



THE CAUSES OF THE FORMATION OF SEBIL AND FOUNTAIN IN ISTANBUL AND THE EFFECTS OF THESE CONSTRUCTIONS ON THE CITY OF ISTANBUL

Mustafa KAHRAMAN*

Abstract

During the period from the 15th to the 20th century, there are plenty of fountains and baths in the city of Istanbul, and these years, Istanbul is regarded as a water civilization. Despite the fact that many fountains and seagrasses are still present today, there are still about 18 water bodies per km². Based on the above information, the answer was sought to determine why fountains and sebils were built so intensely in Istanbul, how much they affected the structure of the city, and why they became obsolete today.

In Istanbul, 289 fountains and 23 seabirds were found in the daytime. However, it is known that until the 1980s almost all of the houses of Istanbul had a water well and an advanced cistern system dating from the Byzantine period. However, why did intense fountains and baths built in Istanbul? In response to this question, the causes such as the idea that stagnant water is dirty in Muslims, the tradition of making charity and fountains for charity, the lack of water, and the lack of well water in the wells have been put forward.

The fountains and sebils in Istanbul have been used intensely for 5 centuries. These structures must certainly be influenced by the city as influenced by its geographical and cultural characteristics. The historical and modern sources, the structure of the street and street systems and the toponomy are examined in order to show the extent to which the fountains and baths in Istanbul affect the city. As a result, it has been suggested that the fountains and baths in Istanbul City affect the physical, cultural and economical aspects of the city.

Finally, it is known that the waters of the fountains and baths of Istanbul have not flowed since the 1980's and that they have become dysfunctional. The reason for this is the spread of the city in the direction of the canal lines.

Keywords: Istanbul, Historical Geograpy of Istanbul, Fountains, Sebils.

1. Introduction

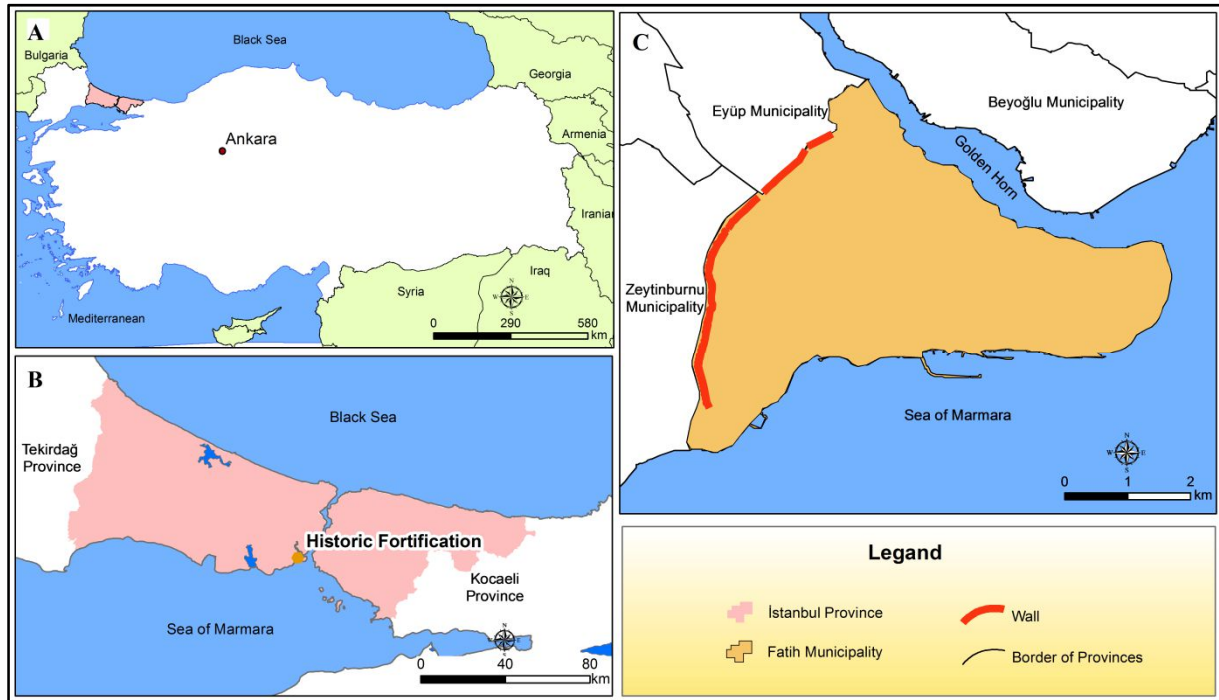
The way in which water was supplied to cities in the past was examined many times on different cities, and the vast majority of the researchers working on this issue focused on the historical development and architectural features of urban water systems (Martini and Drusiani, 2004; Bellwald, Gleason, Schryver, 2002, 151-176; Bellwald, 2008; Bellwald, al-Huneidi, Salihi, Naser, 2003; Ortloff, 2001). Other scholars have concentrated on technical aspects of water supply and distribution systems within urban Area (Bedal 2004; Bellwald 2008; Angelakis and Dialynas, 2012). Only one of the available studies has considered the relationship between the fountain and the city, and quite general evaluations have been made in this regard (Özer, 2010, 129-134).

Istanbul has many successful works on how it provides the water it needs and water structures (Çeçen, 1991; Çeçen, 1988; Çeçen, 1979; Öziş, 1987; Öziş and Arısı, 1991; Kubaracılar, 2008; Taşkın, 1943 Nirven, 1946; Taşlı, 2010). Studies carried out in Istanbul have focused either on the working principles of water systems or on the historical and architectural features, as in the general literature.

In this article, the literature focuses on the relationship between water structures and city. What are the geographical and historical reasons for establishing water systems in Istanbul city, will seek answers to questions such as the effects of water structures used over a long period of time on the city, and why they are left in an active position in the city.

The working place is Fatih District of İstanbul Province. Today, this area which is within the borders of Fatih Municipality from the administrative point of view is the historic inner city area of Istanbul. The Historical Peninsula is surrounded by the Golden Horn Walls to the north, the South Marmara Walls and the eastern Land Walls.

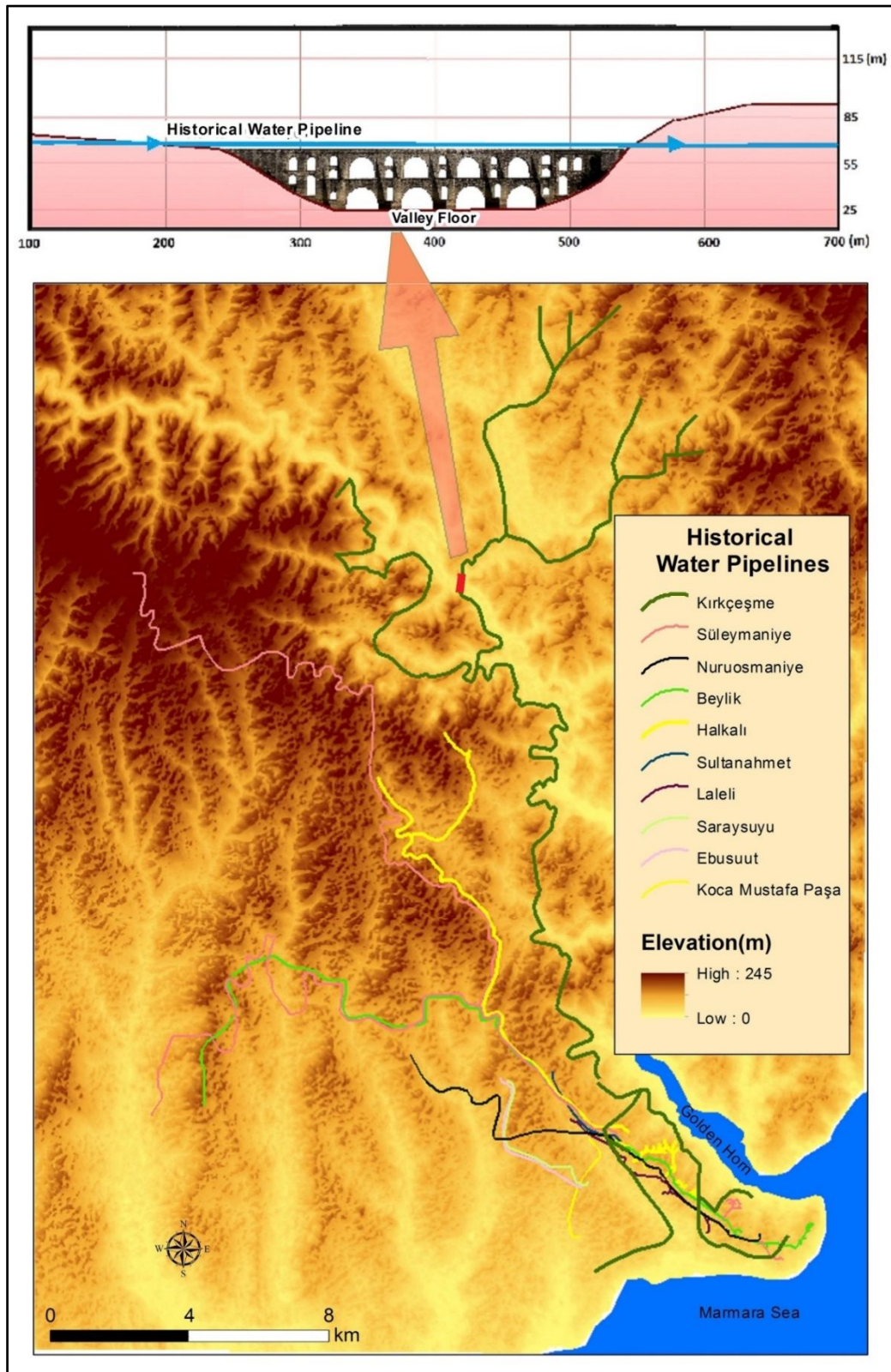
* Dr., Istanbul University, Geography Department, mustafa.kahraman@istanbul.edu.tr



Map 1. Working Area

The area to be studied is limited not only in terms of space but also in terms of time. The article covers the period from the 15th century when the Turks conquered Istanbul, and thus the history of the Turkish culture in the historical peninsula, until the 1980s when the fountains were in use.

Water lines were used to reach the city of Istanbul. It is the artificial waterways to which the waters of the incoming waters are transported from various sources or rivers. There were many water supply lines carrying water to Istanbul. The main ones are Kırkçeşme, Halkalı, Nuruosmaniye, Beylik, Sultanahmet, Süleymaniye, Laleli, Saray Suyu, Ebusuud, Koca Mustafa Paşa Suyu (Map 2).



Map 2. Major İsaler Lines and Water Belt Crossing in Istanbul

When the city water was brought by the above-mentioned water supply lines, the topography had to be taken into consideration. Because, according to the conditions of that time, no pump system was used to transport the water, only the water was moved depending on the gravity. While the arches were being built to pass through the water valleys, The passed earth pipes from slopes.

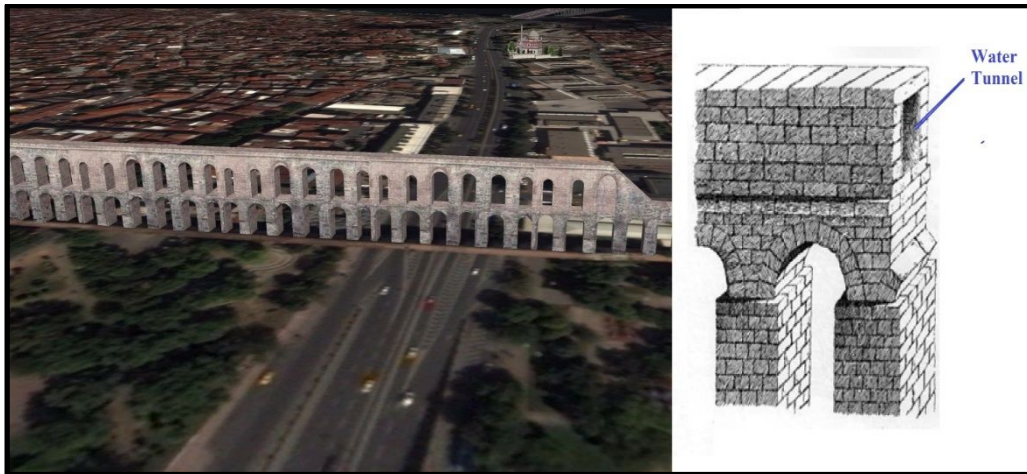
It is passed through pipelines made of water-baked earth and named as "Earth pipe" (Picture 1) Nevertheless, water is not always used in the transmission earth pipe. For example, not on the arches, but on the vast passageways or waterways were built (Fig 1).

Picture 1. earth pipe has made earth



Source: <http://www.romanaqueducts.info> (last accessed 16.11.2017)

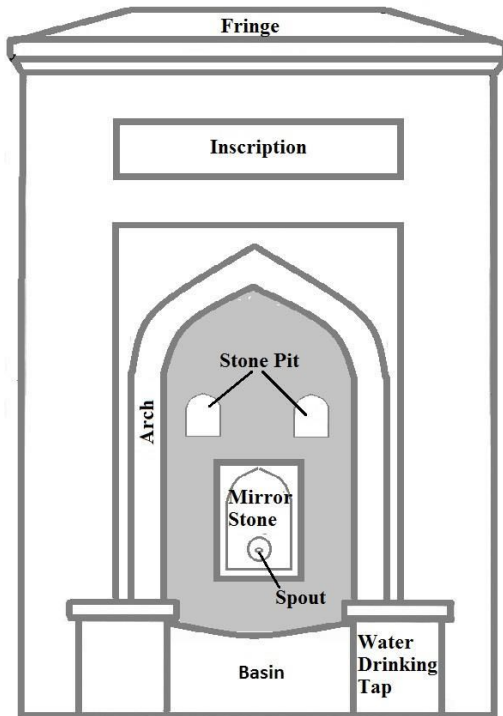
Figure 1. Waterbelt and Water



Source: Google Erth Pro and <http://brewminate.com>

Waters obtained from underground water sources or rivers were brought to the city by water lines. water came to the last fountain. There is a plain view of Ottoman fountain, fringe, arch, inscription, basin, water drinking tap, stone pit, mirror stone, spout, trough and test set in the classical sense (Fig 2) (Photograph 2).

Figure 2: Classical Fountain Elements **Photograph 2. Gazi Süleyman Han Fountain**



Kaynak: <http://www.mustafacambaz.com>

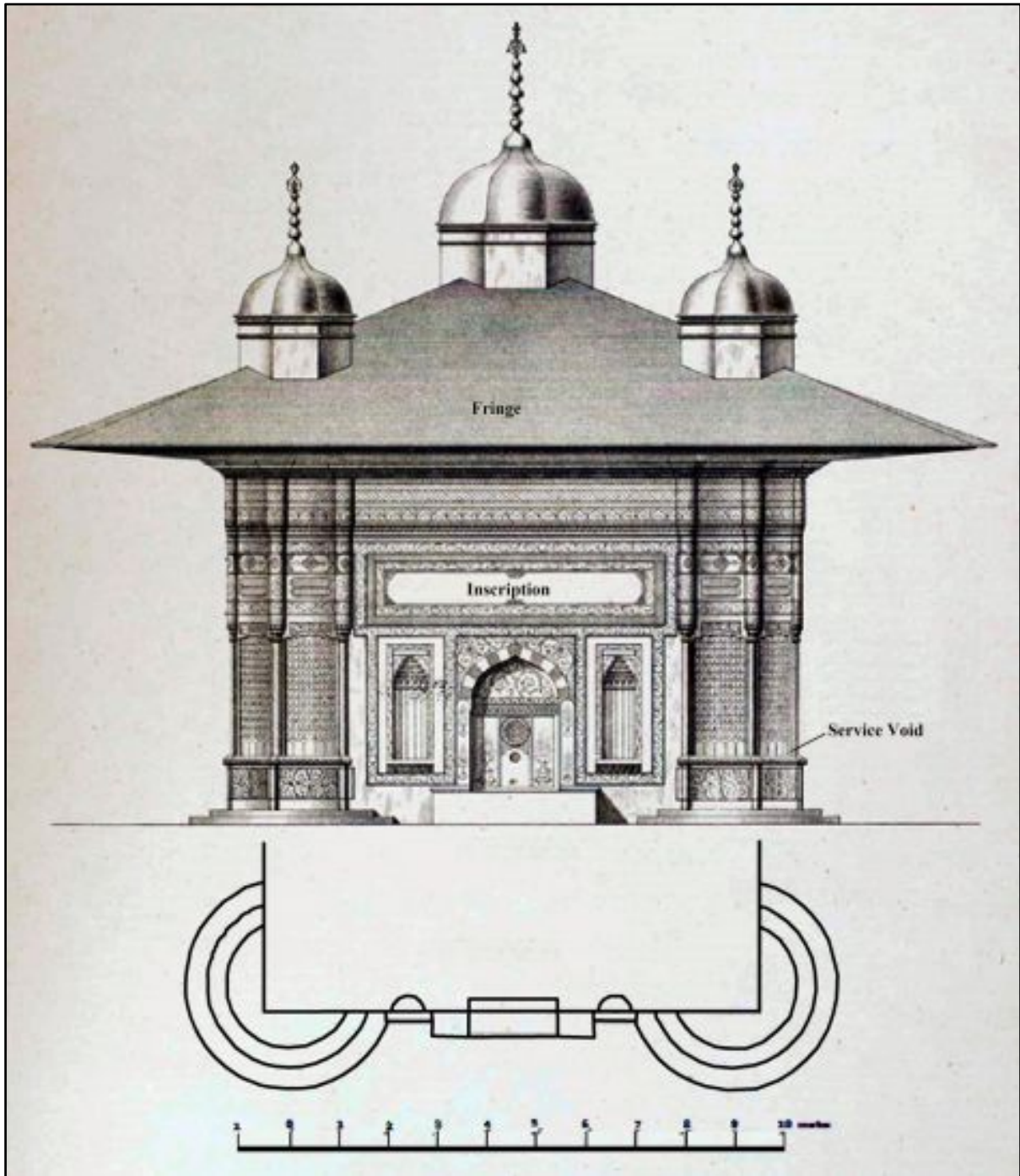
The simplicity of classical fountain construction continued until the 18th century. Baroque and rococo movements influenced Ottoman architecture in the 18th century, the fountains have become more flashy and fancy (Tansuğ, 1965, 100; Kuban, 1954, 5).



Photograph 3. Naz Pertev Kalfa Sibyan Mektebi Fountain from 18th Century

Source: www.mustafacambaz.com

Sebil: Sebils are mostly built from the 18th century. Sebils are bigger and more compact than fountains (Graphic 1) the most important difference that distinguishes the fountains from the fountains in functional terms is to distribute the beverages from the place called the service void after the bronze bars beside the fountain, These cells were distributed free of charge on cold hot beverages by season (Picture 3 and 4)



Graphic 1: Technical Drawing of III Ahmet Sebilin which is one of the important water structures of the 18th century

Source: It was prepared for the world exhibition in 1873, L'Architecture Ottomane-Die Ottomanische Baukunst, Constantinople, 1873 (Turkish and Islamic Arts Museum Inventory No: 2254).

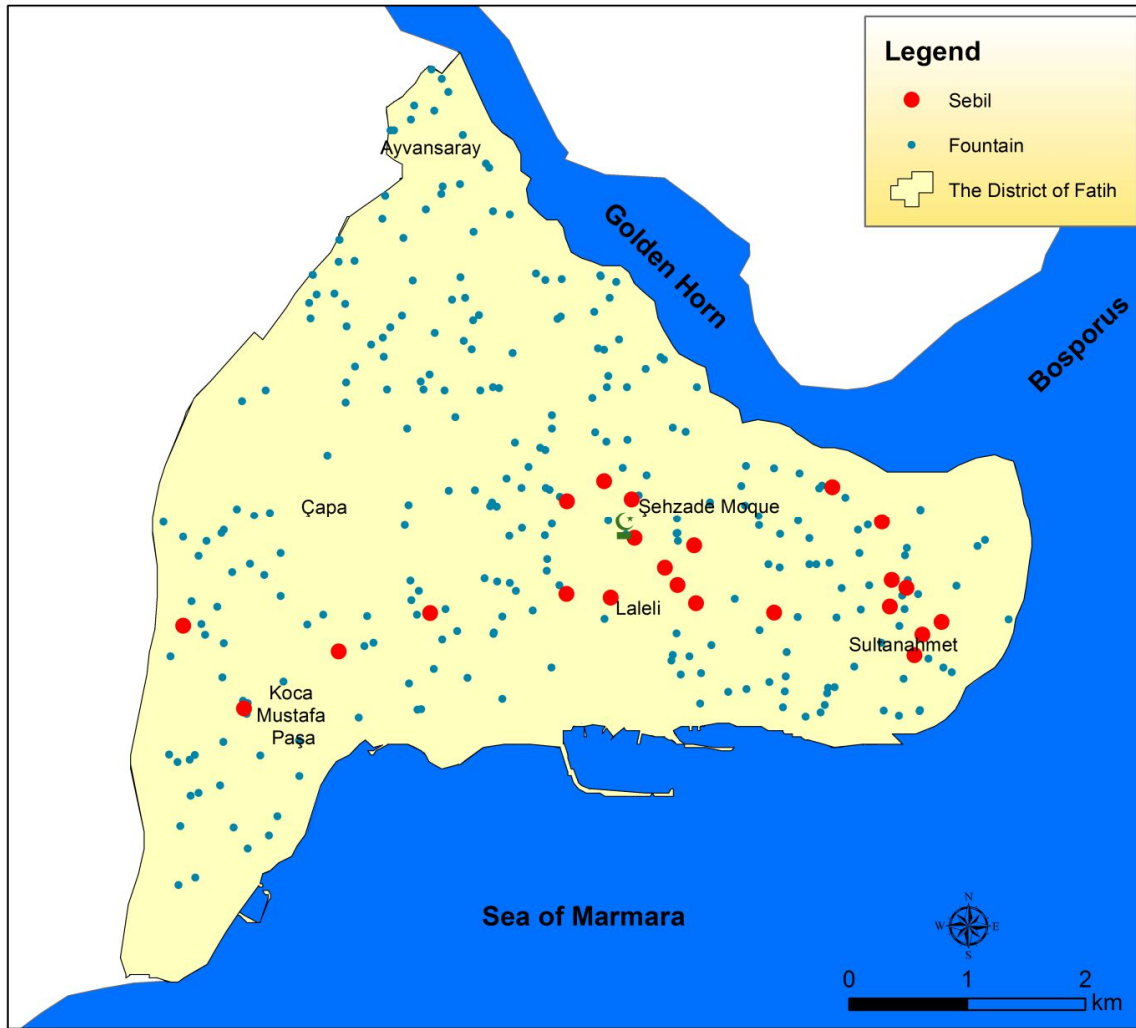


Photograph 3. Sadr-i Esbak Seyyid Hasan Paşa Medresesi Sebili



Photograph 4. A citizen of Istanbul who has been drinking water from the seas during 1920's
Source: Gaumont Pathe Archives

Relevant to Sebil, another thing to say is that the provinces were built in centers where the population was intensive three days a day when they were built. Therefore, the provinces can be considered as important data for determining the historical center of the city.



Map 3: Location of Fountains and Sebils

2. Methods

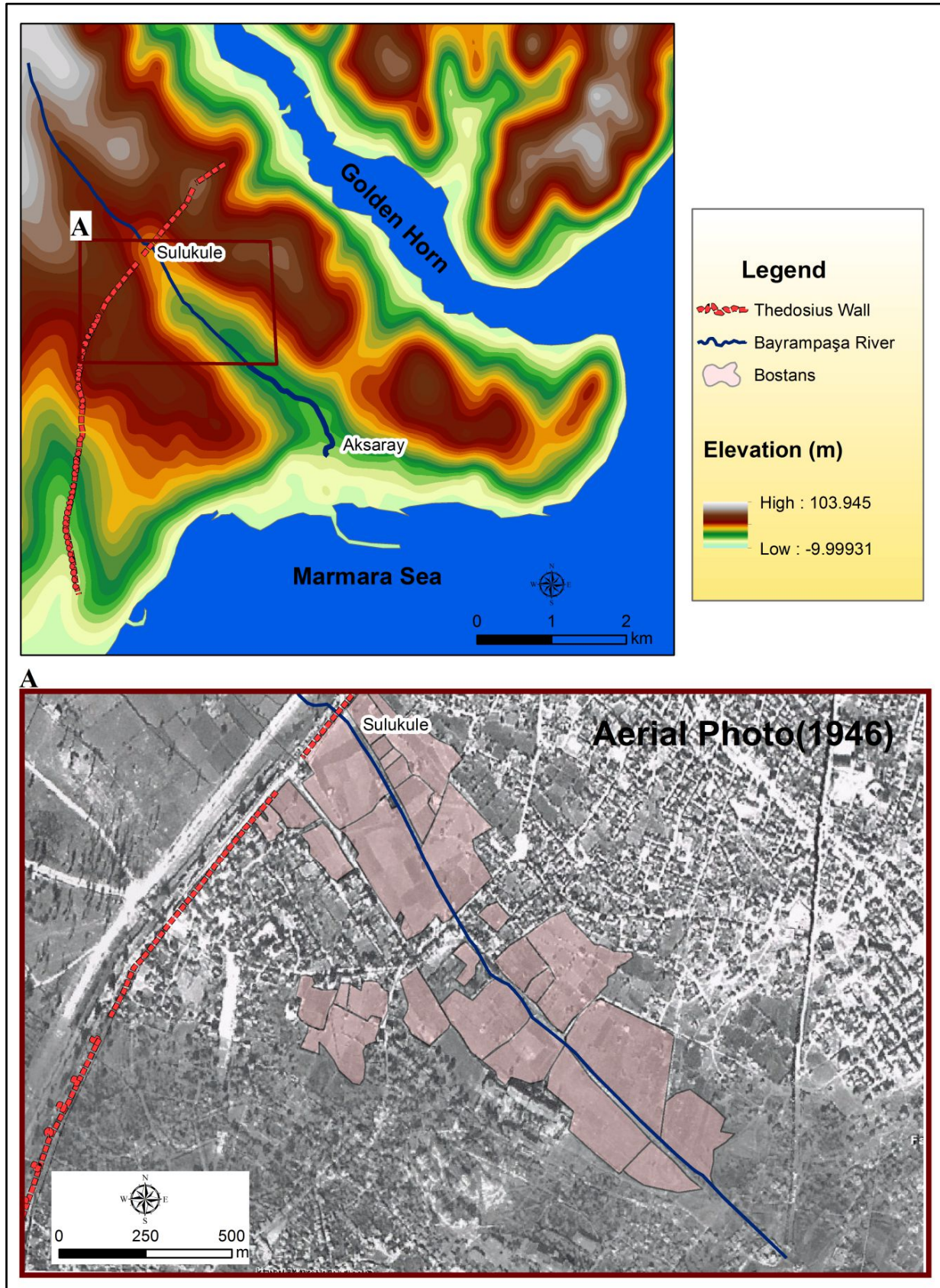
In the article firstly, Locations of fountains and Sebils in the historical peninsula have been identified (Map 3). The identified structures, ArcGIS, 10.2. digitized and mapped. Apart from that, in order to understand how the fountains affected the city of Istanbul during the period from the 15th century until the 1980s, both Ottoman and archival documents and newspaper reports of the Republican period were searched. Finally related to the fountain and sebils domestic and foreign literature have been examined.

3. Effective Physical Geography Conditions in Constructing Fountains and Sebills in Istanbul

In the formation of water culture in Istanbul, the physical geographical conditions such as climate, hydrography and geology are influential on the field where Istanbul city is located. The fact that the city of istanbul has been established has sufficient water resources and sufficient drinking water resources are insufficient.

According to the long-term data from Florya Meteorology Station, the closest meteorological station to the Historical Peninsula, the annual rainfall of the region is 642 mm. According to the average annual evaporation amount obtained by applying the Penman Method, the precipitation is 429 mm (67% is steam) (Dumlu and Yalçın, 2007, 293). Some of the remaining water continues to surface flow, and some of it mixes with groundwater

There was only one stream in Suriçi Istanbul. This stream named Bayrampaşa Deresi enters Bayrampaşa District and enters Şehreden from Sulukule. It moves in the northwest-southeast direction in the city wall and was poured into Marmara Sea (map 4) This stream was used both in the Ottoman period and in the republican period. There are some gardens around this stream, where the gardens are watered. it is estimated that the amount of water in this stream is not much Adnan Menderes Boulevard (Vatan Caddesi) was built along this valley between 1956 and 1957 and after the 1950s the stream was dried up



Map 4. Bayrampaşa Stream

Some of the surface waters in Istanbul City move vertically and mix with the ground water. These waters were not too deep and were accessible through wells. These water wells were not only used during the Ottoman period but until the 1980s, when the water network in Istanbul City became widespread



Evliya Çelebi, a traveler of the 17th century, stated that there are 600 000 water wells in Istanbul (Kahraman and Dağlı 2003, 468) and that these waters are "Shorlu". The word "şorlu" means salty and sour. Because of its taste, this well in Istanbul was not preferred to drink water. The geologic features of the site are the factors that affect the groundwater quality of the Historical Half

As is known, the more the ground is composed of coarse grains and gravel, the faster the surface water moves vertically and mixes with the underground water network. The more clay on the other side of the soil, the less the permeability of the soil. This situation which causes the water to reach the free stream for a longer period of time and the chemical solubility in the water to be too high this. In free aquifers where chemical decomposition is high, groundwater is salty and sour because of the minerals it contains In other words, "Şorlu".

Bakırköy Member and Güngören Members of the Çekmece Formation, Trakya Formation, Vegetative Soils and Alluvion Formations are dominant in the historic city walls. These geological formations allowed the formation of free aquifers and that the people of Istanbul could draw water from the wells. However, together with the amount of clay in the basic components of the formations, the water was salty and sour (Table 1).

Formation	Basic Components
Drawer Formation Bakırköy Member	Mostly Contains Limestone
Drawer Formation Güngören Üyesi	Mostly Clay and Sand Contains
Trakya Formation	Grovak (Sandstone)
Plant Soil	Clay
Alluvium	Clay, Sand Pebble

Table 1. Formations Located on the Historical Peninsula

Source, Avrupa Yakası Mikro Bölgeleme Raporu, 2007, 46 <http://ibb.gov.tr/tr>

As a result of all of the physical geography conditions mentioned above, it is possible to say that the Historical Peninsula is not very good quality for drinking water as there is enough water as usage water.

4 Fountain and Sebils in Istanbul Effective Human and Historical Causes in the Construction

In many cities in the past, water has been problem and will be. But among these cities, few cities were able to create a water civilization, Under this title, the human and historical reasons for the emergence of the water civilization in Istanbul City will be explained.

1. Being the Capital of Istanbul: Istanbul is the capital of the Ottoman Empire from 1453 onwards. This city was, to some extent, the vitality of the empire. Therefore, it is desired to be reconstructed in the best way.
2. Historical Infrastructure: The site of Istanbul City was previously located in the city of Bizantion. It is known that the Roman period brought water from the Istrunas in the first place. The water system built in the Ottoman Empire also benefited from this system built during the Roman period (Bono; Crow; Bayliss, 2001:1326).
3. The Byzantine city government has recently been unable to use this line of relief due to heavy inflows from the west (Ostrogorsky, 1991, 75-76) and therefore open cisterns have come to light. These used open cisterns are also one of the reasons why Istanbul is under siege for a long time.
4. Islamic Culture: Another reason that is influential on water culture in Istanbul is Islamic culture. When Istanbul is conquered, the waters used in the city are water wells that accumulate in wells and open and closed cisterns. There is a belief in the Islamic culture that stagnant water is not clean. Therefore, the waters that accumulate in wells and cisterns are not preferred and the water lines are activated.
5. Istanbul Population: While the population of the city was about 50 000 in the recent period of the Byzantine Empire, at least 100 000 in the 16 th century reached 260 000 – 400 000 in the 17 th century and 500 000 in the last quarter of the 18 th century (Koç, 2010: 171-199). In order to meet the increasing need of water, fresh water lines and fountains have been built in almost every period.
6. Foundation System: In the Ottoman state, civilians had made various structures such as mosque, fountain, imarethane, tekke (Günay, 2012: 479). Because the fountain is cheaper than the other favors, it is made more. This is why the amount of fountain in Istanbul is so high. The shuttle lines were made by the state. But fountains and sebils were made by people or foundations.

5. Fountain and Sebills Effects on Istanbul City

As a result of all these human and physical geographical conditions, many fountains and sebills were built in Istanbul. These fountains and sebills have affected the city of Istanbul from physical, economic and cultural aspects.

5.1. Fountain and Sebills's Morphology Impact

In the city of Istanbul, the classical Ottoman architecture which had the front plan until the 18th century became influential. After the 18th century, the baroque and rococo arts emerged as the forefront of the adornment in the architectural style. The first architectural works of these styles are smaller fountains and baths than the other architectural works. In other words, the fountains became the pioneers of the Ottoman architectural western influence.

We can also say that the fountain and the sebills affect the road network. Today, 308 fountains found in the city walls were found to have 96 of them on one side of a building, 20 of them on the corner, 55 of them on a corner where three roads joined, and 37 of them on 4 roads. This means that in choosing the location of fountains and seals, either a central location is preferred or the fountains have taken over the roads in time (Map 5).



Map 5. Fountains and Roads

Istanbul fountains and sebills have also influenced the city topologically. By 2017, 1170 streets and streets have been identified on the Historical Peninsula. In 101 of these streets and streets (9%), the word fountain 3 (0.3%) is the name of the sebil. Probably in ancient times more streets and streets should have passed the word fountain and sebil.

5.2. Effects of Fountains and Sebills on the Economy of the City

Today, the water network reaches our home. But in the Ottoman period in Istanbul, water network until the 1950s was not so prevalent and there was a profession group that undertook the task of watering houses. These people, called Saka, carried water to the houses with the bins, which were called paddies for a certain fee. The worse the financially, the more they took their own water. The Saka population served 700 for the palace in the 17th century, in the 1930s, the number of casualties in the streets of Istanbul, Galata and Beyoğlu was 5,000 people (Kahraman, Dağlı, 2003, 494-493). (Cumhuriyet Gazetesi 8 Temmuz 1931, sayfa 2).

It is known that some professional groups such as Doğramacı, saw, kutucu, knife maker also performed art here around fountains. For example, in Judge 25b-1 of the Istanbul Court of the 18th century, it was ruled that the knife-shopkeeper working around the Saka Fountain in Eminönü was not disturbed by the saw shopkeeper.

5.3. Effects of Fountains and Sebasses on the Socio-Cultural Characteristics of the City

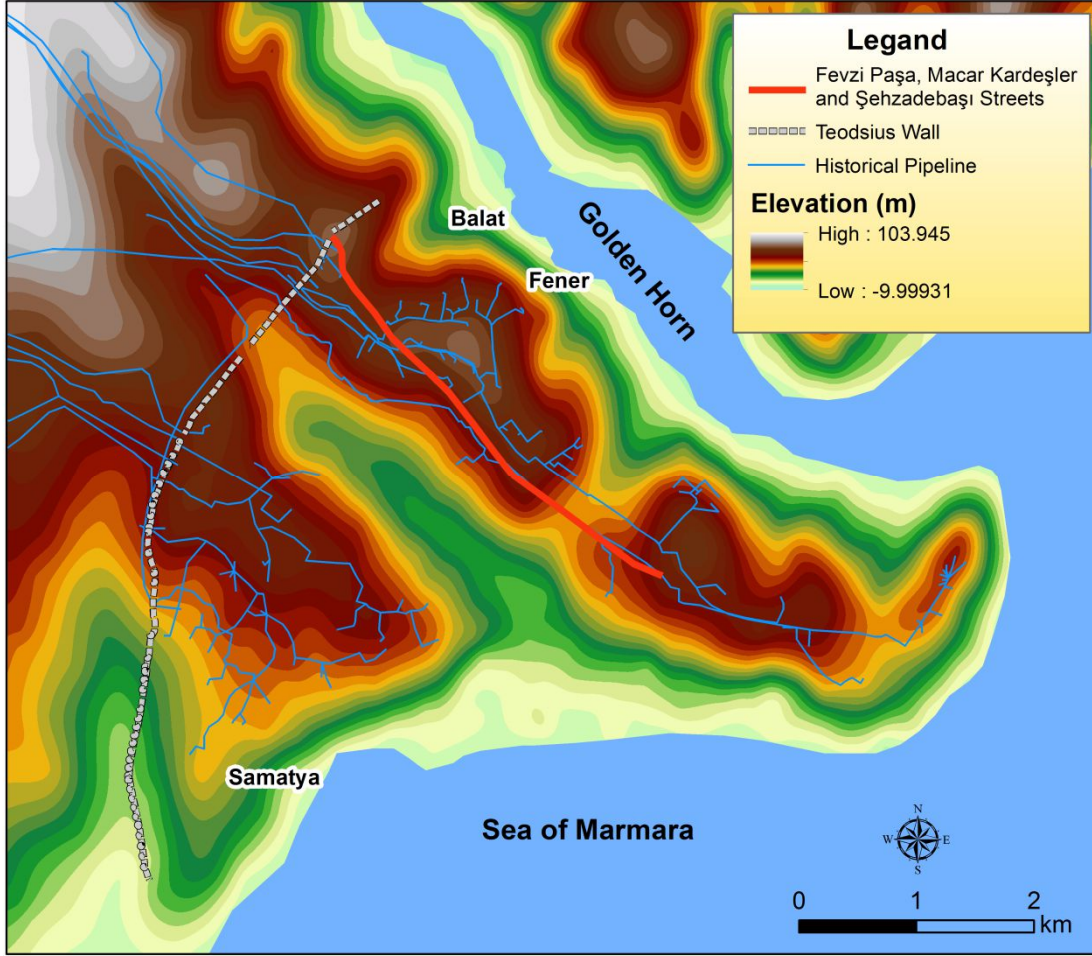
Çeşme and Sebills also affected the Istanbul City from socio-cultural aspects. Fountain heads are places where women chat and local news is made. There were also watergills and tobaccos for men around the larger ones (Picture 1).



Picture 1. III. Ahmet Sebili

Source: Allom, 1838: 16.

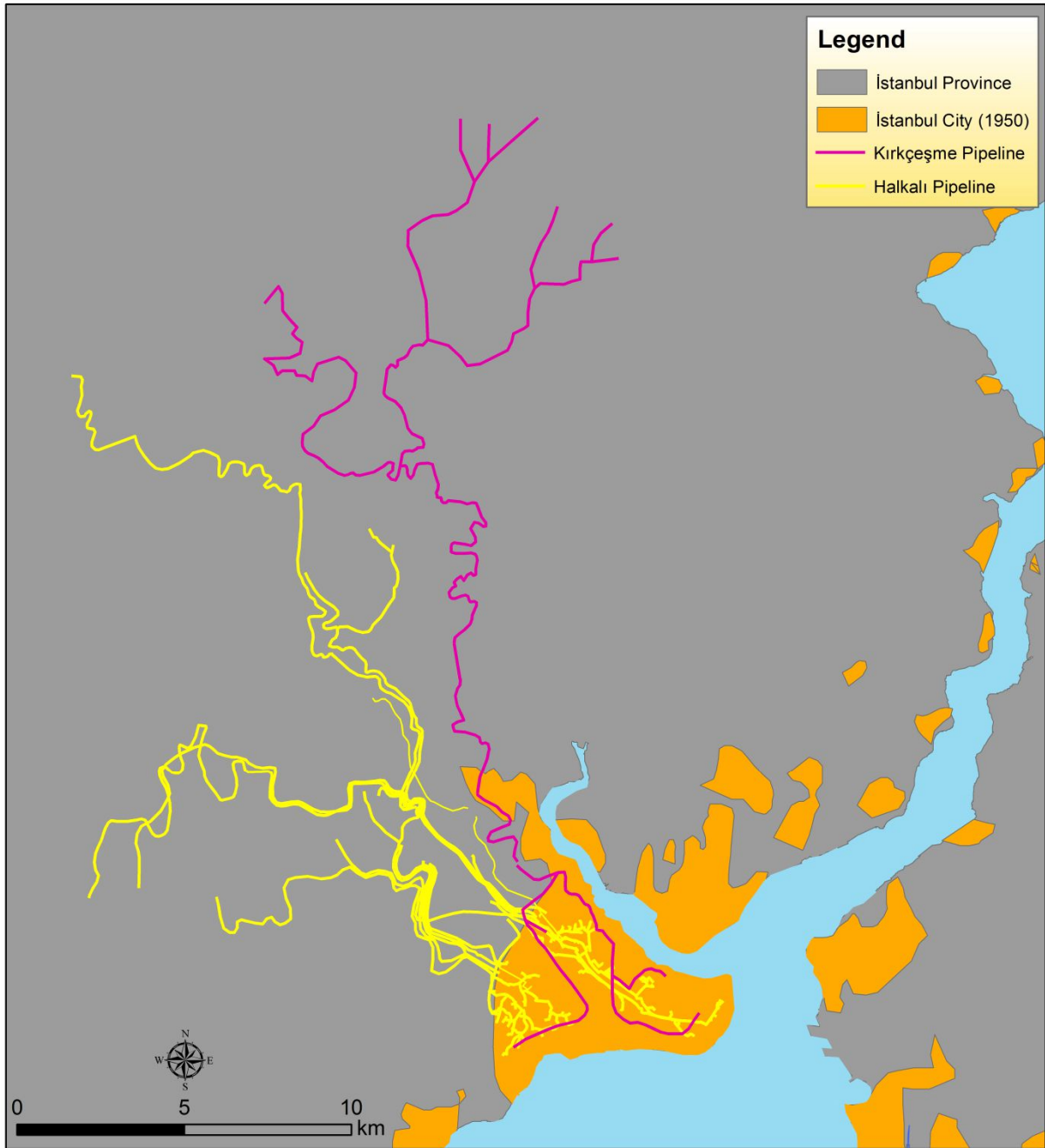
The area where the fountains are located also affected the social geography. This backwater, which can be translated as a contraband water section line called "hatt-i bala" in the Ottoman Empire, is the luckiest place in terms of water resources. As the water is distributed using gravity, the water closest to this line is abundant while the water is abundant and the amount and intensity of the flowing water decreases as the line moves away from the ball. The more wealthy people reside on this water division line. Today the street known as Fevzipaşa Street, which is the continuation of the Hungarian Brothers and Sehzadebasi Street, is a beautiful example of this. Throughout this line, the waters of the ring waters pass through. While the leading ones of Istanbul reside in a neighborhood close to this line, the non-Muslims living in the coasts are living in the neighborhoods like Balat, Fener, Samatya (map 6) In Pera (Beyoğlu), the opposite situation arises The rich non-Muslims were close to where the resettlement line passed, while the poor Muslims resided near the shore.



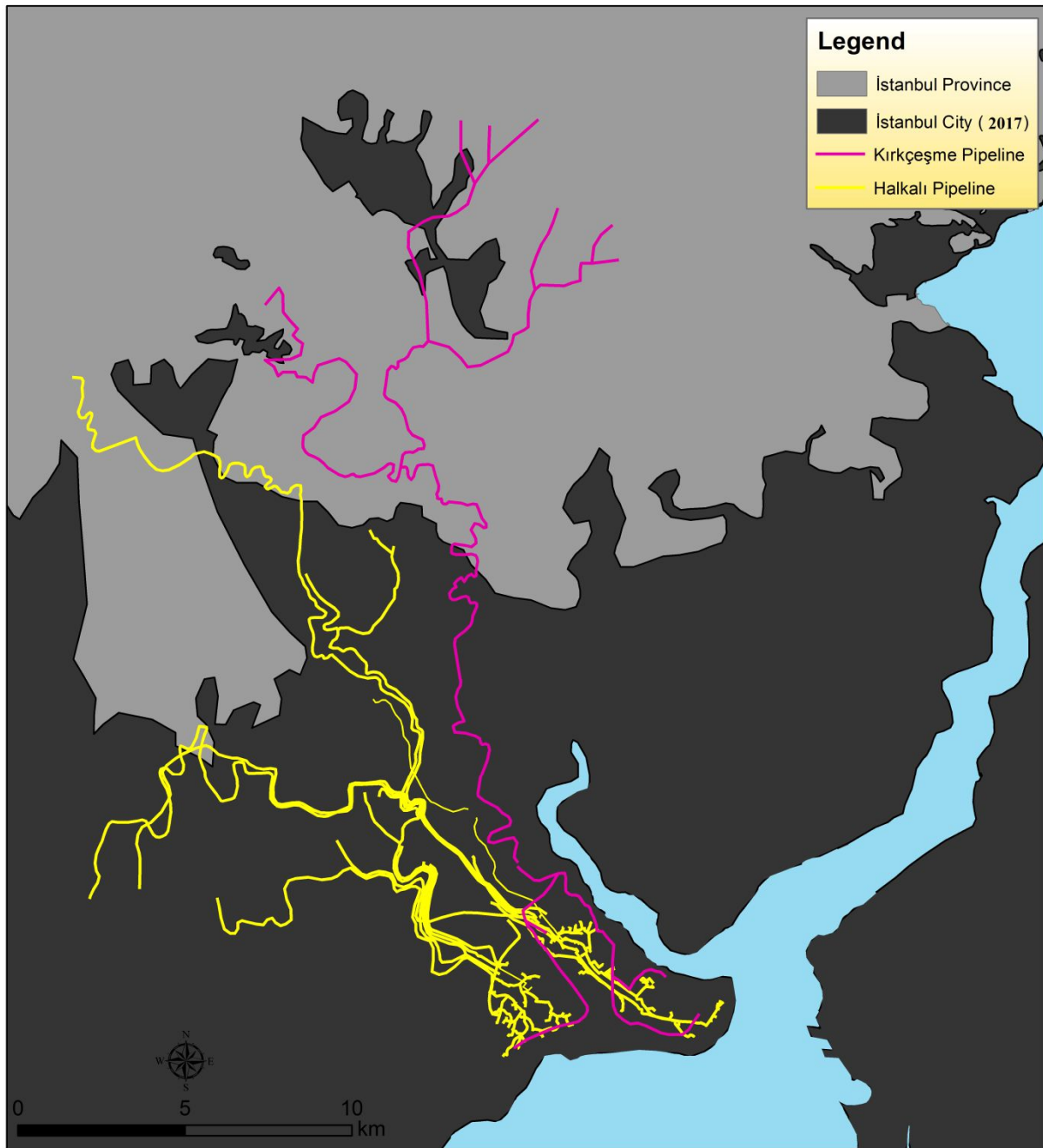
Map 6. Bala Line

6. Disappearance of fountains

Istanbul fountains and sebils were used until 1950's. After the 1980s, the water in the fountains became irregular and the fountains became obsolete. Nowadays almost no water is flowing, the main reason why the fountains and the sebils become idle is that the city of Istanbul is growing fast and unplanned. This urbanization movement was carried out on the canal lines so that the communication between the water resources and the fountains was cut off (map 7 and 8).



Map 7. Streets and Streets of Istanbul in the 1950s



Map 8. Area and Streets of Istanbul in the 1980s

Conclusion

In the formation of fountain and sebil culture in Istanbul, the physical geography conditions in Istanbul city are influential. The absence of any spring water physical geography conditions such as inadequate formation of rivers and inadequate use of underground water and religious factors, remaining water structures from Byzantium, The foundation system in Turkish culture and the increase in the population of Istanbul.

These fountains and sebils built after a while, Istanbul City has affected the various angles. Fountains and sebils are the first place to test architectural innovations. Apart from that, it has influence on both the physical and the names of the road networks. The fountains and the seas also affected the city economically and socially. it has been determined that there is a vital social and economic vitality around the fountains and the seaside.

Fountains and sebils have been influential in Istanbul city life for about 500 years. The loss of this activity took place in the 1980s due to the rapid spread of the city of Istanbul.



REFERENCES

- A. N. Angelakis and S. V. Spyridakis (2013). *Major urban water and wastewater systems in Minoan Crete, Greece*. Water Science & Technology: Water Supply.
- Allom, T.; Walsh, R. (1839). *Constantinople And The Scenery of The Seven Churches of Asia Minor, Illustrated*. Peter Jackson, Late Fisher, Son, & Company.
- Angelakis, A.N.; Dialynas, M.G.; Despotakis, V. (2012). Evolution of water supply technologies in Crete, Greece through the centuries. in: *Evolution of Water Supply throughout Millennia*; Angelakis, A.N., Mays, L.W., Koutsoyiannis, D., Mamassis, N., Eds., Chapter 9, London, UK: IWA Publishing, pp. 227-258.
- Avrupa Yakası Mikro Bölgeleme Raporu* (2007). 46 <http://ibb.gov.tr/tr>
- Bedal, L. A. (2003). *The Petra Pool Complex: a Hellenistic Paradesios in the Nabataean*
- Bedal, L.-A.; Gleason, K. L.; Schryver, J. G. (2007). The Petra Garden and Pool Complex. *Annual of the Department of Antiquities of Jordan*, vol. 51., pp. 151-176.
- Bellwald, U. (2008). The hydraulic infrastructure of Petra e a model for water strategies in arid lands. In: Ohlig, C. (Ed.), *Cura Aquarum in Jordanien. Proceedings of the 13th International Conference on the History of Water Management and Hydraulic Engineering in the Mediterranean Region*. Amman, Jordan.
- Bellwald, U.; al-Huneidi, M.; Salihi, A.; Naser, R. (2003). *The Petra Siq: Nabataean Hydrology Uncovered*. Amman, Jordan: Petra National Trust Publication.
- Bono, P; J Ceow; R. Bayliss (2001). The Water Supply Of Costantinople Archaeology And Hydrogeology Of An Early Medieval City. *Environmental Geology* 40, 1325-1333.
- Cumhuriyet Gazetesi*. 8 Temmuz 1931, Sayfa 2.
- Çeçen, Kazım (1991). *İstanbul'un Vakıf Sularından Halkalı Suları*. İstanbul: İski Yayınları.
- Çeçen, Kazım (1979) İstanbul'da Osmanlı Devrinde Su Tesisleri. İstanbul: İski Yayınları.
- Çeçen, Kazım (1988). Mimar Sinan Ve Kırkesme Tesisleri. İstanbul: İski Yayınları.
- Dumlu, Yalçın (2007). *İstanbul Jeoloji Sempozyumu III*, 293.
- Günay, H. Mehmet (2012). Vakıf. *DİA İslam Ansiklopedisi*, cilt 42: 479, İstanbul: TDV Yayınları.
<http://www.gaumontpathearchives.com>
<http://www.mustafacambaz.com>
- İstanbul Kadı Sicilleri, İstanbul Mahkemesi 24 Numaralı Sicil, (M 1726-1738) Cilt 21, Sayfa 195 Hüküm 12 <http://www.Kadisicilleri.org>
- Kahraman Ali, Seyit; Dağlı, Yücel (2003). *Günümüz Türkçesiyle Eviya Çelebi Seyahatnamesi*. C. 1, Kitap 2, İstanbul: YKY Yayınevi.
- Koç, Yunus (2010). Osmanlı Dönemi İstanbul Nüfus Tarihi / Demographic History of İstanbul in the Ottoman Period. *Türkiye Araştırmaları Literatür Dergisi*, Cilt 8, Sayı 16. 171-199.
- Kumbaracılar, İbrahim (2008) *İstanbul Sebilleri*. İstanbul: Kapı Yayınları.
- Larry, W. Mays; Koutsoyiannis, D.; Angelakis, A.N. (2007). *A brief history of urban water supply in antiquity*. Water Science & Technology: Water Supply, Vol 7 No 1 pp 1-12 Q IWA Publishing.
- Larry W. Mays (2002). *Urban Water Infrastructure: A Historical Perspective*. Chapter 1, Urban Water Supply Handbook. *Museum of Turkish and Islamic Arts Inventory*, No: 2254.
- Nirven, S. Nazım (1946). *İstanbul Suları*. İstanbul: Halk Basım Evi.
- Ortloff, Crouch (2001). The Urban Water Supply and Distribution System of the Ionian City of Ephesos in the Roman Imperial Period. *Journal of Archaeological Science*, 28, 843-860.
- Ostrogorsky, Georgiy (1991). *Bizans Devleti Tarihi*. Çev. Fikret Işıltan, Ankara: Türk Tarih Kurumu Yayınları.
- Özer, Serkan (2008). Geçmişten Günümüze Kent-Çevre İlişkisi İçinde Çeşmeler. *Atatürk Üniversitesi Güzel Sanatlar Fakültesi Dergisi*, 13, 129-134.
- Öziş, Ünal (1987). Historical Parallels in The Water Supply Development of Rome and İstanbul. in: W. O. Wunderlich, J. E. Prins, *Water Resources Developments in Perspective*, Rotterdam, 35-44.
- Tanışık, İ. Hilmi, (1943) *İstanbul Çeşmeleri I*. İstanbul: Maarif Matbaası.
- Tansuğ, Sezer (1965). 18.YY'da İstanbul Çeşmeleri ve Ayasofya Şadırvanı. *Vakıflar Dergisi*, S.6, 90-101.