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# Water Architectures in the Ottoman Empire, Examples from Antalya

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## I. INTRODUCTION

People have settled near water sources throughout history. Inhabitable areas expanded once people learned how to bring water to remote settlements. Civilisations constructed a variety of water structures in order to benefit from its functions and enjoy its aesthetic properties. Elements of water architecture found in Anatolia and Rumelia has been functional in almost all periods in history. Reservoirs used to store the transport water were also used for different functional purposes due to the difficulty of moving and collecting water. Due to the influences of Islam in this territory, the use of water gained popularity through public fountains and *sebils* that were mostly constructed with charitable intentions. For example, *shadivans* gradually became an integral part of mosques where people did their ritual ablutions.

Water architecture in the Ottoman Empire Era also has an important role in daily life due to cultural and religious reasons. Although with some variation, there are many water structures in Anatolia and Rumelia. Located on the south of Anatolia, Antalya Province is home to several valuable water structures from the Ottoman Period, of which some are still non-existent in literature. This study will analyse water structures from the Ottoman period in Rumelia and Anatolia and some examples of water structures in Antalya Province from the same period.

## II. OTTOMAN ERA WATER ARCHITECTURE

Preceded by the Roman and Byzantine Empires, the Ottoman Empire is the third and last

empire in the Mediterranean world. Back then, the Mediterranean region was regarded as a centre of development of civilisation (Ortaylı, 2003). The transport and provision of water was regarded as one of the most important issues in Ottoman urban technology. The quality of water structures was always at highest standards (Cerasi, 2001). Parallel to the development of the Ottoman state's political and economic power as of the 16<sup>th</sup> century, it became possible to use larger amounts of expensive lead which granted new opportunities in hydraulic engineering. Lead is effective in water insulation, practical to mould and shape, while worn parts can be smelted and reused. Such properties of lead quickly made it more popular than clay pipes. Consequently, the stone water reservoirs seen in water fountains from the Seljuk Era were no longer needed. However, more traditional techniques, materials and forms remained in use in Anatolian settlements outside of Istanbul. 15<sup>th</sup> century fountains generally comprised of a vaulted or domed water reservoir with a rather deep niche housing the tap on one side. There were also fountains covered with a wooden cornice. Beginning in the 16<sup>th</sup> century, the classical style of Ottoman architecture integrated function and adornment in a balanced way and this gradually started to emerge in Anatolian drinking fountains in form, technique or detail (Önge, 1997).

During the region of Mehmed II [the Conqueror] a comprehensive repair and development project commenced on the 130 km-long "Halkalı" water supply system, which is first of the three systems that provided water to the *Rumelian* [European] side of Istanbul. The second largest water supply system designed by Sinan the Architect was "*Süleymaniye*". Similarly, the "*Kırk Çeşme* [Forty Fountains]" water supply system in Istanbul is worth noting as it still remains in use today. Having also been employed in the construction of water supply systems of cities like Pompeii in the Roman Empire, water gauges were most extensively used in Ottoman water supply systems. The upward growth of large cities in the 19<sup>th</sup> century required pressurised public water supply systems to provide water to taller buildings (Kıratlılar, 1995).

Drinking Fountains are a prevalent form of water structure in the Ottoman Period. In addition to the existing fountain types, a new fountain style starts to appear in 16<sup>th</sup> century which features twirling spout taps on the exterior or interior facades with some of them

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having cavities to place water urns on the mirror stone. Various forms included: plaza fountains consisting of twirling spout taps installed on the facades of detached cisterns; fountains installed on the exterior or interior of buildings of various functions for the sole aim of providing drinking water; kerb fountains consisting either of a console shaped small basin with sprinkler or a small mirror stone with a twirling spout tap that pours water in to a small carved basin; *shadirvan* kerb fountains consisting of only a small carved basin installed on the side of pools/ponds; and, namazgah fountains located on one façade of the namazgah buildings. The 18<sup>th</sup> century saw the appearance of small quay drinking fountains, generally along the shoreline of the Bosphorus and Golden Horn in Istanbul for the benefit of fishermen and other seafarers in small vessels. By the end of the 19<sup>th</sup> century, original fountains were replaced by a sink installed with a tap and double volans. A good example is the sink inside Yıldız Palace made of white ceramic. Towards the end of the 19<sup>th</sup> century, following the legacy of the Balyan family, the famous Ottoman court architects, masters of Anatolian Greek and Armenian origin started to come into prominence in civilian architecture, particularly imperial architecture (Kıratlılar, 1997).

As with other structures of water architecture, major developments took place under Ottoman influence in *sebils* after the 15<sup>th</sup> century. In terms of architectural development, it is possible to say that starting in the 15<sup>th</sup> century Seljuk period *sebils*, in the form of a niched cistern installed on the walls of buildings, evolved into larger *sebilhanes* featuring sizable windows that opened out. Examples include Istanbul's first *sebil*, the Sebil of Efdalzade Seyyid Hamided din built in the Fatih district in 1496, and the TopkapıTekkeci İbrahim Agha *sebil* built in 1593. During the 16<sup>th</sup> century, *sebils* are usually seen integrated into civil architecture structures like palaces, mansions and pavilions. Towards the end of the 17<sup>th</sup> century changes start to take place in the polygonal plans of *sebilhanes* or consoles with the impact of the baroque rococo style. New structures featured curves and ornamentation alongside sharp corners and uniform facades. Such examples include the Sebil of Amcazade Hüseyin Pasha (c.1697) located in the Saraçhane *Külliyi* (Social Complex) and the Sebil of Emin Agha in Dolmabahçe (c. 1740). Starting in the mid-17<sup>th</sup> century until the end of the 19<sup>th</sup> century, very diverse types of *sebilhanes* appeared in the Ottoman capital Istanbul with the abundance of water supplied to the city, largely owed to economic development and prosperity. The 19<sup>th</sup> century saw the appearance of sebil facades or plaza sebils, generally formed of sebil windows installed on the corners. Having said that, besides various architectural features, traditional sebil architecture survived in Istanbul and, in particular, Anatolia (Önge, 1997).

Mostly made using white marble, *Selsebils* (ornamental cascading fountains) consisted of small basins of varying shapes at different levels that were fixed symmetrically on a large mirror stone as a main console, nestled on a wall or inside a niche that was bordered by raised motifs and affluently decorated profiles. Water rills from the upper-most outlet or small basin to the basins below before finally reaching a small pool on the ground. One of the most beautiful examples of such garden sebils is located in the garden of Muhsinzade Yalısı, a waterside Istanbul mansion built in the 19<sup>th</sup> century. The *se/sebil* found in the 19<sup>th</sup> century Konya Mawlana Islamic Monastery is much more modest compared to these examples. Inclined *selsebils* can be found inside the wall niche on the ground floor of the *ıvan* of the Semanoğlu Mansion (c. 18<sup>th</sup> century) and in the *serdap* (basement) of the Gevraniler Estate's harem (c. 1819). Although in different compositions, the *selsebils* seen inside the windows of the Sünnet Mansion of the Topkapı Palace in Istanbul can be found in traditional Ottoman structures like Yalı Mansion, Tersane Palace and Has Oda Pavilion. Today, most of the *selsebils* in Istanbul date to the 18<sup>th</sup> and 19<sup>th</sup> centuries (Önge, 1997).

The term *shadirvan* is generally used to describe the raised sided pools with ritual ablution taps on either side, found frequently on the interior or exterior walls, or in the central courtyard of Anatolian mosques. The first example of a *shadirvan* of this nature is thought to be the one constructed in the inner courtyard of the Fatih Mosque in Istanbul (c. 1470). Similar to fountains, the *shadirvan* pools in mosque courtyards start to feature twirling spouts around the mid-16<sup>th</sup> century. A few of the original twirling spouts can be found in some Anatolian villages and towns; for example, the *shadirvan* at the 16<sup>th</sup> century *zawiyah* at Abdal Hasan Village in Taşköprü. An example of a non-twirling, classical type spouted *shadirvan* is found at LalaHüseyin Pasha Mosque in Kütahya (c. 1568). Classical Ottoman *shadivans* more often have circular plans and prefer to use goblet shaped navel basins. Ornamentation can be seen on the exteriors of *shadivans* that were built after the 15<sup>th</sup> century. Examples of barriers covering the sides and top of *shadirvan* pools intended to prevent contact with water and disposal of coins also appear in this century. This is also when wooden shelters resting on columns around the pool appear in mosque courtyards aiming to protect people performing ritual ablution from the sun or rain. One of the earliest examples of such *shadirvan* covers is again found in Istanbul's Fatih Mosque. 16<sup>th</sup> century is the period when mosque *shadivans* reach their pinnacle in terms of architectural constitution and function. There are also water aeration facilities known as water mansions or enclosed *shadivans* that resemble classical mosque *shadivans*, but lack ablution taps on the sides of the pools. The *shadirvan* pool at the Manisa Hafiza Hatun Mosque

(c. 1522) has a circular plan with an approximate diameter of 5.50 m and an approximate height of 1.10 m. Beginning at the end of the 18<sup>th</sup> century, *shadirvans* gradually start lose their architectural character, get smaller and even start to disappear. The *shadirvans* at Laleli Mosque (c. 1763), Eyüp Sultan Mosque (c. 1800), Nusretiye Mosque (c. 1826) have a weakly founded architectural structure. The *shadirvans* at Dolmabahçe and Ortaköy Mosques (both c. 1853) and Yıldız Hamidiye Mosque (c. 1886) are no longer visible (Önge, 1997).

### III. OTTOMAN ERA WATER ARCHITECTURE, ANTALYA

Antalya Province is a touristic city situated on the Mediterranean coast in the Mediterranean Region, in South Turkey (Figure 1). It is encircled by the provinces of Burdur, Isparta and Konya to the north, Karaman and Mersin to the east and Muğla to the west. The Mediterranean Sea is to the south. Antalya, meaning "home of Attalus" is believed to have been founded by King Attalus II. After the demise of the Kingdom of Pergamum (133 BCE) the city briefly enjoyed independence before falling to pirates. It was annexed to the Roman empire by Commander Servilius Isauricus in 77 BCE. In 67 BCE the city became the naval base of Pompeius' fleet. Hadrianus' visit to Attaleia in 130 CE contributed to the development of the city. During the reign of the Byzantines the city was listed an episcopate. Archaeological digs in and around Antalya prove that the place was first inhabited by people 40,000 years ago. Since 2000 BCE the region has successively been under the rule of city states like the Hittites, Pamphylia, Lycia, Cilicia and later Persians, Alexander the Great and the subsequent Kingdoms of Antigonos, Ptolemais, Selevkos and Pergamum. The city was later ruled by the Roman Empire. In the archaic ages Antalya was known as Pamphylia and the cities founded here went through a golden age in the 2<sup>nd</sup> and 3<sup>rd</sup> centuries but started declined towards the 5<sup>th</sup> century.

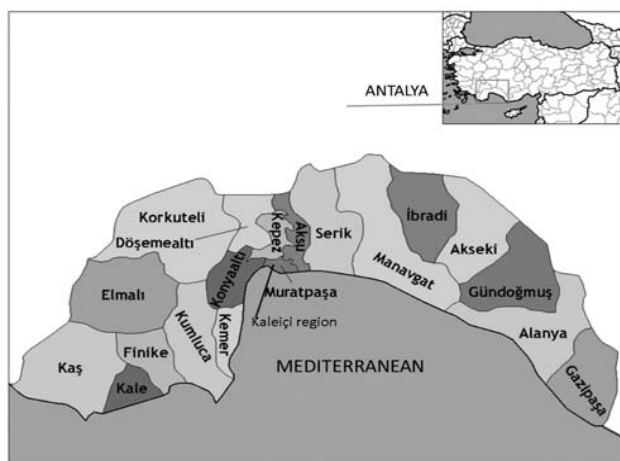


Figure 1: Location of Antalya, Elmalı District and Kaleiçi historic urban quarter

The region fell to the Seljuks in 1207 while it was still under the rule of the Byzantines (aka Eastern Roman Empire). During the Anatolian Principalities period it fell under the rule of the Hamids, an arm of the Teke Tribe. During the reign of the Ottomans, today's Antalya provincial centre was the centre of the Teke Region in the Anatolian State. The area was known as the Teke Region during this period. The famous Ottoman traveller Evliya Çelebi who came to Antalya in the second half of the 17<sup>th</sup> century wrote about the presence of 3 quarters and 3000 homes in the citadel and an additional 24 quarters outside the walls. The commercial centre of the city was outside the castle walls. According to Evliya Çelebi, the harbour was large enough to house 200 vessels. Antalya, the centre of the Teke Principality was under the administration of Konya however it became an independent principality towards the end of the Ottoman Empire (Anonymous, 2017).

Both situated within the borders of Antalya Province, Kaleiçi historic quarter and Elmalı District is home to structures from the Ottoman era. This study examines some of these which feature water elements.

Thought have been built between 1607-1616, Tekeli Mehmet Pasha Mosque is located in the Kaleiçi historic quarter of Antalya Province. The minaret is located on the north-western corner of the mosque while the *shadirvan* lies to the east (Kılıç, 2013). Today, the *shadirvan* is used for ritual ablution (Figure 2).

Murat Pasha Mosque was commissioned by Murat Pasha and was built between 1570-1571 and is near the Kaleiçi historic quarter. The *shadirvan* is located to the north of the courtyard, on the axis of the main entrance. Featuring an octagonal plan, the *shadirvan* has a reservoir in the middle. The octagonal shaped marble clad reservoir has taps on its facades. The *shadirvan* which features the characteristics of the period has a conical cover supported by eight marble columns with stalactite capitals (Kılıç, 2013) (Figure 2).

Ketenci Ömer Pasha Mosque stands out as the largest mosque and monumental structure of Antalya's Elmalı District. The structure which is a notable example of classical Ottoman architecture was renovated by the General Directorate of Foundations twice, in 1938 and 1968 (TVAEE, 1983). As with similar examples, the *shadirvan* seen adjacent to the mosque is for ritual ablutions (Figure 2).

Constructed using stone, the *shadirvan* has an octagonal plan and features a pool in the middle. The exterior of the pool has 16 cusps. Each façade has been separated into rectangular panels with embedded pillars. There is an ablution tap in the centre of each of these panels. The reservoir/ is set in motion with triple-tiered moulds. There are two rows of kaval moulds at the bottom and three rows of concave moulds above and at the ends of the reservoir. 16 pillars support the flat dome that covers the pool. The *shadirvan* has a conical cover



standing on eight reinforced concrete piers that are reinforced by Bursa style arches (Kılıç, 2013).

Constructed in the second half of the 14<sup>th</sup> century, the Nazır Hamam in Antalya Kaleiçi bears a lot of resemblance to the plan of the Bali BeyHamam. Adjacent to the wall on the northern façade, the building has a rectangular plan of approximately 9.50 x 2.50 m that extends on the southwest-northeast axis. An entrance unit has been added to the northwest façade at a later date. The entrance leads to the changing room and that leads to the warm room through a door opened in the middle of the north wall that is bordered with a rectangular cuspidate arch. The hot room is in the centre and consists of three *iwans* while the north and east corners functions as private rooms. The exterior façade is completely plastered and lime-washed and all of the domes have been cement coated with the exception of the circular glass windows (Yılmaz, 2002) (Figure 3).

Cumhuriyet Hamam (Bali Bey Hamam) lacks an inscription about its construction and renovation however, the Prime Ministerial Archives hold a record of the structure under "...Bali Beg hamam Ottoman Imperial Construction Contract" belonging to the Teke Region dated 1606-1607 (Hijri: 1015). The building has a 12.00 x 24.00 m sized rectangular plan that extends on the east-west axis. The eastern façade that looks to the Bali Bey Mosque is made of rubble stone. The building is accessed from the western façade which initially leads to the dressing room that features a hipped roof that has lost its original form. The door opened in the middle of the eastern wall of the dressing room leads to the warm room which consists of the central domes section and two smaller domes areas on either side. The hot room is accessed from the door opened on the eastern wall of the central domed area of the warm room. The hamam is covered with a roof containing windows known as "elephant's eyes". The building does not feature any decorations and has lost its original form internally and externally by means of various interventions (Yılmaz, 2002). Amongst the examined hamams, Bali BeyHamam is significant for being the oldest structure outside the citadel during Ottoman rule (Figure 3).

Ömer Pasha Hamam (Bey Hamam) is one of the oldest hamams in Antalya's Elmalı District. It is mentioned on records in 1455. Back then, the foundation is in the name of Mevlana Ali. There are records of the building in the foundation logs of 1530 and 1567. The hamam is located to the northeast of Ketenci Ömer Pasha Mosque and it is believed to be today's Bey Hamam. However, this is not precise information. The structure known as Bey Hamam has a renovation inscription dated to 1890 (Duymaz, 2008).

The hamam which consists of cold, warm and hot rooms has a plan of four *iwans* and cells in all

corners. The hot room has a quadruple *ivan* plan with a central dome and four *iwans* covered by cavetto vaults on either side that open up to the centre with lancet arches (Köklü, 2003) (Figure 4).

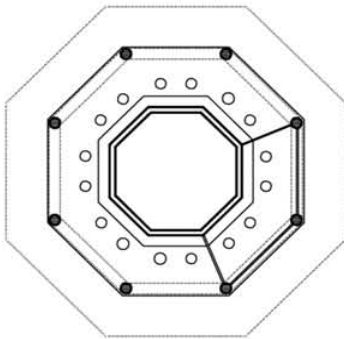
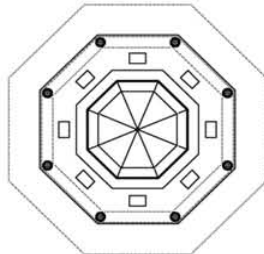
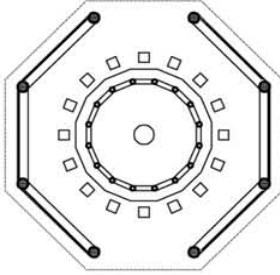
| EXTERIOR VIEW                                                                       | PLAN                                                                                              | POSITION                                                                                                                                                    |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <br>Figure 2b   | <br><br>$36^{\circ}53'11.8''\text{N}$<br>$30^{\circ}42'20.6''\text{E}$   |
|   | <br>Figure 2d  | <br><br>$36^{\circ}53'28.4''\text{N}$<br>$30^{\circ}42'09.2''\text{E}$   |
|  | <br>Figure 2f | <br><br>$36^{\circ}44'34.5''\text{N}$<br>$29^{\circ}54'50.6''\text{E}$ |

Figure 2a, Figure 2b. Tekeli Mehmet Paşa Mosque Şadırvanı, plan (Original, 2017)  
Figure 2c, Figure 2d. Murat Paşa Mosque Şadırvanı, plan (Original, 2017)  
Figure 2e, Figure 2f. Ketenci Ömer Paşa Mosque Şadırvanı, plan (Original, 2017)

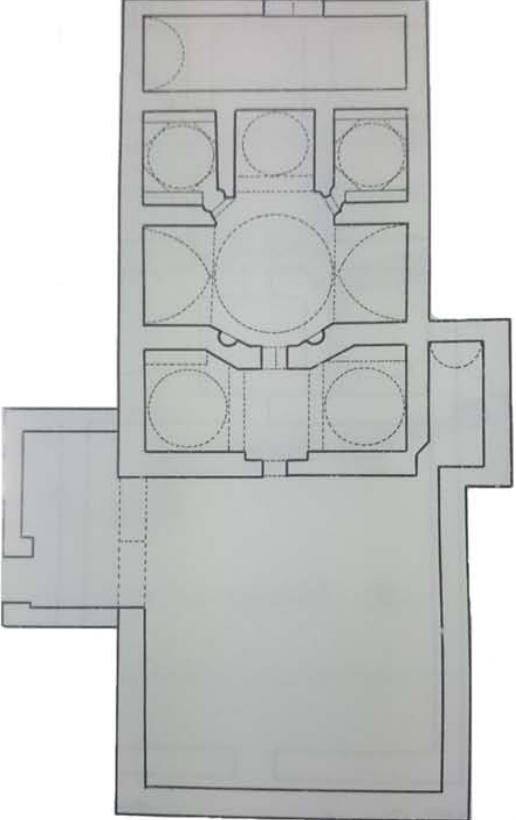
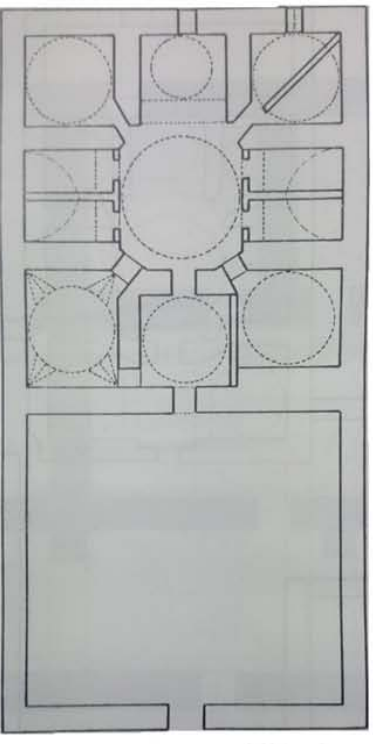
| EXTERIOR-INTERIOR VIEW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PLAN                                                                                                  | POSITION                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|  <p>Figure 3a: Nazır Hamamı dome view</p>  <p>Figure 3b: Nazır Hamamı dome's exit stairs</p>  <p>Figure 3c : Nazır Hamamı warmth space</p>  <p>Figure 3d : Nazır Hamamı warmth space</p> |  <p>Figure 3e</p>  |  <p>36°53'10.4"N<br/>30°42'23.1"E</p>   |
|  <p>Figure 3f : Cumhuriyet Hamamı dome's view</p>  <p>Figure 3g : Cumhuriyet Hamamı entrance from main street</p>  <p>Figure 3h Cumhuriyet Hamamı warmth space</p>                                                                                                   |  <p>Figure 3i</p> |  <p>36°53'18.4"N<br/>30°42'20.9"E</p> |

Figure 3a, Figure 3b. Nazır Hamamı (Original, 2017)  
 Figure 3c, Figure 3d. Nazır Hamamı (Yılmaz, 2002)  
 Figure 3e. Nazır Hamamı plan (VGM, 2017)  
 Figure 3f, Figure 3b. Cumhuriyet Hamamı (Yılmaz, 2002)  
 Figure 3g, Cumhuriyet Hamamı (Original, 2017)  
 Figure 3h. Cumhuriyet Hamamı (Original, 2017)  
 Figure 3i. Cumhuriyet Hamamı plan (VGM, 2017)

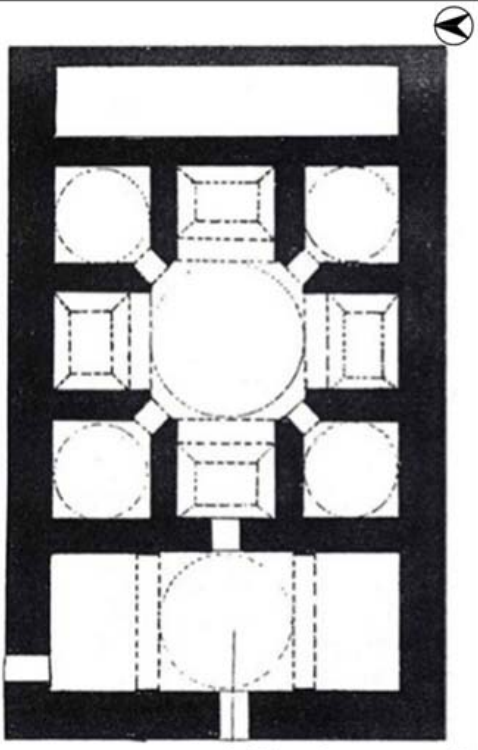
| EXTERIOR-INTERIOR VIEW                                                                                                                                                                                                                                                                     | PLAN                                                                                                | POSITION                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------|
|  <p>Figure 4a :Ömer Paşa Hamamı(Bey hamamı) dome's view</p>  <p>Figure 4b :Ömer Paşa Hamamı(Bey Hamamı) warmth space</p> |  <p>Figure 4c</p> | <p>36°44'37.3"N<br/>29°54'51.7"E</p> |

Figure 4a. Ömer Paşa Hamamı (Bey Hamamı) (Köşklü,2003)  
 Figure 4b. Ömer Paşa Hamamı (Bey Hamamı) (Karadağ,2017)  
 Figure 4c. Ömer Paşa Hamamı (Bey Hamamı) plan (VGM,2017)

#### IV. CONCLUSION

Owing to its climate and location, Antalya has always been a popular place to live in Anatolia in all stages of history. There are several historic structures from the Ottoman Era within Antalya. The water structures examined in scope of this study are located in Elmalı District, one of the fertile grain production centres of Anatolia during the Ottoman period, and in the historic Kaleiçi quarter on the coast, in downtown Antalya. Although previous renovations have caused a certain degree of damage to these structures, they still exist and even continue to be used within the historic fabric of the area. The existing relieves for the examined structures have been disseminated and relieves were prepared for those without in order for them to enter literature.

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