Byzantium Period Water Architecture and a Masterpiece in Istanbul: The Big Basilica Cistern

Bizans Dönemi Su Mimarisi ve İstanbul'da Bir Şaheser: Büyük Bazilika Sarnıcı

Nilay YILMAZ EMRE

Archaeologist

Photographs: Tahsin AYDOĞMUŞ

Corresponding Author: Nilay YILMAZ EMRE / E-mail: nilayata2009hotmail.com

The technology of building aqueducts carrying the water in near and distant watersheds together with giant cisterns that store the water to meet the water need of the public in big settlements is a gift of Rome to the history of architecture. The most beautiful example of engineering science and water architecture in İstanbul is Yerebatan Palace that has also become famous as a large basilica cistern.

Figure 1: View from the platform and arches at Yerebatan Palace that were built after the restoration works and allow visitors to tour without damaging the structure.

Cisterns can be defined as water cellars surrounded by plastered walls, constructed under a building or under earth for the rainwater to be gathered. They were built to meet the water need with the help of bucket or a pump from a hole left at the top. Cisterns are structures that were very important for city life and maintained their importance from the time of ancient cities to the foundation of modern cities.

The water that was carried to the center through the aqueducts outside the city with the aim of meeting the

needs of the city population was collected in big cisterns and distributed to the city from there. The cisterns should therefore not be evaluated by themselves but together with the arches. However, we will first discuss the Yerebatan Palace, also called the basilica cistern and one of most famous cisterns of the Byzantium period, and then the aqueducts that are the most important structures of water architecture in general.

The Teodosius Cistern, Shendone Cistern, St. Irine Cistern, Gülhane Cistern, Mangana Cistern, Philioxenus Cistern, also known as Binbirdirek, Stoudion Cistern, Aspar Cistern, Aetions Cistern, Nurosmaniye Cistern, Myrelaion Cistern, Fatih Cistern, St. Mocius Cistern, Boucaleon Cistern, and St. Sophia Cistern can be listed as the most important examples built in İstanbul during the Byzantium Period. The biggest and the most magnificent of the Byzantium period cisterns is the Big Basilica Cistern, also known as the Yerebatan Palace. This cistern is located southwest to the Hagia Sophia in the Sultanahmet district and is accepted to be built by the emperor Justinian in the first half of the 6th century. Although there are many rumors regarding the construction and accidents of the cistern that was repaired several times since that period, we will not discuss these.

We know that there was a big basilica at the present location of the cistern where science, commerce and art-related work took place and legal affairs were taken care of in the early Roman era. This structure was totally destroyed in a fire in 476. The basilica was reconstructed later by the emperor İllius and had a porticoed courtyard with marble columns. This new structure also did not remain standing for a long time; there was a large fire during the Nika riot. When Emperor Justinian was having the structure repaired, he had the courtyard ground of the basilica dug by drilling the rock there, ending up in the current state. The outline of the cistern was preserved during the repair works carried out from that day until today; however, it was started to be called the Big Basilica Cistern.

Yerebatan Palace has dimensions of 138x64 m. A total of 12 rows of columns with 28 in each series carry brick arches and the vaults supporting them. The vaults are the "monastery vault" type built without the use of formwork. There are a total of 336 columns and 8 have been placed into a woven sheath at the northern part. About 37 columns in the southwest remain within the infilled wall. The heads of the columns are in the Corinthian style and there are impost headers on them. The wooden braces that existed in arch heads previously were replaced with iron braces. The water capacity of the cistern, which covers an area of 9800 square meters, is about 100,000 tons. The outer walls 4.80 m in thickness were made waterproof by covering them with brickdust mortar 3.5 cm in thickness (Figure 2).

The cistern met the water requirement of other important structures around the palace in the Byzantium Period and is also known to have been used in the Ottoman Period. For example, this cistern was used to water the garden of Topkapı Palace for a long time.

The walls of Yerebatan cistern are plastered to the beginning of the arch. This gives us information on the water amount in the cistern. Besides, the traces of the level the water has risen to can be seen in the column bodies. The water had to be drained completely for the restoration works at Yerebatan Palace in recent years and the base turned out to be smooth brick paved (Figure 3, 4).

Many architectural building materials came out with the cleaning of the cistern interior. Some of these were reused building materials. The column where the peacock feather or teardrop motives are repeated is especially spectacular (Figure 5). Similar columns are seen in Beyazıt Square. All these columns, from the late 6th century, belong to the Great Teodosios Triumphal Arch. Other reused material in addition to the column and headings in carved and glyph stonework are the Medusa heads. Two Medusa (Gorgon) heads used as a base under the columns are present in the cistern. One of them is in the reverse and the other in the lateral position. Although there is no written document on the use of the

Figure 2: View from Yerebatan Palace that is accepted to have been built by Emperor Justinian in the first half of the 6th century.

Figure 3: View between the columns of Yerebatan Palace. The water level of the cistern varies between 1 and 2 meters and gives this historical place a poetic appearance.

giant Medusa heads that are of the most beautiful examples of Roman Period sculpturing, some rumors are mentioned. According to one rumor, these Medusa heads were only used as a construction material while the cistern was constructed with no aesthetic or decorative concern. Another rumor is that Medusa is one of three Gorgonas, female monsters in Greek mythology. Of these three sisters, only the snake-haired is mortal, and she turns any person who looks at her into stone. The glyphs or pictures of Gorgona heads were featured on the buildings of that period in order to keep the evil spirits away or provide protection from evil eyes. The two Medusas in the cistern have possibly been used for such a purpose (Figure 6, 7).

Figure 4: View from the platform and arches.

Again, according to a rumor, Medusa was a girl who is proud of her black eyes, long hair and beautiful body. The son of the Greek God Zeus fell in love with Persesus. The goddess Athene also loved Perseus and was jealous of Medusa. Athene turned Medusa's hair into scary snakes. Now, whoever Medusa looked at would turn into stone. Perseus thinks that Medusa is under a spell and cuts her head, and then goes to war with the cut head in his hand. Those who see the head turn into stone and Perseus wins the wars.

It is said that Medusa was engraved to the reverse and lateral parts of sword hilts and the column bases in former Byzantium after that event. According to another rumor, Medusa saw herself on the sword of Perseus and turned

Figure 5: The column where the peacock feathers or teardrop motives are repeated.

Figure 6: One of the two Medusa heads at Yerebatan Palace; as can be seen in the picture, it was placed in reverse.

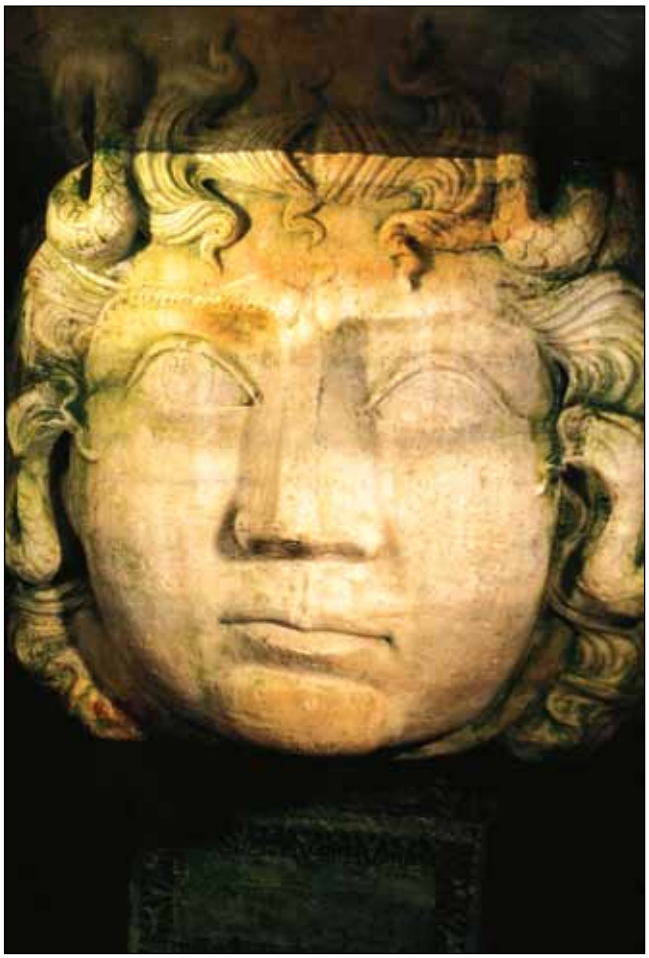

Figure 7: View from two angles of the underworld god Medusa at Yerebatan Palace. According to the Greek mythology, one of the three female monsters of the underground world is Medusa and these goddesses protect the buildings from evil eyes.

into stone. The sculptor therefore sculpted Medusa in three different positions as normal, reverse and lateral according to the reflection positions of the light. The Head of the Medusa in normal position was brought from Didim.

The first information about Yerebatan Palace is from historical sources and the travel notes of travelers. The Historian Prokopios wrote a piece on the buildings by Justinian and mentions a cistern meeting the water need of the city under the porticoed square called "Basilica Stoa". The first accurate information regarding the cistern is from a German Archaeologist who conducted research on this structure during the 1st World War. The archaeologist named E. Unger descended inside the cistern with a submarine boat and prepared a plan with dimensions.

Let's go back to the historian Prokopios. Houses have been built in the stone-paved square named Basilica Stoa since the Byzantium Period. With the conquest of Istanbul by the Ottomans, mansions and even a mosque were built here during the reign of Fatih Sultan Mehmet (1451-1481) besides the houses; thus, the top of the cistern was exposed to intensive construction. In the meantime, water provided from the holes made in the vaults of the cistern was used in the houses. This intense settlement damaged the cistern and the periphery of the 8 columns was strengthened with stonewalls at the northeast side of the structure in the 18th century. The biggest repair and reinforcement were made during the reign of Sultan Abdülhamid IInd by filling the part covering about 37 columns at the southwest side.

The mansion of the chronicler Mehmet Esad Efendi was the largest residential unit on Yerebatan Palace in late periods. Esad Efendi built also a stone library next to the mansion and requested to be buried here when he died. When the 4000 books of this library were carried to Süleymaniye Library, the building stayed empty. The library building was first turned into a printing house and then into stores selling souvenirs. The houses at the entrance were expropriated by İstanbul Municipality in the 1940s and a building was built for the entrance. The building was cleaned and repairs made between 1985 and 1988 and the water and mud inside was removed. A scaffold was established inside for the visitors to be able to tour up to the western end. A platform was built on the northeast corner of the cistern to be used as a cafeteria. Today there is water at a height of 1-2 m in the cistern. The cistern is in a museum open for visiting in the possession of the Metropolitan Municipality. Yerebatan Palace is currently managed by Kültür A.Ş., one of the subsidiaries of İstanbul Metropolitan Municipality, and hosts many national and international events besides being a museum.

ROME, BYZANTIUM and WATER ARCHITECTURE

We know that the civilization that developed water architecture was Rome. The Roman Empire has constructed incredibly large water facilities wherever it went. The water requirement of İstanbul was met with the water brought from the West, from Thrace at that period. While the waters collected from the sources in Strandja Mountains and streams were brought to the city with channels, aqueducts were constructed in order to overcome the surface problem in places where the channels intersected the valleys. However, these waters were connected to underground channels when they approached the city and were collected in open water reservoirs. These tanks were called open cisterns but in fact each was a dam rather than a cistern.

The most important water facilities in İstanbul were built by Roman emperor Adrianus in the Roman Period. We know that emperor Valerius (362-367) improved these facilities in 4th century and the famous aqueduct named Bozdoğan at the Unkapanı district was built by the same emperor. This aqueduct made of stone is 971 m in length and the highest point is 20 m high. The aqueduct is between 5.5 and 3.5 m in width and was built as one, two or three layers for topographic reasons. This monumental building was repaired during the Byzantium and Ottoman periods and is still standing. Another water transmission facility, again within the city borders of İstanbul, that has been able to remain until today is the

Moğlava Aqueduct. The length of the Moğlova Aqueduct built by emperor Justinian is 115.45 m.

We understand from the documents belonging to the Emperor Justinian Period that the water facilities in İstanbul were attached great importance in the Byzantium Period as well. One of the documents showing this emphasis on water facilities and waterways has been found in Palestine. An inscription on the waterway in Hebron includes a regulation related to protecting the waterways. It is written in the inscription consisting of 17 lines that there should be no construction on the sides of the waterway and that this land should be kept completely empty. It is stated that those who fail to comply with the ban will receive heavy punishment such as execution. The same inscription mentions the obligation of leaving an area 4.62 m wide at both sides of the waterway.

However, the Byzantines could not maintain the Roman system. One of the reasons was that Thrace was under the constant threat of enemies. Enemies coming from the West could easily block these waterways so the Byzantines planned part of the water cisterns to withstand long sieges and part of them were turned into cisterns by plastering the building basements upon need.

It is possible to examine the cisterns built inside the city in the Byzantium Period in two groups. The first group consisted of collection reservoirs of huge dimensions with an open top and these are called open cisterns. Those in the second group are closed water cisterns. Closed water cisterns are placed under the buildings. Many large and small cisterns built in İstanbul during this period have been identified. These cisterns numbering 40 to 50 met the water need of palaces, monasteries, private large palaces and the public. The cisterns were of great importance in terms of urban development. They created flat terraces on the rugged earth structure of İstanbul and ensured that buildings built on them appeared high.