی و خصوصیه سی مطالع ایدرک بالجه استکمالی و شرایطی
قبول ایتدیکنی بیان ایلر .

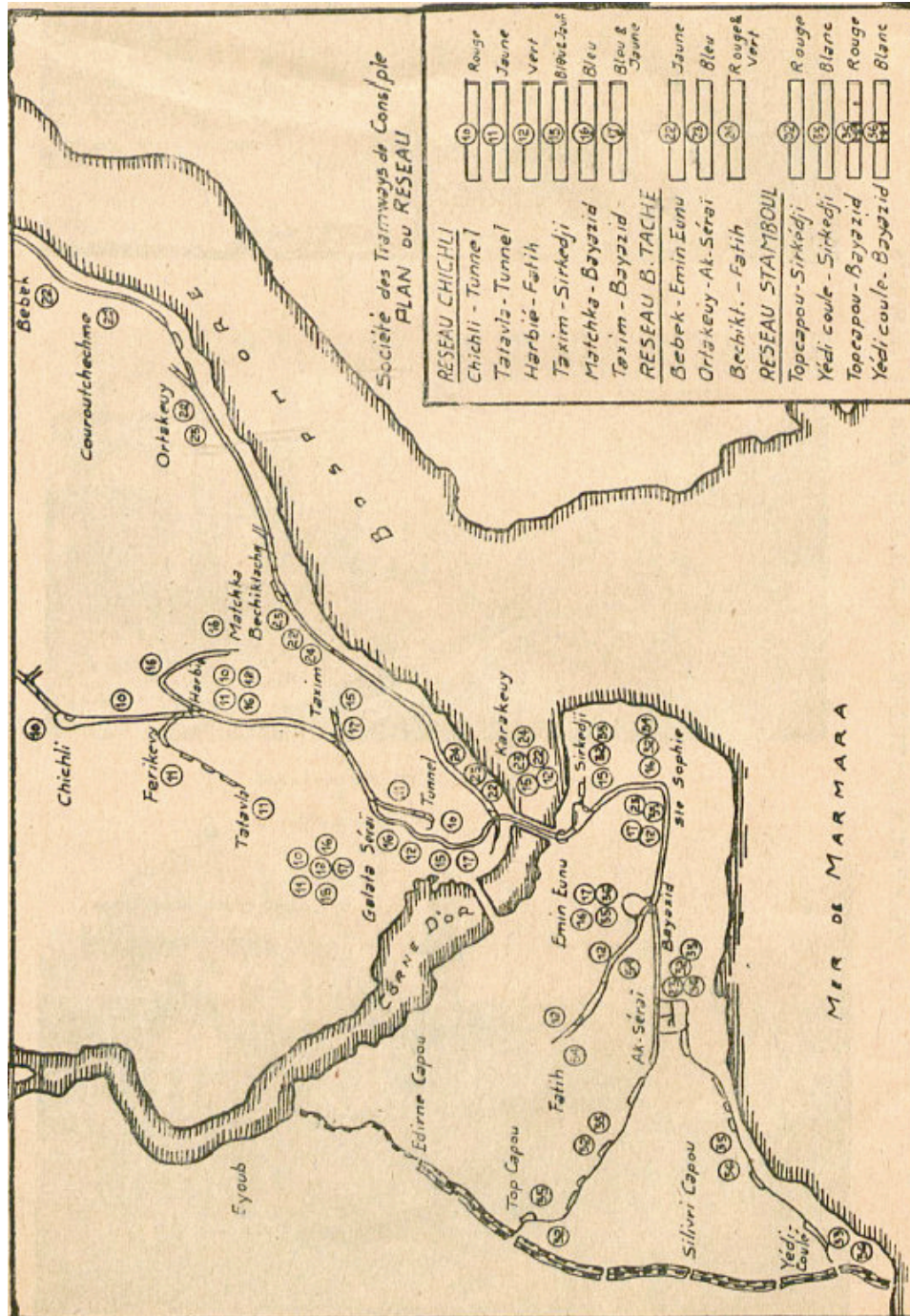
استانبول ۱

Appendix D. Related Maps from *Ameli Elektrik*

Ameli Elektrik, issue 5 (April, 1926)



The Layout of the Main Cables of Istanbul's High-Voltage Electric Network



The general plan of the Istanbul electric tram network.

Appendix E. Related Pages from *Ameli Elektrik*

Ameli Elektrik, issue 5 (April, 1926)



A serial short story named as “Küçük Selma Elektrik Sayesinde Zevcenin Kalbini Tekrar Nasıl Elde Etti” (How electricity helped little Selma rewon her husband’s heart) started to be published from the fifth issue onwards in *Ameli Elektrik*.



بختيار اولمق ايجون

تأسيسات الكترقيه تورك آنونيم شركتده

ساتيه

موجود اولان الكترق آلترلندن بكندكاريكزي سچوب
برای تجربه ویا ویرمسی به ساتین آلیکنز

مركز ادارهسی : بك اوغلی ، جاده كبرده نومرو ۲۵۵ ،
تلفون : بك اوغلی ۹۱۴
آقلاسی : بك اوغلیده تونل میدانده ، مترو خاننده
برنجی قات - تلفون : بك اوغلی ۱۱۶۱
باب عالی جادهسی نومرو ۶۰ ،
تلفون : استانبول ۱۲۸۸
وزنه جیار جادهسی نومرو ۶۴ ،
تلفون : استانبول ۳۰۵۷

شعباتی :
طومسون هوستون ، آنه كه ، ترما (اسویچره) كچی
اوروپانك الك مشهور فابریقه لری معمولاتندن هر نوع
اجهزه بیتیه و توالت ادواتی

فرصتی قاجیرمایکنز



An advertisement page from the *Ameli Elektrik* journal presenting various electric home appliances provided by Tesisat-ı Elektrikkiye Türk Anonim Şirketi (SATIE).