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Investigation of the Historical Harput Ulu Mosque

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Abstract
Anatolia entered into the process of Turkification and Islamization with Sultan Alparslan's destruction of Byzantine armies in 1071 and after that Turks have been dormitories for about a thousand years. First Turkish principalities played an important role in the expansion of Turkish-Islamic culture and civilization in the Turkification of Anatolia after the Battle of Malazgirt. One of these principals Artuqid Principality ruled in Hısn Keyfa-Âmid, Mardin-Meyyafarıkin and Harput and engaged in construction activities by being processed to every level of the lands which ruled Turkish-Islamic motifs. Harput city is one of the settlements that best incorporate Turkish-Islamic architecture. Ulu Mosque was built here that has taken its place among the most beautiful rare works of Anatolia with its unique architecture. Ulu Mosque, which built by Artuqid Ruler Fahrettin Karaarslan in the 11th century has served the Turkish nation for centuries. In this study, the history, design, used materials and the causes of structural deterioration in Ulu Mosque in Elazig- Harput city were investigated and some of the proposals were presented at the end of these examinations.

Keywords: Harput ulu mosque, Restoration, Structural deterioration

Tarihi Harput Ulu Camii'nin İncelenmesi

Özet
Anadolu, Sultan Alparslan'ın 1071'de Bizans ordularını yenmesiyle Türkleşme ve İslamlaşma sürecine girmiş ve bundan sonra yaklaşık bin yıl Türk yurdu olmuştur. Malazgirt Savaşı'ndan sonra Anadolu'nun Türkleşmesinde, Türk-İslam kültür ve medeniyetinin yayılmasında ilk Türk beylikleri önemli rol oynamışlardır. Bu beyliklerden biri olan Artuklu Beyliği, Hısn Keyfa-Âmid, Mardin-Meyyafarıkin ve Harput'ta hüküm sürmüş ve Türk-İslam motiflerinin hüküm sürdüğü toprakların her kademesine işlenerek imar faaliyetlerinde bulunmuştur. Harput şehri Türk-İslam mimarisini en iyi barındıran yerleşim yerlerinden biridir. Kendine özgü mimarisi ile Anadolu'nun en güzel nadide eserleri arasında yerini almış olan Ulu Cami burada yapılmıştır. Artuklu Hükümdarı Fahrettin Karaarslan tarafından 11. yüzyılda yaptırılan Ulu Cami, yüzyıllar boyunca Türk milletine hizmet etmiştir. Bu çalışmada; Elazığ-Harput ilinde bulunan Ulu Cami'nin tarihçesi, tasarımı, kullanılan malzemeleri ve yapısal bozulmaların nedenleri araştırılmış ve bu incelemeler sonucunda bazı öneriler sunulmuştur.

Anahtar Kelimeler: Harput ulu cami, Restorasyon, Yapısal bozulma

1. INTRODUCTION

Historical Harput City was established on an area of 1751 km², at an average height of 1450-1500 meters above sea level, located in the Upper Euphrates Section of the Eastern Anatolia Region, north of Elazig Plain and the Great Plain. The city is located on a rugged and high rocky plateau that is dominant to the environment and suitable for defense. Harput is surrounded by Elazig Plain and Ulu Plain from the south, Kuz Plain from the west, Keban Dam Lake from the north and Murad Valley from the east. Due to the fertile plains and important water resources around Harput, agricultural activities were carried out intensely in this region. For this reason, the region has been an important settlement centre since the early ages and came under the domination of many different civilisations [1].

Harput Castle, which is one of the most important structures of the city and has played very important roles in the city defense, consisted of two parts, the inner castle and the outer castle. The history of the inner castle is taken until the Urartu period [1].

The number of buildings in Harput that have reached the present day from the Byzantine period is almost non-existent. The Virgin Mary Church (VI. Century AD) which located on the eastern walls of the Inner Castle, is the most important work that can survive from this period. Moreover it is understood that some repairs were made in the Inner Castle during this period. It is also remarkable that construction activities are very limited during the period of Çubukoğulları Principality who transforming the Harput into Turkish land [2].

The city, which was the capital of the Artuklu State, expanded in the north and west direction outside the inner castle over time, and new settlements were formed in the outer castle part [1].

Ulu Mosque, which was built during the reign of Artuklu ruler Fahrettin Karaaslan in the 19th century, which played an important role in the formation of the physical structure of the city, as well as contributing to the social and cultural development of the society. This structure, which has survived to the present day by continuing its function in the Ottoman period, has a very important place in terms of Harput history [1].

In this article, the history, design, materials used and the causes of structural deterioration of the Great Mosque in the province of Elazig-Harput were investigated and some suggestions were presented as a result of these examinations.

2. HISTORY OF ELAZIG

Elazig is a city established at the foot of the hill where the Historical Harput Castle is located in Eastern Anatolia. Located at a height of 1067 meters above sea level, the city is located on a light slope ground. Although the history of Elazig is new, the history of the region is quite old. Therefore, we need to consider the history of Elazig together with the history of Harput [3].

Harput and its surroundings are one of the oldest settlements in Anatolia and the settlement date of Harput is similar to the history of Harput Castle. This shows that the history of Harput dates back to around 2000 BC, and the history of the region dates back to 10,000 BC with archaeological excavations (Paleolithic-Chipped Stone Age) [4].

In Hittite tablets, it is seen that the region is called ISUVA. Urartu State dominated there between 12-7 centuries BC whose origins are based on the Hurrians and central settlements are

located in Van (Tuspa). After the Assyrian and Scythian attacks in the 7 century BC, the Urartu state weakened, and the whole region, especially Harput, came under the rule of Med. However, this domination did not last long, with the Meds in the 6. century BC and the Persian Empire in 334 BC, the region experienced the Hellenistic period and it was seen that Harput was called the Sofen Kingdom in this period [4].

The fact that Harput is located directly above the Asian / Anatolian / Thrace / Egypt-related trade routes has caused it to be an important settlement centre and a place that different civilizations want to conquer in every period. In the region conquered by Cubuk prince in 1085, we see that the Artuqids, then the Anatolian Seljuks in 1234, the Ilhanli in 1243, the Dulkadir principality in 1363, and the Akkoyunlu state in 1465 [5].

Harput, finally conquered by Yavuz Sultan Selim after the Victory of Çaldıran in 1516, joined the Ottoman lands, and the conditions such as culture and public works should be preserved as one of the most popular cities of the state until the late 19th century [5].

The new city area, which was established on the outskirts of Harput, initially became a province and then a provincial centre, and even turned into a Sanjak affiliated to the Diyarbakir province. The Independent Governor in 1875 became the province again in 1879. In the last years of the Ottoman state, Malatya and Dersim Sanjaks were also connected here. In 1921, they left Elazıg in these two sanjaks. It was named "Mamurat ül -Aziz" in 1867 with the proposal of Governor İsmail pasha who was appointed here during the period of Hacı Ahmet İzzet Pasa in the 5th year of Sultan Abdülaziz's ascension. However, it is difficult to pronounce, it has been mentioned briefly as "El Aziz" among the people. During the time of Atatürk's admission to the city in 1937, the name "El Azik", which means "Province of Azik", was later transformed into Elazıg [3].

3. GEOGRAPHIC AND GEOLOGICAL PROPERTIES OF ELAZIG

While examining the structural deterioration of a historical building, the geographical location of the city where the artifact is located, its surface forms, climate parameters and geological structure were important. For example, It may cause openings between the joints due to the freeze-thaw cycle that occurs as a result of daily heat exchange. Another example is the possibility of damage to the structure in the earthquake zone as a result of the earthquake. Due to the reasons stated, various information about Harput is presented under this title, which will affect the structural deterioration.

3.1. Geographical Location, Surface Shapes and Climate Structure

Elazig is located in the Upper Euphrates Section of the Eastern Anatolia Region, in the Elazıg Plain, 1067 meters above sea level. The face measurement of Elazig is 9153 km². Its distance in the east-west direction is 150 km and in the north-south direction is 65 km. Dam lakes (826 km²) constitute 9% of Elazig. Elazıg is neighbour to the provinces of Bingöl in the east, Tunceli through the Keban Dam Lake in the north, Erzincan in the northwest, and Malatya through the Karakaya Dam Lake in the west and southwest, and Diyarbakır in the south [6].

Both the geographical location and morphological features of Elazig have been the biggest factor in the emergence of a settlement and settlement. Indeed, Elazig and its surroundings have a low elevation compared to other parts of the region with an altitude of 1300-1400. In addition, passages such as the Mining Groove and the Kömürhan Strait in the Southeast Taurus

Mountains, which extend like a wall in the south of the site, help to bring the warm and humid air masses of the south to the region from time to time. Due to all these, the local climate has a rather mild structure compared to the terrestrial climate of the region, which we typically see in the northeast.

According to the data of Elazig meteorology station, the average annual temperature is 12.9 ºC. Accordingly, the highest value is reached in Elazig after Malatya in the Eastern Anatolia Region. Moreover, Keban located in the lowest part of the province, and corresponds to one of the hottest areas of the Eastern Anatolia region with a value of 14.6 ºC. When we look at the annual temperature differences of the stations in Elazig province, it appears to be more in the stations in the east, and this difference decreases as we go west. This shows that terrestrial intensity within the provincial borders has decreased from east to west. Elazig province shows very low values in terms of the number of days with frost events compared to the region it is in. An average of 81.7 days of frost is encountered during the year in Elazig. There is no frost in the city in seven months of the year. The first frost event starts on October 14 within the provincial borders, and the last frost event occurs in the second half of April. The number of frosty days in autumn and spring is quite low [6].

3.2. Geographical Location, Surface Shapes and Climate Structure

The Elazig area is located on the Eastern Taurus Mountains in the Eastern Mediterranean region of the Alpine-Himalayan mountain formation belt, and includes metamorphic, magmatic, sedimentary and volcanic rocks of different ages from Paleozoic to Quaternary. Pütürge Metamorphites (Precambrian-Mesozoic), Keban Metamorphics (Permo-Carboniferous), Ophiolitic (Mesozoic), Yüksekova complex (Upper Cretaceous), Caspian complex (Upper Cretaceous-Paleocene), Harami formation (Upper Maestrichtian), Lower Bird formation , Seske formation (Middle Paleocene-Lower Eocene), Mining complex (Lower-Middle Eocene), Kırkgeçit formation (Lutetian-Upper Oligocene), Lice formation (Oligocene-Lower Miocene), Alibonca formation (Lower Miocene), Karabakır formation (Upper Miocene) - Lower Pliocene), Pliocene continental, Quaternary [7].

Formations of various ages and characteristics, which are mentioned earlier, form the structure of the province area. These formations; As a result of tectonic movements formed by the effect of the Hercynian, Caledonian and finally Alp Orogenesis and the orogenic phases in their various circuits, they curled, broke and gained slope along the plane of the fracture [7].

Elazig and its surroundings have folded, fractured structures that occur during Upper Cretaceous-Lower Paleocene, Middle Eocene end, Middle Miocene and younger periods. These structures are due to the closure between the Upper Cretaceous-Lower Miocene of the southern branch of the Neotethysis and the continent-continental collision in the Middle Miocene. The common feature of the structures is the N-S directional compaction regime that results from the collision of Arabia and Anatolian plates in the Middle Miocene.The fold axes in Elazig and its vicinity extend approximately in the direction of W-E and WSW-ENE. Overlays are another common type of structure in the study area. Rocks older than the Middle Eocene were pushed south in tectonic slices. Pütürge, more precisely, the Bitlis thrust determines the boundary between the Taurus (Torids) and the Southeastern Anatolian Borders. This region occurred during the Miocene-Pliocene and the thrust movement is 15-20 km from north to south which shows repulsions. This is also the suture (suture) where the Arabian plate collides with the Anatolian plate. [7].

The strike-slip and strike-slip faults are also observed in the topography. By direct geomorphological researches on this fault zone, it was revealed that the fault is active in the Quaternary interior, it preserves its morphological innovation, and the fault zone and its surroundings are at first degree risk in terms of earthquakes [7].

4. ULU MOSQUE

Harput Ulu Mosque is built on an area of 2000 square meters in the Old Mosque Kebir District in Harput. Harput Ulu Mosque is one of the oldest Turkish mosques in Anatolia. The mosque was restored in 1899, 1905 and 1996. The interior of Harput Ulu Mosque consists of three parts. These; inner courtyard, narthex and inner mosque. Its rectangular planned walls are made of rubble stone. The dome arches and minaret are built of brick. The mosque has two doors [8].The Ulu Mosque and its immediate surroundings are shown in Figure 1.

Figure 4.1. Ulu Mosque and its surroundings [8].

4.1. History of the Ulu Mosque

Ulu Mosque (Cami-i Kebîr), one of the ancient structures of Harput, was built by Artuquid ruler Fahrettin Karaarslan. The construction date of the mosque is not known precisely and there are different opinions on this subject. According to Uzun, German traveler and archaeologist Lehmann shows the construction date of the mosque as H. 561 (1165-1166). In other sources, H. 551 (1156) and H. 582 (1186-1187) dates are also given [1].

There are also opinions that the mosque was built during the period of Çubukoğulları before the Artukids, and that it had undergone a serious repair during the Artukid period, because of the building was built in the time of “Sadeddinoğlu Kutluk Bey and Çubukoğlu Kiya Ali days" record on the right side of the mosque's minbar inscription [9,10,11].

The minbar of the mosque, made of ebony wood, is one of the most beautiful works of our history and it is accepted that it was built in H. 582 (1186 CE). Apart from the Grand Mosque, the minbar used in Saray Hatun Mosque was later transferred to the Kursunlu Mosque and is still used in this mosque [12,13].

Evliya Çelebi, an ottoman explorer who visited Harput; he has provided information about the architectural features of the Ulu Mosque, and stated that the mosque is larger and more beautiful than the other mosques in Harput and that it also has a minaret. [14].

Figure 4.2-3. Harput Ulu Mosque 1966 [15].

4.2. Architectural Structure of the Ulu Mosque and Existing Structural Deteriorations

Within the scope of this section, the architectural structure of the historical Ulu Mosque and its existing structural deterioration will be discussed. The base of the minaret rising at the west gate of the mosque which has a square plan and there is also an exit door. It is estimated that the minaret has lost its originality due to the repair on various dates, therefore it is small compared to the size of the mosque. As a matter of fact, the Konya Alaeddin Mosque and the Siirt Ulu Mosque minarets, those minarets are made of bricks, such as the Harput Ulu Mosque, are high, attractive and at the same time, they are structures that serve as observation towers according to the conditions of the era. The Harput Ulu Mosque is also thought to be long and as a watchtower in the original form of its minaret due to the characteristics of these mosques and the thickness of the minaret body [1].

The building has a small courtyard in portico-iwan layout. Cut stone was used in some parts of the mosque, rubble stone was used in the walls, and brick was used in the support and cover system. The mosque has a rectangular plan and looks different from the mosques built during the Artuqid and Seljuk periods with its architectural structure. Here, the plans and shapes of the Seljuk and Iranian mosques were combined and a structure specific to Anatolia was introduced. Harput Ulu Mosque is closed to the outside and its outer walls are extremely thick. There are two crown doors to the mosque in the east and west. Of these, the west gate is placed in a higher and rectangular frame. The western wall, which is the main facade, has a pointed arch door that took its current shape in the last restoration and an arch opening showing the minaret base. The arches of the eastern gate are closer to the pointed arch and are bounded by two round pillars and rectangular frames [16].

The Ulu Mosque, outer court is made up of three sections, the last community and the courtyard. The inner walls of the mosque are connected by arches. There is a courtyard section through the doors in the east and west. After the entrance of the mosque, the spaces around the courtyard are divided into three sections. Together with the courtyard, the mosque has a plan look like (T). The place of worship carries the top cover with pointed brick arches and cradle vaults (ceiling cover formed by the combination of arches) based on short pillars (carrier built of stone and brick) [16].

The worship area is in a plan layout with two naves (each section separated by columns or pillars) parallel to the mihrap wall. There is 8 diameter dome on the square floor in front of the altar. The mihrab is in a frame formed by two zigzag sequences. The pulpit of the mosque (1186) is maden by ebony tree using the Kundekari technique, and the work of Abu Said, the son of İsmail, is located in the Harput Kurşunlu Mosque (Sare Hatun Mosque) [16].

Figure 4.4. Ulu Mosque-West Arched Door [15].

Figure 4.5. Ulu Mosque-East Arched Door [15].

Figure 4.6-7. Harput Ulu Mosque- before and after latest restoration [15].

One of the most interesting aspects of the Harput Grand Mosque is its minaret. The minaret, which is located in the northwest of the mosque and consists of a square base and a cylindrical body, is bent eastwards. It is interesting in that its minaret is curved and its bricks are used as decoration elements. (It is claimed that the minaret of the mosque, which varies between 3 and 7 degrees, that is more than the Leaning Tower of Pisa.) The interlaced six-pointed stars and knitted motifs wrapped the entire minaret body so that it does not leave any space. The upper part of the minaret above the balconies is quite long, narrow and cylindrical. The minaret is reached through the mosque and a staircase built later. Cheers are unadorned, so it differs from the other buildings of the Artuqid [16].

Figure 4.8-9. Harput Ulu Mosque minaret current situation [15].

Figure 4.10- 11. Harput Ulu Mosque- before and after latest restoration [15].

After the previous restorations, no collapse was detected in the existing structure. Particularly, some spills were detected in the brick parts of the minaret. Spills were detected in the joints between bricks. The peculiar inclination of the minaret is valuable in terms of tourism. Therefore, it should be preserved as it is. Moreover, it was not damaged in the earthquake that took place recently.

5. RECOMMENDATIONS AGAINST HARPUT ULU MOSQUE STRUCTURAL DISORDERS

It is seen that the structural deterioration factors of the Historical Harput Grand Mosque depend mainly on the geographical location and surface shapes, climate and geological structure of the city.

It is known that an average of 83.6 days of frost occurs in Elazig throughout the year. Due to freezing and subsequent thawing, structural deterioration and crustal spills have occurred on the surface of the building. Especially in the minaret section, structural defects have occurred over the years due to the dislocation of the bricks and the damage caused by pigeons.

Ulu Mosque should be restored and brought into tourism by paying attention to climate parameters and geological structure. Various suggestions have been made in this regard below.

1. The materials to be used should be preferred in accordance with the original according to the existing damage analysis. In time, joints begin to wear on surfaces exposed to friction, impacts, winds, water and various chemicals, and after a while it may be completely empty. Gaps often consist of structural problems, physical and chemical deterioration, or a combination of these.
2. In the parts where the walls do not need to increase the cross section and reinforcement, it will be sufficient to renew the existing plasters on the inner and outer surfaces.
3. For spilled plasters, the traditionally prepared Horasan mortars on the field can be preferred by using natural hydraulic lime and slaked lime, and thus, the effects from the outside can be reduced by refilling the empty parts. Lime-based plasters should be avoided on exterior walls.
4. Especially the gaps in the minaret section can be re-knitted by selecting the materials that are suitable for the original with point interventions, and if necessary, the brick minaret can be reinforced with fiber polymer composites [17].

5. Ductility will also be increased while the tensile stresses on the surface are met by placing rods by using special resin or lime-based mortars into the gaps of 2-3 cm in the wall joints by using fibrous polymer rods.
6. When it is required fiber reinforced polymer transparent wrap may use for outher surface of arches, vaults, domes and suitable places in order to increase bearing and ductility capacity under existing loads. However, in this reinforcement technique, it is important to prepare the sub-surfaces to be bonded correctly.
7. On the other hand, due to acid rains and freeze-thaw effects, water and harmful ions dissolved in water should be prevented from entering the bodies of natural stones that erode over time. It is preferable to create a water impermeable shield at the cross section of the stone by using water-repellent materials, and thus the water and harmful ions dissolved in water will be prevented from entering the stone and will be protected from freeze-thaw effects.

In terms of tourism and historical importance, it is important that the restoration is carried out as soon as possible and it is brought to the values of our country.

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