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Water crossing utopias of Istanbul: Past and future

Aslı ÇEKMİŞ GÖRGÜLÜ[1], Işıl HACIHASANOĞLU
Istanbul Technical University, Faculty of Architecture, Istanbul, TURKEY

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Abstract:
Throughout history transportation projects showing endeavour to give their users full access have been regarded as utopias. Among them those related with water – crossing the water or channel crossings – are the most splendid in terms of showing feats of engineering and architectural innovation.

Cities with a dynamic topography experience difficulties in transportation. Istanbul is one being built on two continents – a city with a strait and firth. As a consequence, crossing the water gains more importance in terms of sustainable urban transportation. This paper particularly focuses on the water crossing utopias of Istanbul by looking at the official projects beginning with the Ottoman period up until today. This study encompasses the bridges, tunnels and canal projects, excluding transportation by watercrafts. Proposals are listed under three main headings; 1. Crossing the Golden Horn, 2. Crossing the Bosphorus and 3. Supporting the waterway for the Bosphorus.

Bridges over the Golden Horn have changed throughout the years in line with developments in technology. Among them, the Galata Bridge has had a significant role in terms of connecting the royal and later historical peninsula to the rest of the city. Bridge and tunnel proposals for the Bosphorus during the Ottoman period were spectacular utopias, but were never realized. Today, two bridges connect Europe and Asia, whilst a third is currently the focus of much debate. The current tunnel project Marmaray, of which construction is almost finished, has been constructed along the same route as proposed a century ago. This railway tube tunnel and the proposed Golden Horn metro bridge are two fundamental parts of an uninterrupted rail system network in İstanbul. It is, only the canal projects that could not come to fruition, which are rather big-scale projects and prompt a greater urban transformation.

Keywords: *Watercrossing, transportation, utopia, Istanbul, bridges, tunnels, canals*

1. Introduction

Located alongside the Bosphorus and surrounding the Golden Horn, Istanbul is the most crowded and the most important city in Turkey in economic and cultural terms. The Bosphorus creates a crucial passageway connecting the Marmara Sea and the Black Sea while dividing the city

established on two continents, thereby separating Continental Europe and Asia from one another. Transportation in the city is an arduous and problematic task due to two main phenomena: (1) population growth and urban sprawl – need for effective transportation modes and networks, (2) dynamic topography – need for uninterrupted transportation which effectively embraces the urban geography. That Istanbul is a city founded on a major seismic belt has also made transportation a more challenging issue.

Solutions for the transportation problems that aim to cross the water are a prerequisite for a sustainable transportation system in Istanbul. Throughout the years, quite original and diverse projects have been devised and several utopias produced. In general the suggestions focus on three main issues relating to water transportation in Istanbul: 1. Crossing the Golden Horn 2. Crossing the Bosphorus, and 3. Supporting the waterway for the Bosphorus. This article covers Istanbul's interrelation with water and maritime transportation. Within this scope, the study deals with utopian projects suggested in the past and today with a methodology based upon literature review. Proposals during the Ottoman period when initial projects emerged (after 1500 and especially in the 19th century) are presented as 'historical utopias' whereas the projects devised later (especially in the second half of the 20th century) are presented as 'current utopias.' This article addresses only the official projects which the government has actually built or planned to have built but not yet implemented. Initiatives by private persons or corporations are excluded.

This study makes an analysis of the transportation projects in terms of both architectural and urban quality. The historical and current utopias are considered important with regard to their relation with the present and the future. Therefore the study presents two significant arguments: the first one is observing how water transportation has changed in technological, visionary and urban terms throughout history, and the second is recognising the potentials of current suggestions which define life in the city as well as its future.

2. Transportation and utopia

"Utopia" was coined by Thomas More (1516) as the title of his book describing a fictional island in the Atlantic Ocean. The word meant both 'no place' and 'good place.' However, utopia today as a container term does not only refer to an ideal community or society but it encompasses solutions to problems in almost every discipline. For Trahair (1999) utopias invite "hopeful visions, imaginative thought, plans, plots, schemes and blueprints for the future." While utopias are fully concerned with the political, social and legal aspects of the system, they are highly related with the physical setting in which the society functions. Architecture always functions with a concept of progress that is naturally linked to utopian discourse. The discipline of building may be regarded as the strongest site of imagining the future – the world to come (Johnson, 2007). Thus, architecture and urban design are inevitably the topics of utopian thought. And, two fundamental questions, and fields accordingly, arise in literature: how the architecture could be a utopia itself to create an ideal society, and how the illustrated utopia of an ideal society could be materialized.

Utopias which describe the city and the architecture as the spaces of an ideal society mostly provide details about transportation as well. This is one

of the two different approaches that may be brought forward as to the relationship between utopia and transportation. ***(1) Transportation in utopia;*** is a proposal about how transportation would be as part of a good (future) life and environment. For example, transportation is described impressively in Sci-Fi literature and cinema inspired by techno-utopia as a part of future life; such as teleportation, time-machines, self-driving or flying automobile technologies.

Transportation has also been included in the utopias of architects and city planners throughout history. The Tower of Babel designed in the 8th century B.C. may be cited as the first example in this sense because the tower constructed with the aim to link the earth with the sky was imagined as a bridge starting from the earth and reaching the sky. As a matter of fact the idea of connecting the building to the sky had become so important that the Tower of Babel was illustrated as if it had no ending in many drawings and gravures (Figure 1).

Transportation had a crucial role in the social setup of the city in utopias described or drawn in the Ancient Ages, Middle Ages, Renaissance (ideal cities) and subsequent centuries up until the Industrial Revolution. The solutions for transportation with the scale and requirement in the foreground were designed as paths integrated into city plans. After the industrial revolution new materials and technologies reflected the building and city utopias and this process was influential on transportation as well. Particularly futuristic and constructivist approaches encompass diverse suggestions for transportation. In Antonio Sant'Elia's "Citta Nuova" (1912-1914) building groups and monolithic skyscrapers comprised of large-scale masses and platforms were linked to one another with terraces, bridges and overpasses. Transportation fit for the industrialized and mechanized city of the future was emphasized. Differently, "Flying City" by Georgy Krutikov (1928) was designed as a reaction to unfavourable incidents in industrial cities. The earth was left completely green and the city was settled with such systems hung to flying craft, and airborne transportation was provided via flying modules driven by individuals. Similarly, mobile, modular and techno-utopic projects of Metabolism, Archigram and GIAP addressed transportation within their own context during the second half of the 20th century. Ecologic and natural design approaches such as Arcology that emerged in the late 20th century aimed to avoid the loss of energy by suitable transportation. Transportation systems establishing the main city axes to provide for pedestrian circulation to reduce the roadways were popular. In the 2000s, with cities still expanding and becoming more crowded, transportation has become

Figure 1. *The tower of Babel ("The Confusion of Tongues," engraving by Gustave Doré (1865)).*

an important point in ecologic and social utopias for a problem-free city life and a better protected environment.

(2) Transportation as utopia is the other approach for a utopia-transportation relation; that visionary transportation projects are proposed for better access or to solve an existing or potential transport problem. Without doubt one of the biggest transportation utopias that human-beings have realized is artificial watercourses such as: Suez, Panama and Kiel Canal which reduce thousands of kilometres of seaway. As well constructing kilometre long tunnels under the sea is another utopic idea, which also came to fruition; e.g. the railway tunnel which links the United Kingdom to France passing through the English Channel.

In terms of urban life, transportation is vital as it allows people to carry out the diverse range of activities in cities that consist of spatially separated, highly specialized land uses. Urban transportation depends on some key concepts (Hanson, 2004) such as; 1. Accessibility - of places or of people - as the number of opportunities (activity sites) available within a certain distance or travel time, 2. Mobility as the ability to move between different activity sites and, 3. Equity as the degree of people's travel patterns that are outcomes of choice or constraints. Transportation as a utopia itself is linked to a better urban life and also urban development. For Banister and Lichfield (1995) spatial and economic development of cities are highly related with the quality and quantity of the transport infrastructure. In general, transport projects or utopias are expected to be capable of meeting many requirements with some of them listed as follows:

- Establishing a connection between places; providing accessibility; being engaged with people, animal and goods transportation.
- Creating alternatives for a challenging transfer axle or finding/establishing different ways for improvement.
- Making transfer more extensive, faster, more efficient, more comfortable, safer, cheaper and better integrated.
- Making transfer more public and equal. Establishing systems which can be used effortlessly by all rather than single, distinct or privileged systems; increasing the mass transportation or transportation capacity.
- Automating transfer, being able to integrate it with technology (spending less manpower and energy, making transfer with more machineries and electrical power)
- Making transfer more sustainable (Black, 1996; Whitelegg, 1993); which is less environmentally harmful and energy efficient.

An efficient system of urban transportation operates when there is intermodality and integration between the different modes of transport. The use of water as an urban transport mode is vital especially for cities on water such as New York, Hong Kong and Istanbul. Waterborne transport is a part of urban transportation including air, cable, rail and road. Bridges and tunnels, on the other hand, are alternatives of waterborne transport, which adapts guideways to water crossing. Within the scope of this paper bridges and tunnels are covered as the water-based forms of transport excluding watercrafts and their technology, as not being specifically architectural or engineering projects. Additionally canal projects proposed for Istanbul are attached to the scope of the paper, since they are spectacular utopias as artificial watercourses, creating waterways for transportation.

In brief, the projects which aim to connect pieces of land or occasionally to cut across them, and which are mostly integrated with advanced engineering and design approaches can each be considered as a transportation utopia. The aim of this article is to look into those projects in the history of Istanbul and support proposals for the future.

3. Water crossing utopias of Istanbul

This section presents a case study including historical and current water crossing utopias of Istanbul. Three titles are set in order to distinguish between the diverse transport projects presented; those that aim to cross the Golden Horn and the Bosphorus, and those that create artificial watercourses. Projects are examined in terms of their period, purpose/functionality, design, capacity, and also construction process and technology.

3.1. Crossing the Golden Horn

Istanbul started to rapidly extend into Galata, Üsküdar, Kadıköy and Bosphorus villages outside the city walls in the 19th century. Thus the necessity of crossing the Golden Horn to connect to the administration centre caused transportation systems to develop (Çelik, 1993). The demand which caused the sea traffic in the Golden Horn to increase was met by both a more frequent number of voyages and higher capacity use along with enhanced vessels. The idea of a bridge, a more effective way of crossing the water in terms of transportation, came true for the Golden Horn in 1836.

However, according to sources a bridge was built over the Golden Horn much earlier than that. Some sources suggest the first bridge was built at the time of Justinian (527-565) while others suggest a bridge colloquially known as “Kamiloye Phyra” existed even before that (Evren, 1994). As a matter of fact it is said the Justinian Bridge was built as an arched stone bridge over “Kamiloye Phyra”. Unfortunately the construction year, location and description of either bridge are not definite. In addition, various sources suggest a bridge was built over the Golden Horn by Mehmet II at the time Constantinople was besieged and conquered (Evren, 1994). Details about the location where the bridge was built and what kind of bridge it was are also inconsistent; some documents suggest it consisted of galiots tied side by side whereas some suggest it consisted of barrels and chests put side by side. However the historians agree the bridge built for military purposes was unstable and short-lived because of the construction method.

The idea of constructing a bridge over the Golden Horn during the Ottoman period emerged in the early 16th century. In 1502 Leonardo Da Vinci put forward the vision of ‘constructing the biggest and most beautiful bridge the world would ever witness’ over the Golden Horn with his drawings and shared the project with Sultan Beyazıt II (Da Vinci Bridge Documentary). The bridge suggested by the famous artist was designed to be 365m (600 braccia) in length and 24m (40 braccia) in width at the narrowest part and 43m (70 braccia) high from water level; reaching from Vera to Constantinople (Figure 2). The bridge was meant to connect Eminönü to Galata while giving free passage to small boats from below and not disconnecting the link between the Golden Horn shores, the Marmara and the Bosphorus. This approach also applies for the bridges constructed subsequently over the Golden Horn. Da Vinci also mentioned in his letter to the Sultan that he wanted to build a windmill, an underwater pump and a

suspension bridge over the Bosphorus in addition to his suggestion for building a stone bridge over the Golden Horn (Babinger, 1952). However none of the projects devised by Da Vinci came true. Still, Beyazıt II had a very strong desire for constructing a bridge over the Golden Horn and made a request to the famous artist Michelangelo to that effect in subsequent years (Ismail, 1931). But it is known that suffocated with the pressure put by the Pope, Michelangelo who was thinking about going to Istanbul to build a stone bridge never got to Istanbul.

After unsuccessful attempts in the 1500s the Golden Horn bridge project was postponed further for several centuries. The first bridge during the reign of Mahmut II in 1836 was constructed between Azapkapı and Unkapanı and was called "Hayratiye" or "Cisr-i Atik". The reason for building the bridge at that place was Tersane-i Amire (Imperial Shipyard) located at Azapkapı (Çelik, 1993). Based upon the engravings by the artists who visited Istanbul it is observed that the wooden bridge had gateway sections allowing for small vessel transportation (Figure 3). Also, the bridge could open by replacing the parts when necessary.

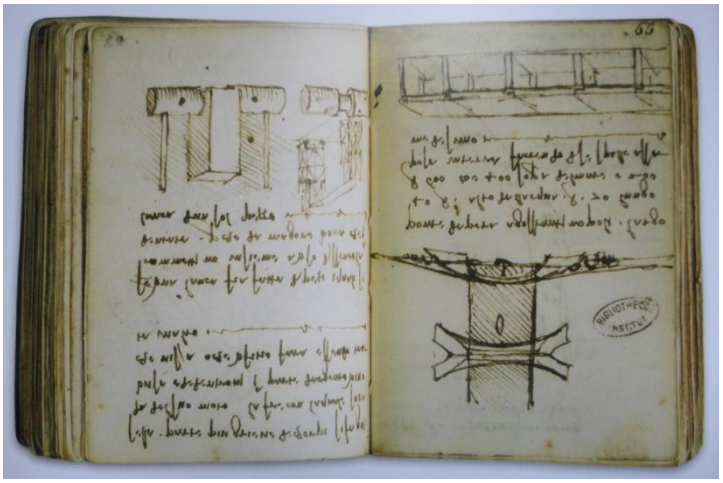

Figure 2. *Galata Bridge by Da Vinci. Drawings of Leonardo for Galata Bridge 1497-1502 (Manuscrits et imprimés. Bibliothéque de l'Institut, Paris).*

During subsequent years Karaköy developed as a centre of trade which made the connection between this district and the city centre more important. Additionally, the Sultan began to stay in Beşiktaş and the Bosphorus palaces as well as Topkapı Palace, where the population in Beyoğlu and Beşiktaş increased accordingly. Also horse carts imported from Europe became widespread. Thus a new bridge known as "Cisr-i Cedid" was constructed between Eminönü and Galata in 1845 (Galata Köprüleri, IA). The design of the wooden bridge, approximately 500m in length, built on pontoons with sections allowing for water transportation was quite similar to the previous bridge (Figure 4). In 1863 it was replaced with a new wooden bridge because the first Galata Bridge which was almost twenty years old was worn out, and unable to meet the heavier traffic. Furthermore there was also a quest to impress and show-off to several famous persons, including Napoléon III, invited to the opening of Sergi-i Osmaniye in Sultanahmet

Figure 3. *1836 Hayratiye Bridge (Cisr-i Atik) (Bartlett, William Henry. In "The Beauties of the Bosphorus." Pardoe, Julie (1838)).*

(Evren, 1994). The new bridge was wider and stronger with two less inclined sections allowing small vessels to pass.

Replacement of the two wooden Golden Horn bridges with permanent iron structures in the light of new technology and materials was put forth before long. In 1869 a British company developed a project for the Galata Bridge. Just as the project which had been put into practice was about to be completed in 1871, the company wanted the bridge to be moved to a place between Unkapanı and Azapkapı due to economic reasons resulting from poor and unsuitable ground conditions. And another similar iron bridge was suggested for Galata (Çelik, 1993). Therefore both the 1863 Galata Bridge and 1836 Unkapani Bridge, which was already quite worn-out were replaced with new bridges supported by iron pontoons; Unkapanı Bridge and Galata Bridge were commissioned in 1872 (Figure 5) and 1878 respectively. Those bridges could also open to allow vessels to pass. The bridges with a roadway in the middle had side pedestrian walkways.

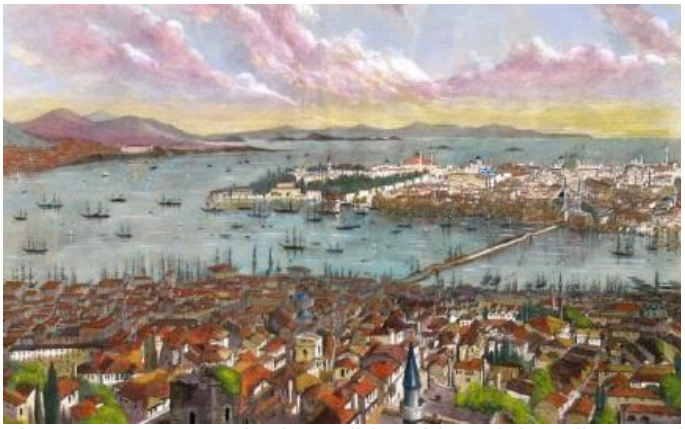

Figure 4. *1845 Cisr-i Cedid Bridge (The Illustrated London News (1853)).*

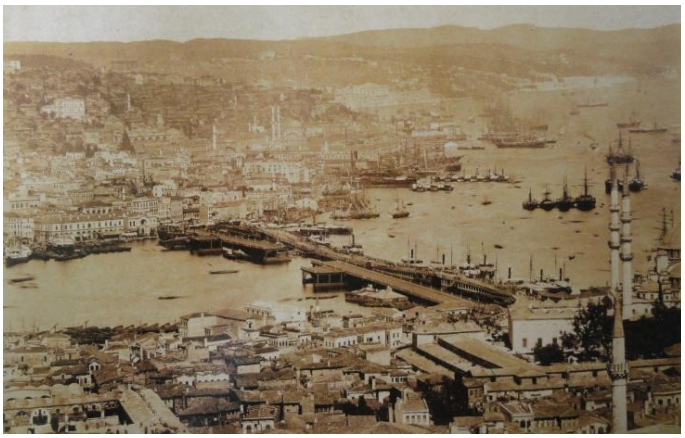

Figure 5. *Iron Galata Bridge in 1875 and 1880 ((first) 1863 wooden Galata bridge is replaced by the new iron bridge (Anonymous, 1875) M.Sinan Genim archive; (second) by Pascal Sébah, 1880).*

The 20th century began with new projects for the Golden Horn. Three suggestions were devised to replace the Galata Bridge in 1902; all of them were of foreign origin but none of them was put into practice (Çelik, 1993). The first project from Paris drew attention because of its eclectic style. The bridge with a lattice iron structure consisted of three sections, each ending with minarets connected to one another with balconies (Figure 6). The platforms on the sea level could be accessed from the stores located on the water's edge close to Karaköy and Eminönü, thereby creating a public pier and market area on the platforms. Another Paris-oriented project was drawn by Joseph-Antoine Bouvard. In comparison, it had a more European style than the previous suggestion. Monumental towers

were suggested for those points where the bridge stepped on to land. And the third project was developed by a German company. Even though sultanate put his signature to this design, the construction was cancelled before it started. A time of domestic problems, the Sultan was dethroned and the second Constitutionalist Era begun.

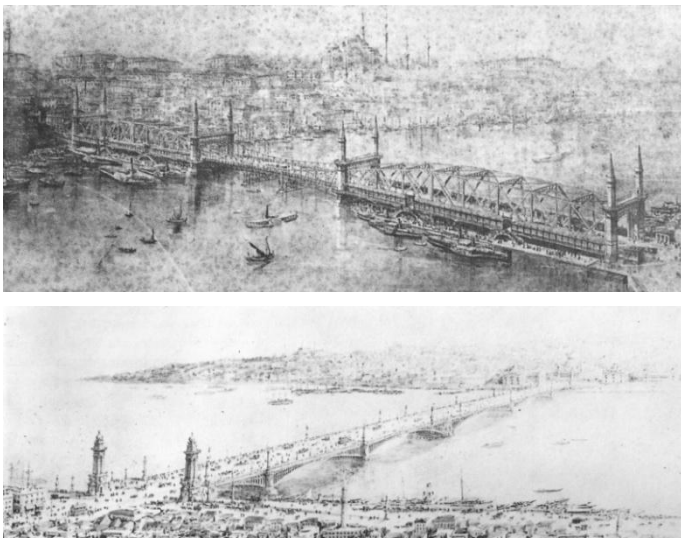

Figure 6. *The proposals for Galata Bridge in 1902 ((first) The first project from Paris, IA.; (second) Project by Joseph Antonie Bouvard, IA).*

Another project by the same German company (MAN AG) for the Galata Bridge came true in 1912. The bridge where steel construction materials and advanced technology were used allowed the tram line to pass through for the first time (Figure 7). The bridge designed in a parabolic shape consisted of twelve parts and was 470m in length (Ilter, 1988); additionally a part of the bridge, as much as 67m can rotate 180° to allow vessels to pass through.

With the construction of the new Galata Bridge in 1912 the old iron bridge (1878) was carried to the place between Unkapanı and Azapkapı, and replaced the 1872 Unkapanı Bridge, where it served more for a period of more than 24 years. In 1927 several projects, one including a suspension bridge proposal, were developed for the Unkapanı Bridge now quite worn-out despite the reinforcement efforts made (Evren, 1994). In 1936 the bridge broke into pieces and became unusable as a result of a powerful storm. So in 1940 a fourth bridge was constructed between Unkapanı and Azapkapı; “Atatürk Bridge” was 477m in height and 25m in width standing on 24pcs of steel pontoons (Unkapanı Köprüleri, IA). In the 1970s an agreement was made with a Japanese-German company for a new bridge project. The fifth bridge was 995m in length, 31m in width and 22m high from sea level (Evren, 1994). The bridge which is still in use today having

Figure 7. *1912 Galata Bridge ((first) Photograph, anonymous. (second) Postcard, anonymous).*

Figure 8. *1992 Galata Bridge (The old left and new right bridge (Tuğrul Acar)).*

Figure 9. *Golden Horn Metro Bridge (The model of the bridge, IBB. (on the first figure; together with Unkapanı Bridge)).*

had much reinforcement and extension work carried out at certain times has become a very important and busy highway in the city.

The 1912 Galata Bridge became worn out over the years due to increased traffic and was reconditioned in the 1970s. The ferry ports that had been a part of the bridge since the time of Şirket-i Hayriye were removed and several shops under the bridge were closed. The bridge created pollution in the Golden Horn not allowing the water to flow smoothly because the gap between the pontoons were so narrow (Galata Köprüleri, IA). In the 1980s it was agreed the Galata Bridge would be replaced with another new bridge. The old bridge would be protected with regard to its historical and cultural identity (Eski Galata Köprüsü Sempozyumu). However, in 1992 the bridge was largely damaged by a fire which unexpectedly broke out at a shop, the parts of the bridge that survived the fire were carried to the back of the Golden Horn as they became unusable. The Galata Bridge of today for which the construction works started in 1987 was commissioned in 1992 (Figure 8). The new project was a massive bridge designed with a pile foundation system, a different technology (Özen, 2011). Ships can sail under the drawbridge span that provides an 80m opening.

Beside those bridges that are still in use today, a current transport utopia is the Golden Horn metro bridge-a rail system connected to the underground. It is estimated that the Golden Horn metro bridge project launched in 2009 will be completed in 2013. When the construction work is completed, the underground line from Hacıosman, going through 4. Levent, Taksim and Şişhane, will reach Yenikapı transfer station crossing the Golden Horn.

The Golden Horn metro bridge is being constructed approximately 200m south of the current Unkapanı Bridge. The project consists of a 387 m long cable supported bridge and a 120 m long swing bridge (Figure 9). The cable supported bridge, with its 64.5 m high pylons, is supported by a single plane and will be constructed as a free cantilever outwards from the pylon (IBB). The 120 m long mobile swing bridge can rotate in order to allow ships to pass through as with the other bridges in the Golden Horn. Footbridges on either side are connected to the main bridge deck by cross bracings.

To sum up Chart 1 it will be helpful to see the history of the Golden Horn crossing by the Unkapanı and Galata Bridges and also the new metro bridge. In addition, the Haliç Bridge, which is a highway bridge between Ayvansaray and Halıcıoğlu, might be attached to this projects' data. It is in the far northern part of Haliç and began service in 1974 as the adjunct to the first Bosphorus Bridge and the ring roads projects.

3.2. Crossing the Bosphorus

The idea of crossing the Bosphorus by means of a bridge became a current issue for the Ottoman for the first time with the Hamidiye Bridges project. In 1900, during the reign of Abdülhamit, F. Arnodin, a French civil engineer suggested a connection between Sarayburnu-Üsküdar, and Rumeli Hisarı-Kandilli (Yılmaz, 2010a). Although the two bridges were proposed by the same designer during the same period, they were quite different in terms of architectural style (Figure 10).

The bridge between Sarayburnu and Üsküdar seemed more aesthetic compared to the other; the project stood close to the contemporary examples in Europe

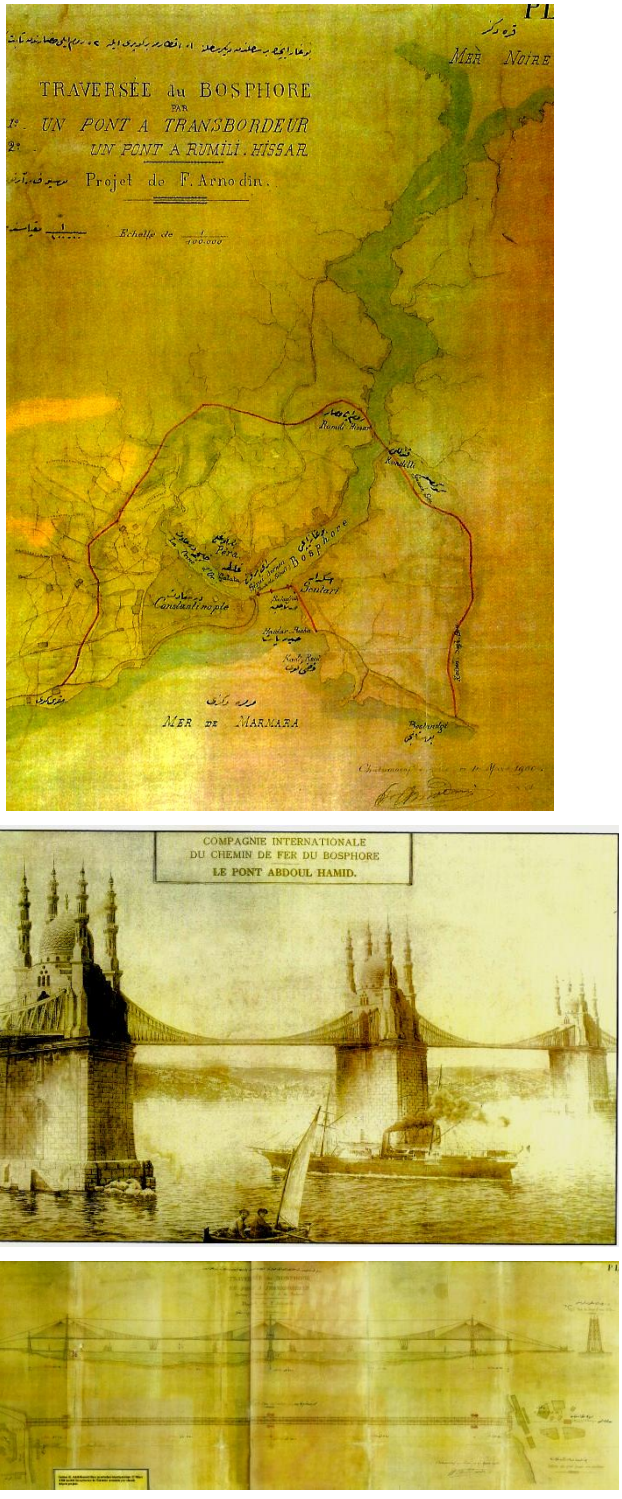

Figure 10. *The Hamidiye Bridges (first) The locations of bridges; (second) Sarayburnu-Üsküdar; and (third) Rumeli Hisarı-Kandilli. ("Boğaziçi'ne İki Köprü: Sultan İkinci Abdülhamid Han'ın Cisr-i Hamidi (Hamidiye Köprüleri) Projesi," Osmanlı'nın Muhteşem Projeleri 1. Çamlıca Yayınları, Istanbul, 2009).*

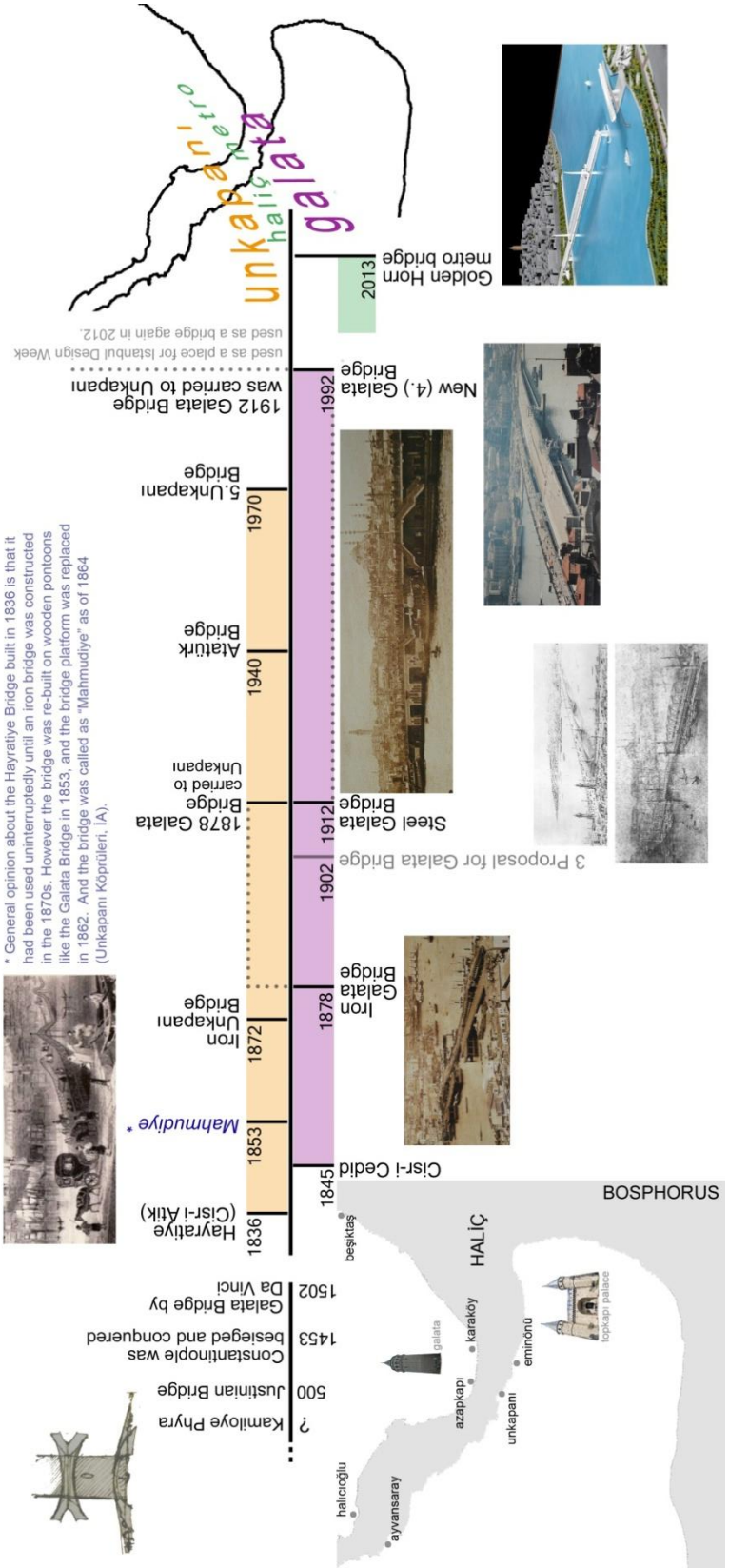

Chart 1. *The history of the Golden Horn Bridge.*

with its steel construction. Five piers would bear the bridge which was intended to cross over a sea line of 1700m. A cable car with wagons to be hung from below the bridge, 50m high from sea level, was designed to carry passengers. The second bridge between Rumeli Hisarı and Kandilli had separate paths and steps for vehicle and pedestrian traffic, and also for a railway. Railway stations were suggested to be put in Bakırköy and Bostancı in order to build a rail system circulating outside the city. Also this network was considered to connect to the Baghdad railway line and serve as an important part of the line from Medina to Vienna. The piles of the bridge were in the form of very large massive blocks each with a building on it terminating with a dome and minaret in an African architectural style. Between those masonry supports the bridge platform was hung with steel cables. Additionally, guns were settled on bearing columns considered to be used for military defence (Yılmaz, 2010a). As built close to the imperial borders, the bridge would keep the Bosphorus transit under control so it would also fulfil monitoring and defence functions like a fortress or seawall.

Crossing the Bosphorus by means of a bridge was a utopian approach in the Ottoman Empire. However, passing through the sea- not spanning was a much more impressive idea for that period. The first suggestion for a sub-sea tunnel was offered by Eugène-Henri Gavand, engineer of the tunnel between Galata and Pera (Yılmaz, 2010a). Gavand presented to the Ottoman Government a sub-sea tunnel project between Sarayburnu and Üsküdar in 1876. Another sub-sea tunnel project was put forward by French S. Préault Railways Company for the same route in 1891. This design aimed at rail transport from under the sea with the tunnel carried by piles fixed to the ground covering a distance of appropriately 800m under the Bosphorus water (Figure 11).

The construction of another sub-sea tunnel between the Anatolian (Üsküdar-Salacak) side and the Rumelian side (Yenikapı-Sarayburnu) came to the forefront once again in 1902. This latest design belonged to three American engineers–Frederic E. Strom, Frank T. Lindman and John A. Hilliker. The sub-sea tunnel suggested for rail transport was carried by sixteen large piles fixed to the sea ground (Figure 12). It was anticipated that it could operate three-wagon trains - two wagons for passengers and one wagon for goods - and to connect the railway line to Haydarpaşa. In conclusion, all the bridge and tunnel projects for transportation going back to the early 20th century were never realized due to World War II and the collapse of the Ottoman Empire.

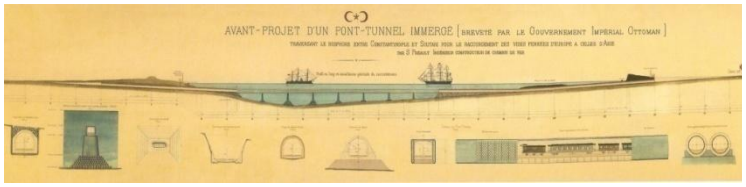

Figure 11. *The sub-sea tunnel project By S. Préault Railways Company. ("Boğaziçi'ne Tüp Geçit: Sultan İkinci Abdülhamid Han'ın Tüp Geçit (Tünel-i Bahri) Projeleri," Osmanlı'nın Muhteşem Projeleri 1. Çamlıca Yayınları, Istanbul, 2010)*

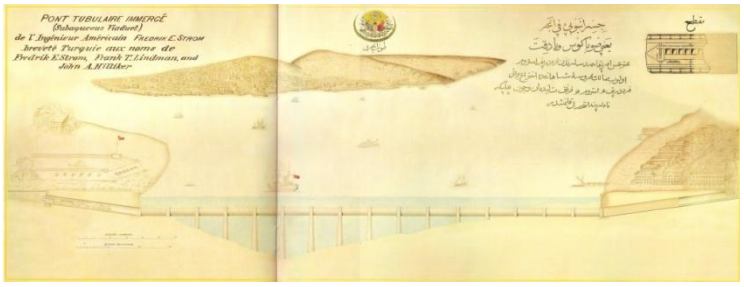

Figure 12. *The sub-sea tunnel project By Frederic E. Strom, Frank T. Lindman ve John A. Hilliker. ("Boğaziçi'ne Tüp Geçit: Sultan İkinci Abdülhamid Han'ın Tüp Geçit (Tünel-i Bahri) Projeleri," Osmanlı'nın Muhteşem Projeleri 1. Çamlıca Yayınları, Istanbul, 2010)*

Throughout the years, the necessity to cross the Bosphorus had become a crucial issue in Istanbul. Transportation by steamboat and fast ferry could no longer meet the demand by the number of citizens and the gradually increasing motor vehicles to pass. Within the development policies of the new state, a contract was signed with Freeman Fox and Partners, a British company, for the first bridge to be built over the Bosphorus in 1968. The construction of the Bosphorus Bridge which started in 1970 was completed in 1973 (Figure 13). With a total length of 1560m the suspension bridge is 64m high from sea level. The bridge platform formed by welding sixty deck slabs with a hollow box section to one another has six traffic lanes (KGM).

The Bosphorus Bridge initiated a new era in terms of urban transport. Transportation between different points within the metropolitan area redefined distances in terms of time. The bridge and the periphery roads created settlement potentials and caused decentralization of the city depending upon increased private automobile ownership (Tekeli, 1992). During the following decade the bridge went quite beyond the estimated car/day capacity. A second bridge was recommended with a view to eliminate the traffic congestion on the bridge, reduce the traffic flow density and connect the European-Anatolian highways to a higher capacity periphery road.

The second bridge, “Fatih Sultan Mehmet Bridge,” the construction of which started approximately 5km north of the first bridge in 1985 was commissioned in 1988. The bridge quite similar to the first bridge in terms of design and technology has a span of 1090m and is 64m high from sea level at the highest point with bridge deck slabs around 40m in width. Fifty five bridge deck slabs with an aerodynamic hollow box section provide for the bridge access (KGM). As a result of this bridge, population in the north of the Anatolian side that has a link to the bridge and TEM highway started to increase, and the fields along the periphery roads became convenient locations for prestigious housing estates. Moreover, Levent and Maslak axles that emerged as business centre districts were first connected to the Anatolian side and then to Sabiha Gökçen Airport.

The Bosphorus bridges have become the most important connection for vehicle transportation in Istanbul. Even though the two bridges are characterized as highway bridges today, pedestrian access on the bridges was considered initially. Both bridges had a path reserved for pedestrians, but access was prohibited later due to an increase in suicide attempts. Neither of them have a railroad or a link to current/potential city rail systems contrary to the projects suggested during the Ottoman period.

Figure 13. *The first Bosphorus Bridge (Photograph, anonymous).*

Recently the suggestion for a third bridge has become a current issue with a view to reduce traffic flow on the current bridges and to stabilize the

traffic to a desired density and flow in the city. But the professionals believe that the bridge would increase the traffic and congestion and trigger new problems rather than creating a solution, and therefore object to this proposal. Arguments also increased with speculation about the location and the design of the bridge as well as whether it should be constructed at all. But in May 2012, the Minister of Maritime, Maritime Affairs and Communications introduced the "Northern Marmara Highway Project" also covering the construction of a third bridge and presented the first draft project (TRT Haber). This suspension bridge between Rumeli Kavağı-Beykoz estimated to be complete in 2015 features a design similar to the other two bridges over the Bosphorus. It will also cross the sea in a single span due to security concerns. The Minister underscored that the bridge would have both highway and railway transition and when it was completed it would be the longest suspension bridge with a rail system in the world.

To sum up the idea of crossing the Bosphorus by means of a bridge was designed experimentally during the Ottoman period in the early 20th century whereas it became a reality with more developed proposals along with technological advances during the second half of the same century. The construction of a new bridge is still regarded as a solution for the issue of transportation in Istanbul.

The idea of crossing the Bosphorus through a sub-sea tunnel is about to come true with the "Marmaray" project, the construction of which started in 2004. The project that began in the 1980s with several surveys is recognised as the 'Istanbul Strait Rail Tube Crossing and Commuter Railway Upgrading' project that will be integrated into the current and future rail systems in the city. Thus represents a significant phase in the idea of creating an uninterrupted rail system network in Istanbul. The Marmaray Project between Sarayburnu and Üsküdar matches up with those tunnel routes proposed during the Ottoman period. The project suggests a system where the foundation, hydraulic and seismic engineering principles are combined with advanced technology (Figure 14).

Figure 14. *The Marmaray Project (The route (red line) (http://tr.wikipedia.org/wiki/Marmaray), and immersed tube tunnel (http://www.marmaray.com.tr/) – Black belts represent the current Bosphorus Bridges).*

The immersed tube tunnel is 1.4 km in length. Two integrated tubes which will allow for one-way passage of each train are

completely buried under the bottom of the sea. The upper part of the tunnel will be covered with backfill in order to ensure stability and protection (Marmaray Project official web site). The project also experiences the challenges of being situated in the Bosphorus in terms of construction technology. The challenges include the current, heavy vessel traffic between the Black Sea and the Marmara, non-homogenous pattern of the ground in the Strait and the fault line close to it. Other special circumstances about the project have emerged at the stations of the rail system being constructed in the historical city. That some ruins from the 4th century were discovered during the excavation works in Üsküdar, Sirkeci and Yenikapı has required archaeological surveys to be carried out and new actions to be taken in these regions.

3.3. Creating an artificial watercourse (Canal projects)

With its unique geography Istanbul has a strait, that is to say a natural canal, which connects the Black Sea and Marmara Sea. However, the project for creating an artificial inner watercourse became a current issue at certain times throughout history. This idea has a different place than the other two areas; first of all it is a very big-scale project, and secondly the construction work –excavating the rock and moving the water– is a more challenging task.

The Ottoman attached astonishing importance to the idea of a canal. There were several attempts to connect the Mediterranean and the Red Sea through the Suez Canal, the Black Sea and the Caspian Sea through Don-Volga Rivers, and the Marmara and the Black Sea through the River Sakarya (Yılmaz, 2010b). The idea of carrying the water from Sakarya first to Lake Sapanca and then to Izmit Bay to connect the Marmara and the Black Sea was a canal project suggested for Istanbul for four centuries (Figure 15).

Shipping necessary wood for boats, fuel and construction to the city were inconvenient and costly, consistently increasing the price of raw materials. That inner watercourse project mainly aimed to improve the cargo and stock shipment to the city. Therefore the first project attempt was made during the reign of Süleyman the Magnificent, and the Architect Sinan was assigned for the project. Projects relating to a canal were also brought to a certain phase during the reign of seven sultans thereafter; distance measurement, findings as to ground conditions, estimations as to expropriation and levelling were conducted, also the cost of such a project and the number of workers required were calculated (Yılmaz, 2010b). But the canal project could not be implemented during the Ottoman period.

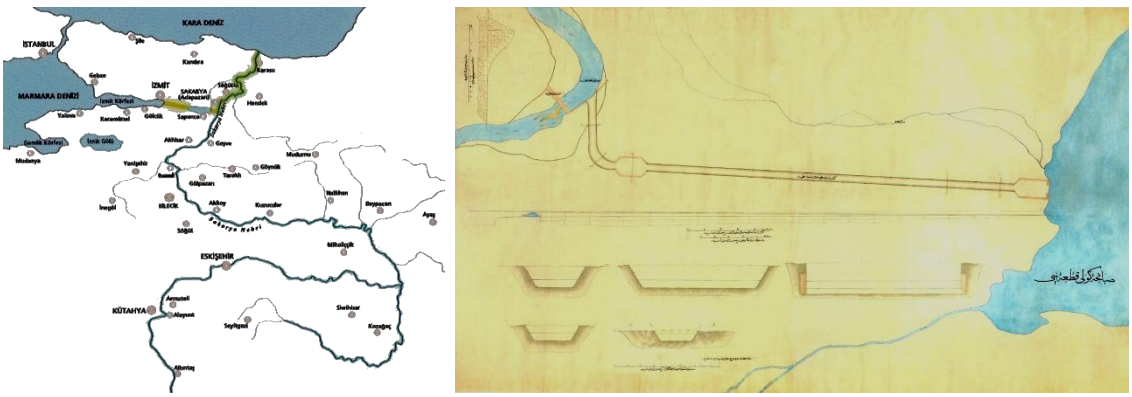

Figure 15. *The Sakarya-Sapanca-Marmara Canal Project - The route and an original drawing of the project (Yılmaz, 2010b).*

Entering a new period with the Republic of Turkey, Istanbul experienced an increased development and urban growth during the second half of the 20th century. Issues relating to stock shipment differed from those of the Ottoman and the solutions were changed, but the idea of a canal still existed. The idea of constructing an artificial watercourse in Istanbul was brought forward by B. Ecevit, politician, in 1994 (CNN Turk). This new idea about a canal brought forward after almost one century was quite different from the project suggested during the Ottoman period. First of all its location shifted from the east to the west of the Bosphorus. The idea of connecting the Black Sea and the Marmara still exists however this time a linear, more short-cut and wider canal is planned rather than a canal connected to Izmit Bay with a lake connection. The purpose is to create a bypass sea route as an alternative for the Bosphorus in terms of transportation and urban sense as well, rather than shipping goods to Istanbul as intended one century before.

A canal project was also on the agenda of the new government elected in 2001. First, an island project was presented (TRT Haber). It was a suggestion for an inner canal starting with the Golden Horn, continuing the watercourse along Kağıthane and Alibeyköy streams to reach a point in the farther north of the Bosphorus; thus an island starting with Karaköy will end with Sarıyer (Figure 16).

The canal was designed to be approximately 20km in length and 100m in width. This approach can be considered as an urban layout; a suggestion for new settlement and sub-centres. The purpose of the project is firstly to reduce the pressure on the city centre and dense urbanization, and to ease the transportation. As well it was suggested that the proposed canal would also offer a solution for keeping the Golden Horn clean and reducing the pollution in the streams and it was emphasized that it would be influential in creating more liveable environments.

In 2011 the same government introduced to the public a new canal project they intended to build (IBB). It was quite similar to the proposal made in 1994 in terms of its purpose, location and design. It was emphasized that the project introduced by the Prime Minister himself at the Haliç Congress Centre would transform Istanbul into a new city with two peninsulas and an island, representing an urban restructuring as well as a restructuring in transportation (CNN Turk). The canal for which the feasibility surveys have already started is designed to be 45-50m in length between the Black Sea and the Marmara Sea and 25m in depth, 150m and 120m in width on the water surface and at the bottom respectively (Figure 17). The canal mainly intends to reduce the traffic and, in parallel, the danger in the Bosphorus due to the vessels carrying dangerous

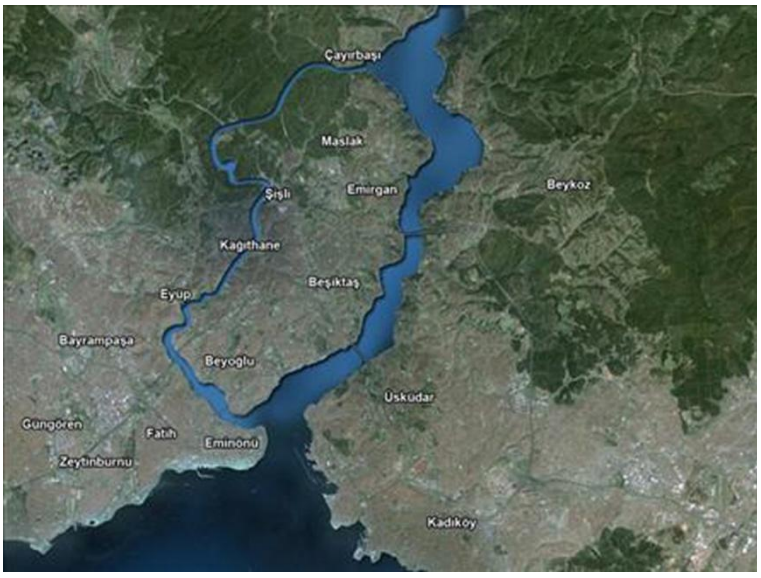

Figure 16. *The Island Project for Istanbul (TRT Haber).*

substances such as LPG and petroleum. And in terms of urban design a new settlement area with diverse facilities is proposed around the canal. In parallel, the largest airport in Istanbul will be situated close to this region for the population and growth that will gain momentum in the west of the city with the canal project. Of course, highway and railway transportation will continue uninterruptedly with the bridges planned over the canal.

In brief, in recent time canal projects proposed as an alternative to the Bosphorus and reformation of the Strait require a comprehensive, interdisciplinary feasibility survey to be executed. On the other hand, sustainability is expected from the projects in terms of ecologic, bio-climatic, geographic-topographical, economical, strategic, cultural, social and benefits of many other macro and micro dimensions. Yet if the canal projects representing a significant utopia in terms of water transport come true for Istanbul, they will be quite determining for the future of the city.

4. Evaluation

It is certain that Istanbul due to its geography lies at the heart of accessibility and transportation issues. The issue of water crossing within this structure has allowed unique projects to emerge throughout the ages.

It can be noted that the suggestions for the Golden Horn Bridge that started with Da Vinci's drawings developed with the idea of being connected with the business and the administration centre. The prestigious value of a bridge that reaches the palace was also considered in the initial projects devised in the 19th century. There were two different connection points in the Golden Horn, and out of these more importance was attached to Karaköy-Eminönü in terms of design such that the Galata bridges which had worn out and been replaced with newer ones were carried to Unkapanı and served there for many years. Also Galata bridges became a live point of passage for the city's people with ferry ports and shops. Thus, the place of the Galata Bridge in urban memory was quite strong. Particularly the 1912 bridge had been a symbolic structure for the Golden Horn, Eminönü, Historical Peninsula and even for Istanbul until it was destroyed by fire in 1992. The bridge that was carried to the place between Sütlüce and Eyüp in parts and repaired thereafter has been acting as a unique space for 'Istanbul Design Week' since 2005; efforts have been exerted to protect its historical and urban identity. Additionally the bridge was temporarily re-used between Balat and Hasköy for transportation purposes in the summer of 2012 due to on-going repair works on the Unkapanı Bridge and Fatih Sultan Mehmet (second Bosphorus) Bridge.

The Golden Horn bridges have been continuously renewed over the years depending upon technology and availability of materials. Various bridges from wooden bridges to iron ones, steel pontoons and then pipe systems were built but most importance was attached to the opening of the bridge to

Figure 17. *Istanbul Canal Project, suggested in 2011 (http://www.kanalistanbulprojesi.gen.tr)*

allow for the passage of vessels. A current utopic project proposed for the Golden Horn that is about to come true is 'the Golden Horn metro bridge'. Even though the new bridge is considered important for the sustainability of urban transportation, it is criticized for having an adverse effect on the city silhouette. Objections are being raised for the existence of such a high bridge which visually covers the landscape.

The bridge projects for crossing the Bosphorus have to deal with a much wider opening and more height because of the vessels compared to those built in the Golden Horn. The two bridge projects – the Hamidiye Bridges, suggested during the Ottoman period are quite valuable in terms of their design approach. The suspension bridge suggested to be constructed between Sarayburnu and Üsküdar had a more contemporary, modern appearance. And, while the second bridge planned for the north was articulated with the international railway infrastructure the purpose was to associate it with the strength and identity of the empire. The bridge which had guns as a defence structure and was carried on castle-like massive blocks had a quite monumental outlook. It stands as an ideological design with its symbolic components beside a transportation project.

And today the Bosphorus is connected with two suspension bridges quite similar to one another in terms of design and technology. The location of the bridges is different from that of the Hamidiye Bridges. The usage pattern is completely highway oriented for vehicle transportation rather than pedestrian or rail transport. However the functionality of the bridges fell short with urban growth and increased car traffic in time. And now there is a prolonged debate whether the third bridge suggested as a solution will really be a long-term, reliable response to the issue of transportation. Specialists and planners believe and have expressed that policies should focus on the integration of different modes of transportation rather than a new bridge proposal (Tezer, 2006). Overall, the third bridge which will accelerate expanding city borders and will cause new problems loses its value as a transportation utopia.

Population density in metropolitan cities requires urban transportation to be provided by mass transportation, particularly by a rail system in an ecological sense. This idea is also included in the proposal for a third bridge over the Bosphorus. However there is a more impressive approach suggested for the rail system to cross the Bosphorus: tunnel projects proposed during the Ottoman period and a recent one – Marmaray. The drawings relating to the first tunnel projects in the 1900s are valuable in terms of the uniqueness of the idea however they appear to be not very competent in a technological sense. Even though the proposals are not very reasonable with respect to the elevations for the rail system, means of transportation and construction system, they feature a progressive pattern. And the Marmaray project is technologically one era ahead, in spite of that it has been going through a challenging construction process because it is situated in Istanbul and the Bosphorus. Yet the most important part of the idea of an uninterrupted rail system for Istanbul will be fully realized when the project is complete.

Lastly, the canal projects discussed can be evaluated as a part of today's utopia. Even though the suggestion in the Ottoman period aimed to connect the Black Sea and Marmara, it offered lower capacity transportation and a more natural watercourse route. Furthermore the connection suggested would not completely affect Istanbul city and the Bosphorus. The canals

proposed more recently represent quite radical projects for the city. Although those suggestions seem protective of the Bosphorus, they will inevitably drive urban growth and transformation. If there had not been a natural watercourse connecting the Black Sea and the Marmara in Istanbul, it would have been a more utopic project and maybe implemented long before. In other words the need for construction and the value it would create remains quite obscure.

5. Conclusion and recommendations

This study presents a projects' data, starting from the Ottoman period when the first maritime utopia projects for Istanbul started, and encompassing the current projects. This resource makes a contribution to those studies to be conducted relating to the maritime identity of and transportation in Istanbul. There are three problem-oriented utopic approaches for water-based transportation in Istanbul; crossing the Golden Horn, crossing the Bosphorus and creating an artificial watercourse. Even though the purpose of the approaches handled with bridge, tunnel and canal projects have remained the same for centuries; the projects have differed with advances in construction techniques and materials. Additionally the projects were designed around the socio-cultural, economic and political structure of various periods.

The ideas of the historical utopias which seemed to be very difficult to implement and started as fiction at first have turned into real architectural and engineering structures today. Recent transportation projects, which are either under construction or have been recently suggested, must be evaluated from several different perspectives. First of all it is important to ensure sustainability and integration in transportation. Each project must facilitate city life as far as possible while creating the most rational and ecologic solution for the issue of transportation. In addition, suggestions must be environmentally sound and not damage the historical heritage or the image of the city. The effects of the projects on public spaces and socio cultural identity must be taken into account.

That Istanbul has a challenging topography as well as a rapid, irregular sprawl in urban areas depending upon population may be cited as the main reason for the transportation problems of today and the future also. And this will always keep alive the quest for projects which attempt to create new solutions. The struggle Istanbul has with water and the new pursuits of water transport in the city will create more utopic projects and drive such projects to be fully realised with new technological and urban approaches.

[1] *Corresponding Author*

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Ulaşım ve ütopya ilişkisi iki şekilde ele alınabilir. İdeal toplum düşüncesi içinde kenti ve mimariyi anlatan ütopyalar ulaşıma da yer verir. Bu; önerilen çevrede yaşamın bir parçası olarak ulaşımın nasıl olacağına dair fikirleri kapsamaktadır. Öte yandan ulaşımın kendisi de bir ütopya olabilir. Erişebilme ve bağlanma düşüncesinin insan hayalini bile zorlayabileceği noktalarda her öneri ve proje ütopya niteliği taşımaktadır. Okyanusları birbirine bağlayan dev kanallar gibi zamanında imkansız gibi görünen düşünceler, insanoğlunun başarma isteği ve gücü ile gerçek olmuş ütopyalardır.

Ulaşım, İstanbul gibi dinamik topografik ve coğrafik yapıya sahip, hızlı nüfus artışı içinde düzensiz ve dağınık bir yerleşim gösteren şehirlerde önemli bir olgu, ve en büyük kentsel sorunlardan biridir. Ancak her problem veya zorluk yeni bir ulaşım önerisini de beraberinde getirmektedir. Şüphesiz ki kentiçi ulaşım sürekliliğinde İstanbul'un 'su' ile ilişkisi önemli bir yer tutar. Marmara ve Karadeniz'i bağlayan bir boğazın iki yakasında – iki kıtada kurulan kentin kalbinde başlayan haliç iç kesimlere doğru devam ederek büyük bir yarımada oluşturmaktadır. Bu gerçek, büyük kentte Haliç'i aşmak ve Boğaz'ı aşmak yönünde su ile ilişkili iki ulaşım problemi tanımlamaktadır. Bu problemi çözmeye yönelik üretilen ütopya niteliğindeki projeler bu makalenin çıkış noktası olmuştur. Deniz ulaşım ütopyaları içinde köprüler ve tüneller ele alınarak; deniz araçları ile yapılan yolcu ve eşya taşımacılığı mimari ve mühendislik alanın dışında kaldığından incelenmemiştir. Öte yandan İstanbul için önerilen kanal projeleri denizi aşmak değilse de birleştirmeye yönelik büyük deniz geçişi ütopyaları olduğundan ve kentle ilişkisinin gücü bakımından üçüncü bir alan olarak çalışmanın kapsamına dahil edilmiştir.

Bu bağlamda ilk projelerin ortaya konduğu Osmanlı'dan (16. ve özellikle 19. Yüzyıl) itibaren günümüze kadar olan bir dönem taranmıştır. Literatür araştırmasına dayalı bir yöntem içinde, gerçekleşmiş veya gerçekleşmemiş ancak resmi olarak onaylanmış tüm projeler dikkate alınmıştır. Özel kişi ya da kurumlara ait olan öneriler ise konu dışı bırakılmıştır. Tarihi (dönemi), amacı/işlevi, tasarımı, kapasitesi, yapım teknolojisi ve yapım süreci açısından ele alınan projeler İstanbul'un 'su'ya dayalı üç ana problemine referans vererek şu başlıklar altında toplanmıştır; 1. Haliç'i geçmek 2. Boğaz'ı geçmek, ve 3. yapay su yolu yaratmak. Özetle, bu çalışmanın hedefi İstanbul'un bugüne kadar olan deniz geçişi projelerini mimari, mühendislik ve kentsel nitelik bakımından analiz etmek ve çıkarımlarda bulunmaktır. Geçmiş ütopyalar bugünle, güncel ütopyalar da gelecekle olan ilişkileri açısından önemsenmiştir.

Yönetim merkezine bağlanma düşüncesi ile başlayan Haliç'te bir köprü fikri Osmanlı'da 1400'lere kadar uzanmaktadır. Resmi belgelerle bilinen ilk proje Da Vinci'ye aittir. Ancak ilk köprü 1836 yılında Unkapanı bölgesinde inşaa edilmiştir. Tersanenin varlığı yer seçiminde oldukça etkili olmuştur. Daha sonra inşa edilen Galata köprüsü ile birlikte, iki köprü yüzyıllar boyunca Haliç'in iki yakasını bağlamıştır.

Teknolojik gelişmeler yanında kentsel gelişim ve bazı politik sebeplerle köprüler belli tarihlerde yenilenmiş; yaya ve at arabası ulaşımından, tramvay ve otomobil ulaşıma kadar farklı kullanım şekillerine adapte olmuşlardır. Bugün inşası devam eden Haliç'teki üçüncü köprü; Haliç metro geçiş köprüsü, ise kentiçi sürekli raylı sistem hattının önemli bir parçasını oluşturmaktadır. Ancak asma köprünün yüksekliği ve tasarımı Haliç'in doğal dokusuna ve tarihi silüete etkisi bakımından olumsuz değerlendirilmektedir.

Öte yanda Boğaz'ı geçmek Haliç ile karşılaştırıldığında çok daha büyük bir çaba gerektirmektedir. Osmanlı döneminde önerilen köprü ve tünel projeleri hayalgücünün yarattıkları anlamında büyük ütopik projelerdir. Boğazın iki noktasında geçiş sağlayan Hamidiye köprüleri aynı dönemde ve aynı tasarımcı tarafından önerilse de büyük farklar taşımaktadır. Biri, uluslararası raylı sistem ağının önemli bir halkası olarak düşünülmüştür. İmparatorluk sınırlarına yakın yapılan köprünün bir savunma yapısını andıran ve dini sembollerle süslü mimarisi ise dikkat çekicidir. Bu köprüye göre daha modern, ve çağdaşlarına yakın duran diğer köprü önerisi demir iskeleti ile narin ve zarif bir tasarıma sahiptir. Öte yandan, Osmanlı'da Boğazı geçmek için tünel projeleri de düşünülmüş ve üç proje ortaya atılmıştır. Düşüncenin özgün ve ilerici olmasına rağmen bu öneriler teknolojik anlamda çok yetkin değildir.

Boğazın bir yapıyla aşılması ise ilk kez 1973'de Atatürk köprüsü ile gerçek olmuştur. Takip eden yıllarda köprü öngörülen araç/gün kapasitesinin oldukça üstüne çıkmış, kentsel gelişim ve trafik yoğunluğu içinde yetersiz kalmıştır. Çözüm için 1980 yılında Boğaz'a, daha kuzeyde ikinci bir köprü yapılmaya başlanmıştır. Ancak bu köprü yeni bir kentsel yoğunluk ve trafik yaratmıştır. Bugün İstanbul'un iki yakasını bağlayan köprüler en önemli karayollarını teşkil etmektedir. Yine de problemler devam etmekte, etkin bir kentsel ulaşım sağlanamamaktadır. Bu yönde ortaya atılan üçüncü köprü projesi ise tartışma yaratmaktadır. Yeni köprünün de diğerleri ile aynı süreci paylaşacağı kesindir. Uzmanlar ve kent plancıları ise çözümü daha etkin, hızlı ve entegre sistemlerde aramaktadır. Raylı sistemler bu anlamda oldukça önemlidir. Boğaz'ı rayla geçmek üçüncü köprü önerisinde de vardır, ancak Sarayburnu-Üsküdar arasında inşası devam eden Marmaray projesi kentiçi ve çeperlerde kesintisiz bir raylı sistem ağının en önemli halkasıdır. Trenlerin tüp tünel ile denizin altından bağlanmasını sağlayan bu proje İstanbul için gerçekleşen en büyük ulaşım ütopyası olarak nitelendirilebilir. Öte yandan kazılar sırasında bulunan tarihi eserler, ilk medeniyet tarihini geriye çekerek dünya literatürünü de değiştirmiştir.

Yapay su kanalları, diğer iki düşünceden çok daha farklıdır. Karaların bağlanmasına değil parçalanmasına referans verir, ayrıca çok daha büyük ve zorlu bir iş, üst ölçekte bir yaklaşımdır. İstanbul şehri için bir kanal önerisi ise başında tartışmalı bir konudur. Öyle ki kentin kendisi doğal ve eşsiz bir kanala sahiptir. Yeni bir kanal düşüncesi bu bağlamda Panama ya da Süveyş kanallarında olduğu gibi zorunlulukların çok daha dışında gelişmiştir. Osmanlı döneminde kereste taşımacılığı için düşünülmüş kanal projeleri Sapanca gölü üzerinden bir bağlantı önererek Karadeniz'i İzmit körfezine bağlamayı planlamaktadır. Yedi padişah döneminde ele alınsa da hiç gerçekleşmemiştir. Yakın dönemdeki kanal projeleri ise tamamen farklıdır. Biri; Haliç'in su yolunu devam ettirerek Boğaz'ın sonunda, Sarıyer'de, Karadeniz'e doğru açılmayı ve böylece büyük bir ada oluşturmayı hedeflemektedir. Farklı tarihlerde ortaya atılan diğer iki kanal projesi ise İstanbul Boğazı'nın batısında doğrusal bir rota ile Karadeniz ile Marmara'yı birbirine bağlamaktadır. Güncel kanal projeleri Boğaz'a alternatif ya da onu doğal yapısını değiştirmeyi öngören oldukça radikal projelerdir. Gerçekleşmeden önce kapsamlı ve disiplinlerarası çalışmaların yapılması beklenmektedir.

Sonuç olarak, bu çalışma İstanbul'un su ile ilişkisi üzerinden deniz geçişi ütopylarını ele almıştır. Bu projeler dökümanı benzer nitelikteki yeni araştırmalar için kaynak oluşturmayı hedeflemiştir. Geçmişte gerçekleşmesi zor gözüken öneriler zamanla, teknoloji ve malzemedeki gelişmeler ve yeni yaklaşımlarla, kapsamlı mimari ve mühendislik projelerine dönüşmüştür. Öte yandan İstanbul'un doğal yapısı yanında şehirleşme süreci de ulaşımı her zaman önemli tutacaktır. Ve deniz ulaşımı birçok yenlikçi ve yaratıcı düşünceyi besleyerek yeni ütopik projelerin doğmasını sağlayacaktır.