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Wastewater and Environment

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PROCEEDING BOOK

EDITORS

Alper BABA

Orhan GÜNDÜZ

Gökmen TAYFUR

PREFACE

The 2nd Regional IWA Symposium on water, wastewater and environment is hosted by the Izmir Institute of Technology in Çesme-Izmir, Turkey between the dates of March 22 and 24, 2017. Following the previous IWA conferences, the theme of this conference was ‘The past, present and future of the world’s water resources’ which established the trend of thinking of the participants and determined the composition of the papers those were presented. Inspired by the IWA’s vision that is ‘A world in which water is wisely managed to satisfy the needs of human activities and ecosystems in an equitable and sustainable way’ the community of professionals concerned with water, presented their experiences for sustainable urban and basin-related water solutions.

The purpose of the symposium was to highlight water as a source of life and to stress the need for water cooperation between all actors in society to protect its value and exchange ideas between academia and industry on various forms of water cooperation that are fundamental to water use and water management. Also to identify good practices for water cooperation and demonstrate its merits for poverty eradication, economic development, environmental sustainability and peace.

The conference technical programme was organized in the following general areas: Water Treatment; Ancient Water Systems; Water Resources; Hydrology and Hydrogeology; Modeling and Simulation; Water Quality; Waste Management; Ecotoxicology and Health Risks and Water Reuse. We hope that the contents of the related papers will be beneficial source of information on water, wastewater and environment related engineering applications.

211 abstracts were presented in 30 sessions during the three days of the conference. We wish to acknowledge and express our sincere gratitude to the Organizing Committee for their valuable efforts and to the Scientific Committee for their precious time spent in reviewing of the submitted papers.

On behalf of the Organizing Committee

Prof.Dr.Alper BABA

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Investigation of Historical Water Structures of Sanliurfa: Baths and Public Baths

Kasım Yenigün^{1,a}, Cihat Kürkçüoğlu², İbrahim Yenigün³ M. Yaşar Sepetçioğlu⁴ and Gökmen Tayfur⁵

1. Harran University, Engineering Faculty, Civil Eng. Department, Şanlıurfa, Turkey

2. Harran University, History of Art Department, Şanlıurfa, Turkey

3. Dicle University, Park and Garden Plants Department, Diyarbakir, Turkey

4. Harran University, Hilvan Vocational School, Şanlıurfa, Turkey

5. Izmir Institute of Technology, Civil Engineering Department, Izmir, Turkey.

a. Corresponding author (kyenigun@hotmail.com)

ABSTRACT: Bathing has been a vital part of our life since early ages. The bath structures constitute a very important contribution to the cultural heritage of the world, also in Turkey. Today each house has a bathroom and people do not have time to go to the public bath because of the fast pace of life. Nevertheless, many people still believe to the necessity of the baths for health and importance for our social life. Most of the cities of Turkey have many water structures carried traces of the past and cultural symbols. Investigation of these structures and achieving lessons from them, especially the baths, is our responsibility to the history.

As one of the oldest cities in the world, Urfa also has many historical and new baths. The ancient baths continue to convey many cultural backgrounds to us, while resisting the adverse conditions of the day. With this study, Urfa's bathhouse inventory was tried to be created. The construction periods of the baths, their current situation, and plans are presented with photographs. Thus, a scientific document has been presented.

Although the result of religious beliefs in different civilizations is different in societies, "hamam" culture and architectural analysis, and the place of the baths in the public life is very important and it has always been important in the socialization of the societies as well as serving the needs of the people.

1. GENERAL EVALUATION of BATHS (HAMAM)

The history of baths (or cleansing) dates back to the early times. In the early ages, human had purified in streams and seas, then bringing open and closed rooms under the influence of their beliefs, creating baths that are the source of today's bathing culture. Ganges River for the Indians, Euphrates for the Assyrians, and Nile River for Egyptians were important places for both physical and spiritual cleansing. Traces of the first closed spaces to wash can be seen in India, Egypt and ancient Aegean and Greek civilizations.

In the excavations related on the earliest baths, the advanced water and sewage system that emerged in Mohenjo-Daro, the most important city of the Indus civilization of 2500-1500 BC in Sind, west of Pakistan, suggests that there were baths there. Moreover, excavations in Mesopotamia found a Bathing Site belonging to the Assyrians, is believed to be the oldest bath in the world. With being primitive, examples of early baths are also found in Tell el-Amarna in Egypt. The bath which was found in Mesopotamia, belonging to the 3rd

Salmanasar, King of Assyria who ruled between 859-824 BC, and special divisions used for bathing in the city ruins of the third century BC in the Resulayn near the border of Turkey-Syria, and the remains of a bath belonging to the Late Hittite period (1200 BC) in Zincirlihöyük near Gaziantep in Anatolia can be given as examples for the earliest baths. It is known that there were 170 general baths in Rome at 33 BC. In 1638, there were 302 public baths and 14234 private baths in Istanbul (Eyice, 1997; Ürük, 2016).

The roots of Roman baths are Greek baths, but the Romans developed the bath. The first public bath known was the Stabia Bath in Pompei City. In the fourth century BC, the baths became quite developed places, and these places gained the bathing identity as a center of physical discipline and health. After the imperial era, architecture of public bath was appeared in Rome. Imperial baths, called "thermae", were massive and architecturally magnificent as they show the power of the emperor. One of them is the Caracalla Bath which was built by the Roman Emperor Caracalla (Figure 1). It is believed that an architect named Sergius Orata, lived in the first century BC, brought the central heating system with hot air for the first time and that the bathing structures became widespread with the application of this system. The architecture of the Roman baths, their internal ornamentation, and their large size have made these structures important in terms of art history. Public baths and private baths, for houses of the rich, were built in all the regions extended by the Roman Empire (Ulgen, 1950; Eyice, 1997).

Early baths (or hammams) of Islamic era were built in the eighth century by the Umayyad rulers. The most famous of them are Qasr Amra, Hamamu's-Sarah and Khirbat al Mafjar (Figure 2). After that, parallel to the rising of Islam, it had been a rapid change in the architecture of baths from Roman to Islamic bathing habits. All of these baths are of the same character in terms of typology. These baths carried only the tradition of Roman baths with heating systems and service departments (Creswell, 1989; Ulgen, 1950; Nielsen, 1995; Grabar, 1998).



Figure 1. Caracalla Bath in Rome
(Tour in Rome, 2015)



Figure 2. Qasr Amra in Jordanian desert
(Historvius, 2017)

In order to worship in Islam, it is also necessary for a person to keep both his soul and his body, his clothes and his surroundings clean. Islam makes it necessary to bathe in a stream that is not stagnant. For this reason, while religious and commercial buildings were being built during the Seljuk and Ottoman periods, the construction of the bath (hamam) was completed first, in order to enable the employees to perform their worship with ease. After the construction of the baths, some foundations were established to sustain their functioning. "Building a bath" is a sign of wealth and charity in popular Turkish folk culture (Yegul, 2011). The magnificent Roman baths have greatly influenced the washing

and purification cultures of the Ottomans. However, over time, by the influence of the Ottoman culture and architecture it has developed and took place on the history pages as "Turkish Bath" (Figure 3), (Uruk, 2016).

Hamam is the general name of the places built for washing people by heating the water. The origin of the Arabic baths is the hamm (hamam) which means "to warm up, to be warm". The meaning of the word is "warming place" for bathing and it is used in the sense of bathing place. Its Persian meaning is "germâbe" (Ulgen, 1950).

Turks, especially the Ottomans, had gave a great importance to the hamam. Establishing "tent baths" by army in the places where they lodged in Seljuk period shows the trace of its importance. In the Ottomans, many public baths were built at the places where the Empire borders reached. Beside these public baths, many small private baths called "gusülhâne" have been built in houses of the smaller settlements (Figure 4), (Kuban, 1977; Eyice, 1997; Oruc, 2009).



Figure 3. The interior view of Yalınayak Bath, Tire-Izmir, Turkey (Reyhan et al., 2013)

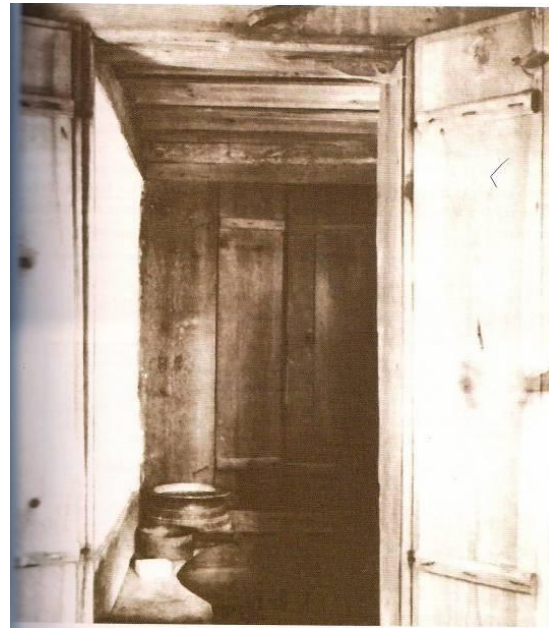


Figure 4. The "gusulhane" plan and its appearance in the room of traditional Safranbolu house. (Gunay, 1989)

Bath structures were built in all cities of the Seljuk Period and the following Sultanates (Beylikler) era. The baths were reached both the architectural and the technical peak in the Ottoman Empire period. Many significant examples were built in major cities of the empire like Bursa, Edirne and Istanbul. The baths, which served to obtain income for foundations, parallel to their purpose, continued their existence until the nineteenth century. Today, they serving mostly for touristic purposes and some of the baths have lost their unique functions (Ertuğrul, 2009).

Baths are classified as private and public baths according to their usage patterns, or classified as single and double baths according to usage for men and women. The single baths are made for men and the double baths consist of twin baths built adjacent to each other, one for men and the other for women. (Eyice, 1960; Önge, 1988). The washer is called the tellak (dellâk) in the Ottoman-Turkish baths. There are also a servant group which are named by the names such as "külhancı", "meydancı", "peştemalçı", "çıkmacı", "kahveci" etc. (Uzun and Albayrak, 1997).

In the baths where the Seljuks built in Anatolia, they were washed at the "kurna" structure (Figure 5). "Göbektaşı" was used for sweating instead of a separate closed space (Figure 6). The dressing areas have become in big size and the fountains have started to be built in the middle part for rest and relief (Önge, 1988).

The idea of planning the baths remained unchanged in the Ottoman era and the architectural details inside were developed and used. Baths were also built in Istanbul with the conquest of Istanbul. Turkish baths are classified in 6 categories according to their temperature (Figure 7), (Önge, 1981; Eyice, 1997; Ertugrul, 2009).



Figure 5. The "kurna" structure (Water World, 2013)



Figure 6. The "göbektaşı" structure (Uruk, 2016)

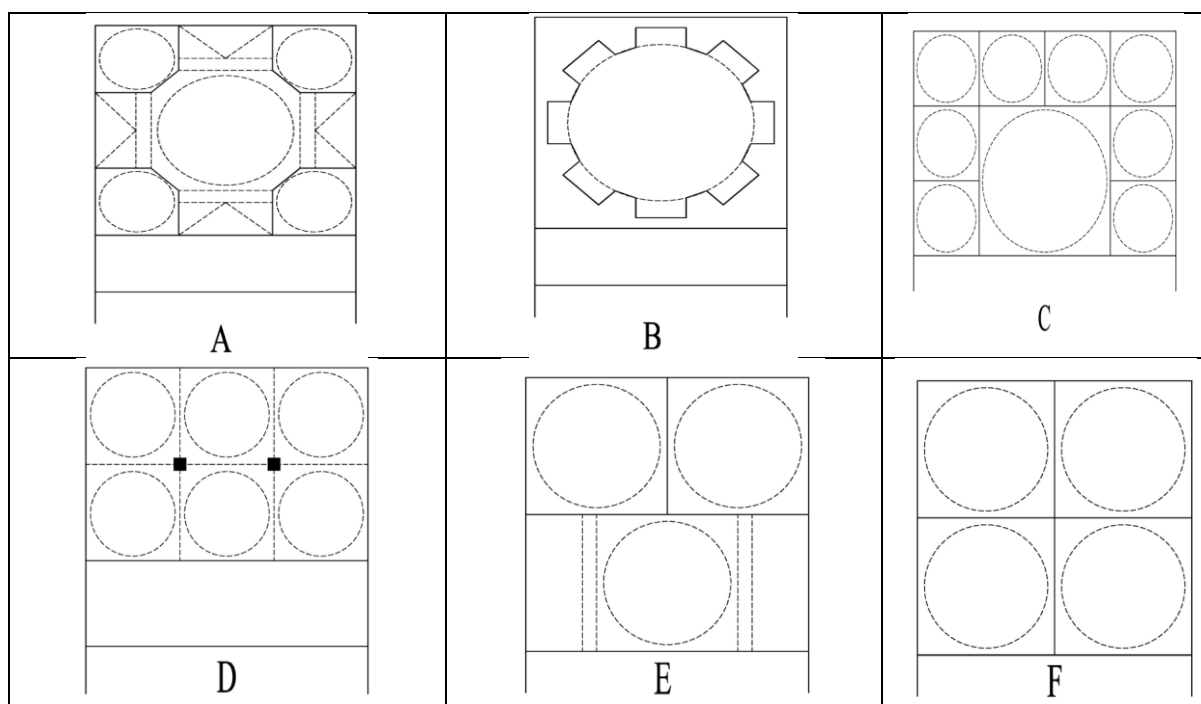


Figure 7. Classification of Turkish baths; (A) Four corner type, (B) Star shaped type, (C) Square type, (D) Multi-domed type, (E) Central-dome type (F) Similar rooms for each functions (Ertugrul, 2009)

When the historical development of the baths and the functions of the spaces are examined, it can be mentioned that some places have different names but have the same function. The disrobing area "soyunmalık-camekan", the warm area "ılıkılık", the hot area "sıcaklık" and the hot and cold water reservoirs and the furnace "külhan" part can be seen in the Turkish baths (Aru, 1949; Onge, 1986).

In the Roman baths, the name of the main entrance to the locker room is Apoditerium. From here, one can be transferred to the Frigidarium, which has a large pool and cold water. After this part, there are tepid Tepidarium part and the main hot Caldarium parts. There are many Roman baths in Anatolia. Some of them were found in Ankara, Ephesos, Miletos, Pergamon, Priene, Perge and Side (Farrington, 1995).

The clean water required to operate baths is obtained from natural water sources such as spring, lake, or from wells and cisterns. In the past, it was observed that some baths took water from the city network where the water was carried with the channels. The water brought to the baths is transferred to the interior sections through a distribution center, called maslak or maxem. Then, the water is sent to the cold water store and to the fountain by the holes. In Turkish baths, water was distributed with special pipes called "pöhrenk" or "künk" made of terracotta. Water comes from here to the "kurna" structures. (Önge, 1981; Kurkcuoglu, 1992; Yenigun et al, 2013).

2. ANCIENT BATHs in OLD URFA

Şanlıurfa which is located in southeastern Anatolia-Turkey, is known as oldest city in the world after excavation and findings of Gobeklitepe (Figure 8). The life had started in Urfa (or Edessa, the name of the city in Roman times) by the 11500 years BC, continued through Mitanni times in the 2nd millennium and extended from the Hittites, Assyrian, Persian and to the early Roman periods of the 1st millennium BC to the Imperial Roman and Byzantine eras of the first millennium of our era. Settlement continued through the Arabs beginning in the 7th century CE and continued through the Seljuk, Safavid and Akkoyunlu periods to the 15th century. The Turkish settlement began in the 16th century and continues until today (Figure 9).



Figure 8. The location of Şanlıurfa in Turkey

Şanlıurfa is a rich city of ancient water structures and it has common ancient water structures such as aqueducts, galleries, reservoirs, maksems (water distribution structures), fountains, cisterns and wells from the old civilizations. City center is also decorated with

Turkish baths and çimeceks (a Turkish public bath for only one person) (Kurkcuoglu, 1992).

Most of the historical sources describe Şanlıurfa as a ‘water abundant city’ although it is located on the hot and arid part of Anatolia. One of the ancient names of Şanlıurfa ‘Orhay’ is accepted as a distorted version of ‘Kallirrhoe’ (beautiful city of watercourses), or a name derived from the themes in the Sami language ‘wrh’ (water), or in Arabic ‘wariha’ (abundant in water) (Çeçen and Gökçek 2005; Segal 2005).

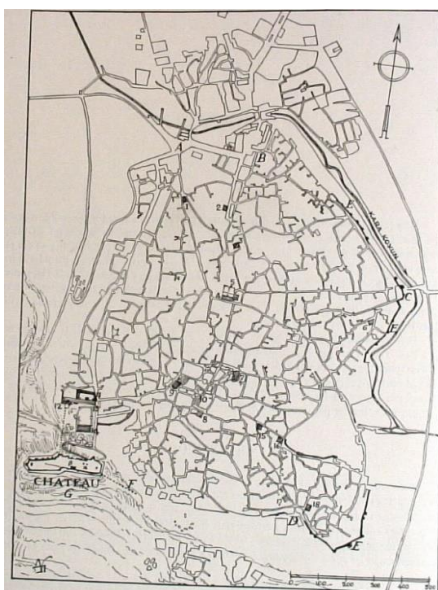


Figure 9. The old city plan of Urfa.

Water structures of the city, especially baths and “çimecek”s, were partially mentioned in the literature related the history of the city. However, research on the historical water structures of the city, especially in terms of engineering are scarce.

The aims of this paper are to describe origin and development of the bath, features of the baths along the historical eras, and lastly investigation the baths of Şanlıurfa with defining some of their technical details, locations, updated positions, and to establish an archive about them.

According to historian Mar Yeşua (1958); a public bath had been constructed by the governor Alexander in 497, then two man dead in the collapsing of the summer bath in 498, and the winter bath, near the Harrankapı, had been used as a hospital at the big famine that occurred in 501. Near the well of Prophet Eyüp, a bath was constructed in 490 by Bishop Nona, after he learned that the water of the well was suitable for the treatment to the leprechaun.

Evliya Çelebi, famous Turkish traveler, had written the names of the eight old Urfa baths in his travel book named Seyahatname, which are; Pasha (or Yıldız), Samsat Kapi, Hacı Beg, Cincikli, Arasa, Muharrem, Kecici and Meydan. Pasha bath had been destroyed by governor of the era in 1958, during reconstruction applications. Some parts of that bath is still conserved underground. But the place of Hacıbeg bath is still unknown. There were many historical baths, which are not in still or not in operation now, listed below (Kurkcuoglu, 1992):

- 1) BeyKapisi bath had been constructed in 1751 and located in north of the Kara Musa Mosque, Beykapisi district. It was demolished in 1940 (Figure 10)
- 2) Mencek bath had been constructed as a big and double style bath. Its features were written in detail in 1373 dated Emir Mencek İbni Abdullah Charity.
- 3) Karaburc bath was constructed belonging to the 1696 dated Abbasiye Foundation in Harrankapı district.
- 4) Denekovan bath; according to the information of Rızvan Ahmet Pasha Foundation dated 1740, Denekovan bath was in Kunduracı Bazaar.

- 5) Halilürrahman bath was in the corner of Prophet Abraham Lake and the Great Road and it is not there anymore due to demolition in 1945 (Figure 11).
- 6) Ayaklı Bath belonging to the 1780 dated Kutbeddin Mosque Foundation at near to the old palace (Figure 12).
- 7) Kuloglu bath; 1722 dated Hacı Nimetullah Bini Asker Vakfiyesi, place of the Kuloglu bath is unknown.
- 8) The Arasa bath is the old Arasa bath which is available today alongside the İsoţçu Bazaar (Figure 13)

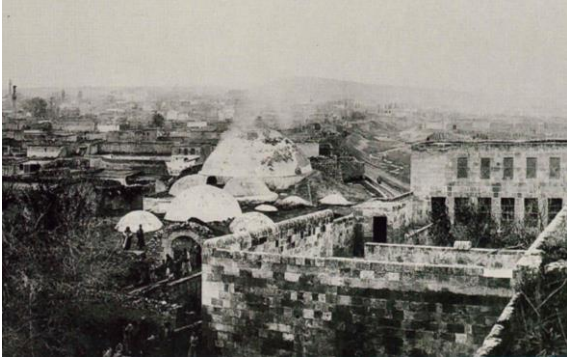


Figure 10. Beykapısı bath in 1940 (Photo: Max Von Oppenheim; Aran and Akgul, 2016)

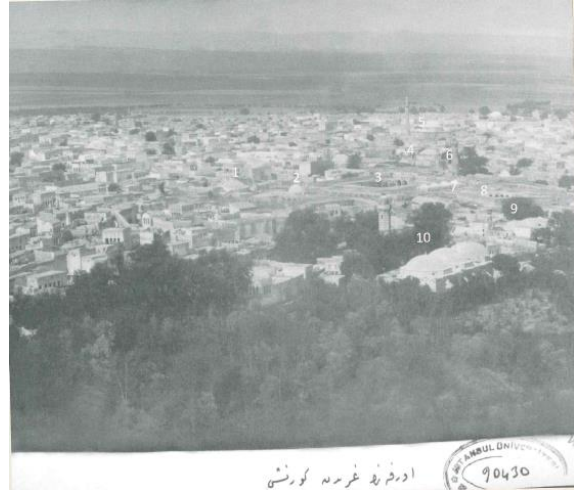


Figure 11. Halilürrahman Bath
(Photo: C. Kurkcuoglu; Kurkcuoglu, 2011)



Figure 12. Ayaklı bath (Kurkcuoglu, 1992)

Figure 13. Historical Arasa (or Melhem) Bath
(Kurkcuoglu and Kara, 2009)



Gelener (2011), in his study, showed the general location of some historical Şanlıurfa baths on a map (Figure 14).

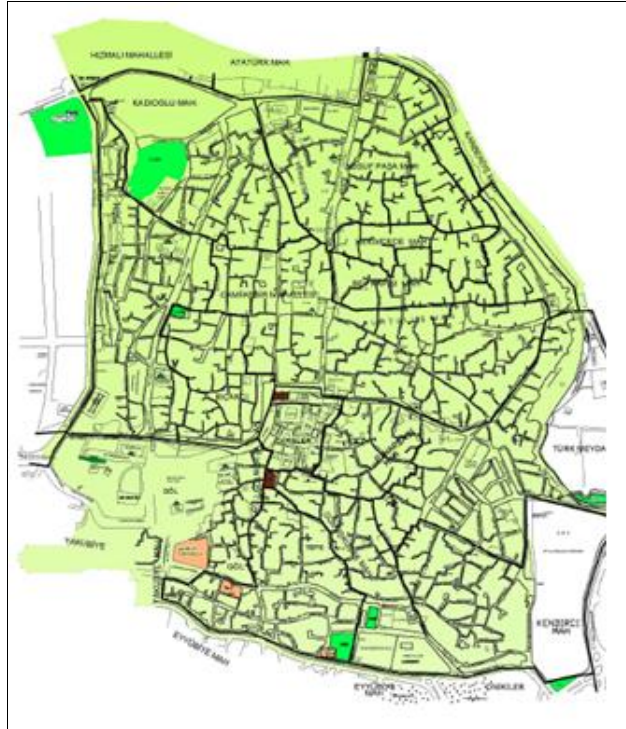


Figure 14. General locations of some historical Şanlıurfa baths

The baths, which are still exist and under operation today, are Sultan, Kececi, Vezir, Cincikli, Velibey, Serce, Saban and Old Arasa. Figure 15 shows the location of the Velibey and Saban Efendi baths in historical photograph (Kurkcuoglu and Karahan, 2009)



Figure 15. Western side of Şanlıurfa, (1) Velibey (Veli Beg) Baths and (4) Saban Efendi Baths

Some of the important old baths are detailed below;

Cıncıklı Bath; Cıncıklı bath is in Karaburç district, Hızanoğlu Street, at the east side of Hızanoğlu Mosque. Its construction date is unknown due to the absence of inscription. It had been repaired in 1729 (Figure 16).

Keçeci Bath; Keçeci bath had been constructed at east side of the Sultan bath. The purpose of that bath was to prepare hot water for the "keçe" (coarse and thick fabric that is made by compression of the hair sheep, goats or camels, etc. to produce rugs), (Figure 17).

Old Arasa Bath; Old Arasa bath is in Isotcu Bazaar. Its construction date is unknown due to the absence of inscription. But it may be existed in XVII century due to its name was in Evliya Çelebi's travel book named Seyahatname (Figure 18).

Şaban Bath; Şaban bath is located in Kazancı Bazaar. Its construction date is unknown due to the absence of inscription. According to the records of 1767 dated Kazzaz Mehmet Çelebi İbni Abdullah Foundation, it is belonging to the Şaban Efendi foundation and it had been constructed in XVIII century (Figure 19).

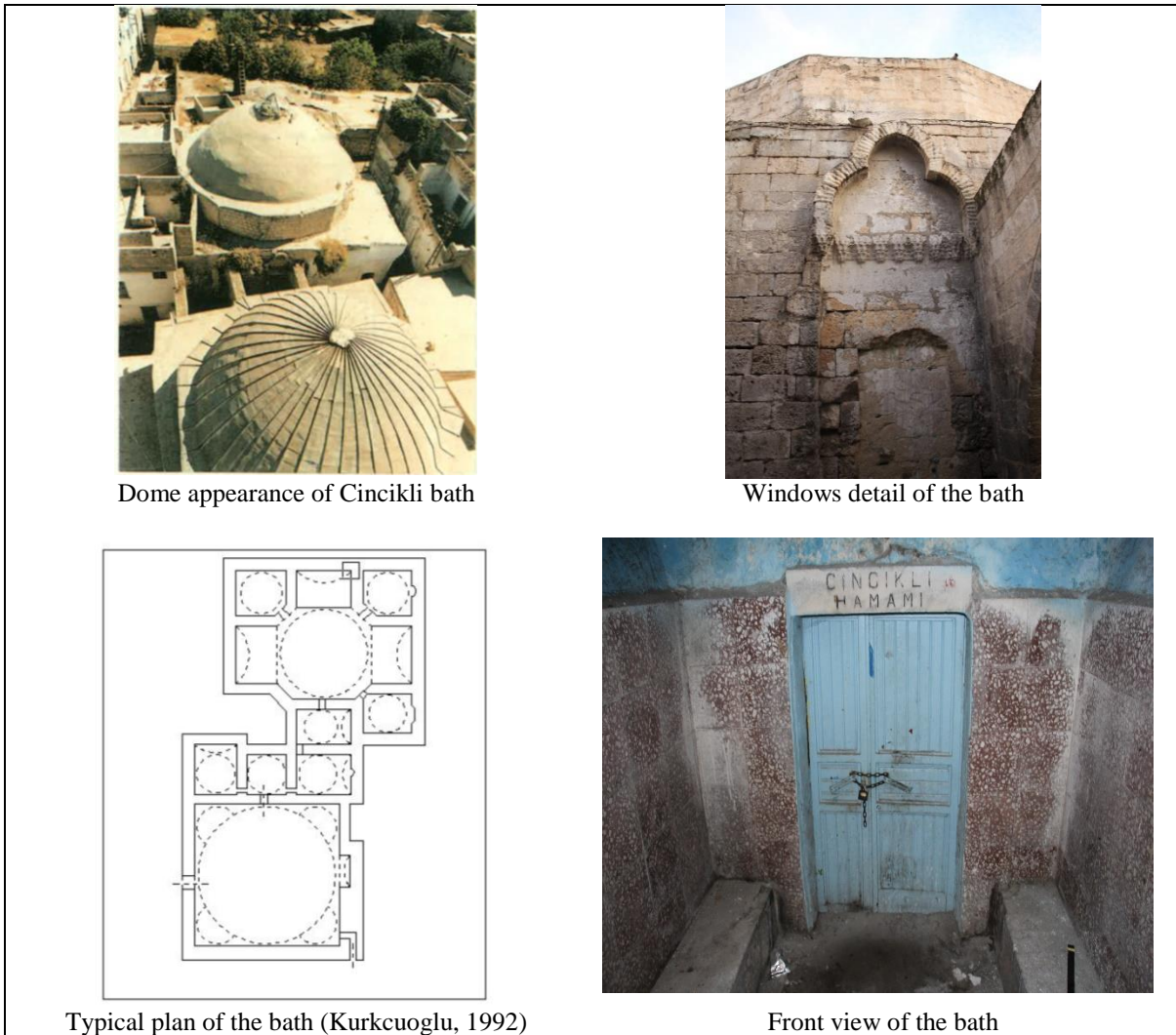


Figure 16. The details of Cıncıklı Bath



Preparing the “keçe” in the Keçeci bath



The dome of the bath

Figure 17. The details of Keçeci Bath

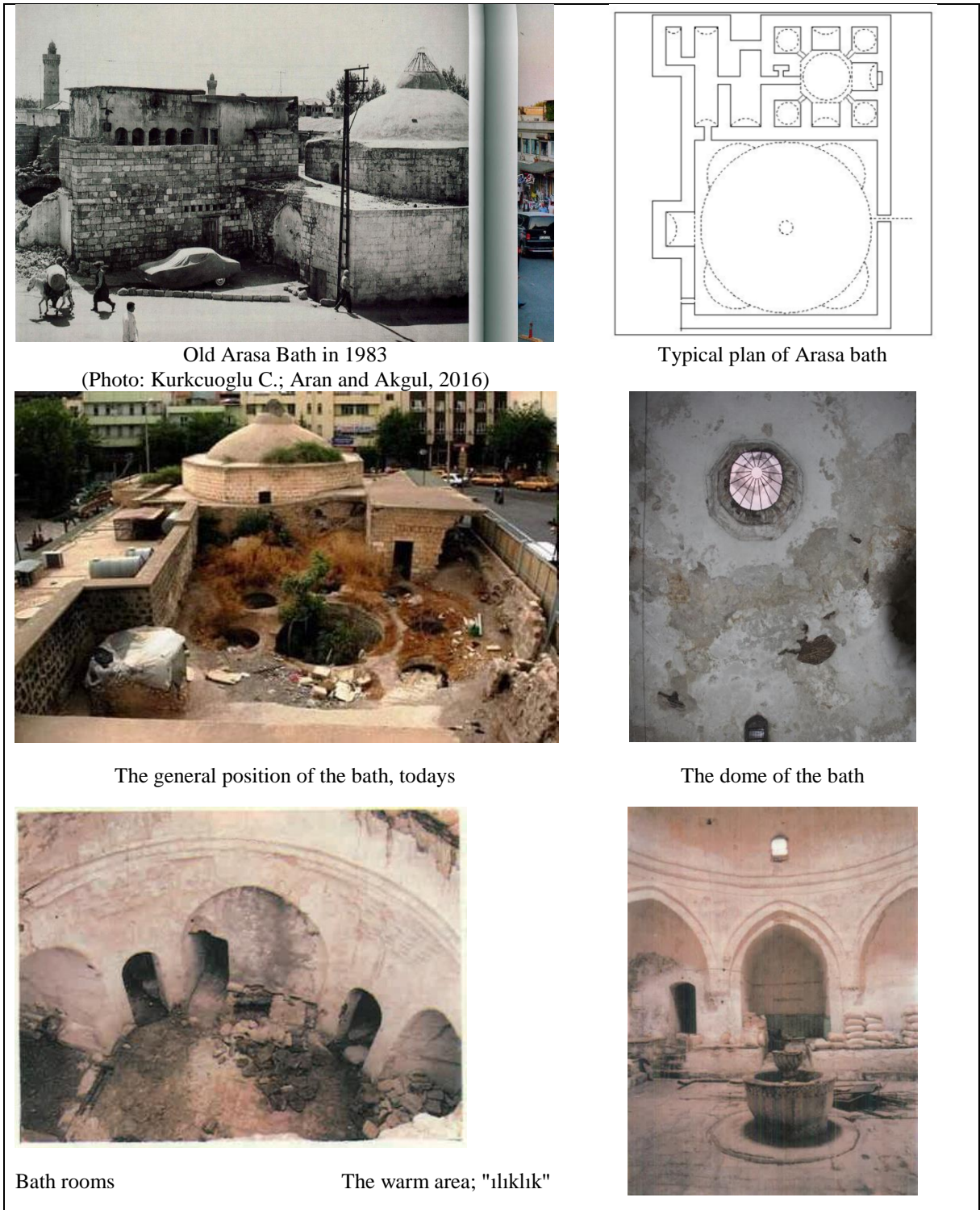


Figure 18. The details of Old Arasa Bath

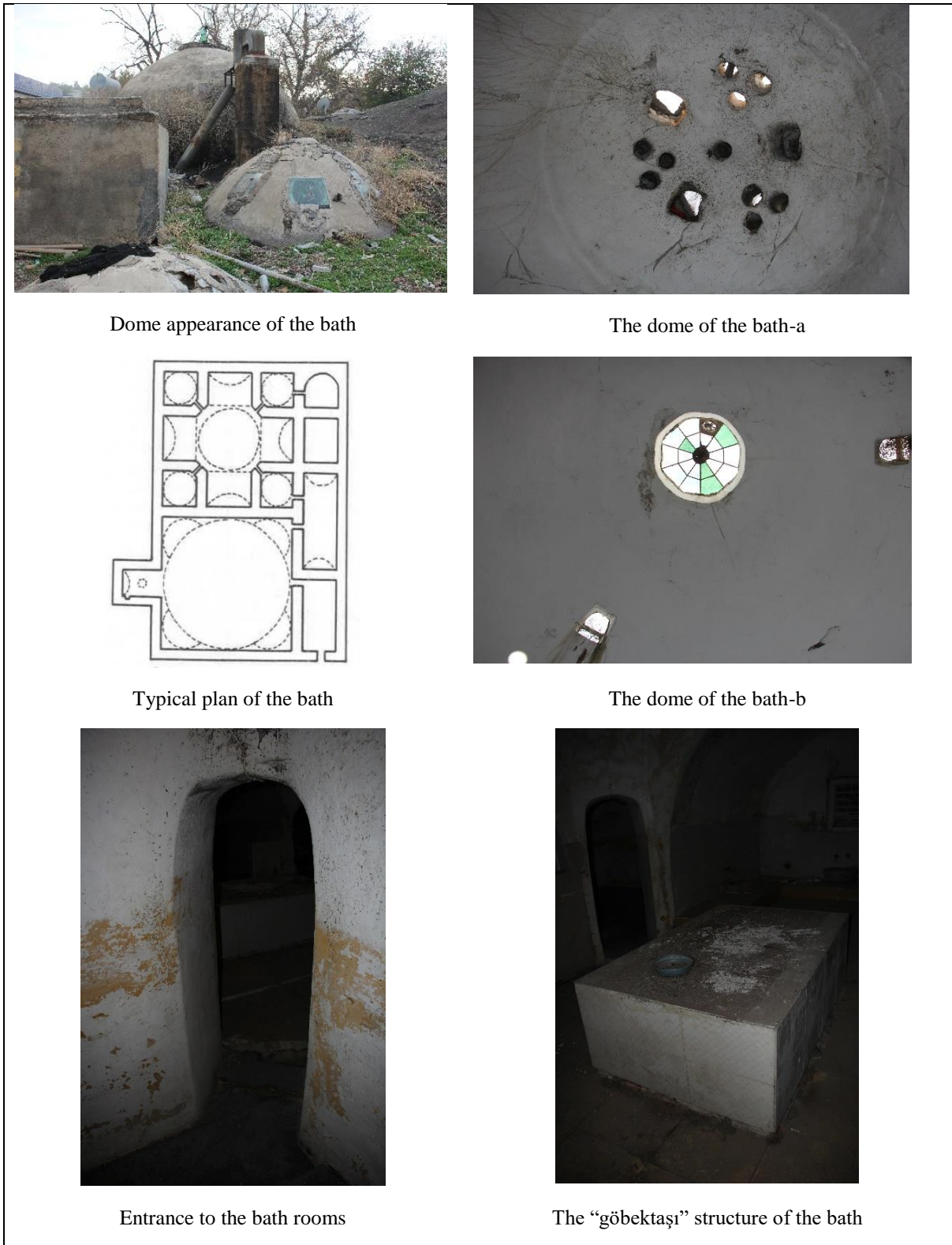


Figure 19. The details of Şaban Bath

4. RESULTS AND DISCUSSION

Bathing has been a vital part of our life since early ages. Literature has divulged many reasons why baths were built, their important explained that bathing constituted a crucial activity embedded in social and economic life. The bath structures constitute a very important contribution to the cultural heritage of the world. Today each house has a bathroom and people do not have time to go to the public bath because of the fast pace of life. Nevertheless, many people still believe to necessity of the baths for health and importance for our social life (Buyukdigan, 2003; Celik et al, 2010).

As one of the oldest cities in the world, Urfa also has many historical and new baths. The ancient baths continue to convey many cultural backgrounds to us, while resisting the adverse conditions of the day. With this study, Urfa's bathhouse inventory was tried to be created. The construction periods of the baths, their current situation, plans are presented with photographs. Thus, a scientific document has been presented.

Although the result of religious beliefs in different civilizations is different in societies, hamam culture and architectural analysis, the place of the baths in the public life is very important and it has always been important in the socialization of the societies as well as serving the needs of the people.

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