



Comprehensive Review of Causes of The Structural Deterioration of Kursunlu Mosque

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Abstract

Elazığ has a quite old history regionally while its history as a residential area is relatively new. For this reason, we need to discuss the history of Elazığ together with the history of Harput. Until the Turkish domination, several old tribes established important states and civilizations in the region. After 1085, Turks started to take Harput and its around out of being fortress and the military city, during the reign of Ottoman Empire, it became the center of culture, art and trade by leaving Turkish marks on every corner of Harput. Harput, which was famous for its castle, schools and medresas, mosques, hans, baths, bazaars and artisans, developed Elazığ, which is becoming an important center today by developing the same features over time. The Kurşunlu Mosque, one of the most beautiful examples of the Ottoman mosques in Harput, is able to reflect the era it was built to the future generations with its architecture, building material and construction technique bearing the traces of its construction. This paper provides a review of the history, design, materials used in construction and the causes of the structural deterioration of the Kurşunlu Mosque in Elazığ. Various suggestions are presented according to the results of the research.

1 INTRODUCTION

Historical monuments are the most important reminders of a society's history. It is important to understand past lives. The knowledge obtained from historical works helps us to reach a lot of knowledge from what a society that lived thousands of years ago to how it lives and how it lives [1].

Having been permanently settled since prehistoric times, Harput has been the scene of intensive construction activities especially in Urartu, Roman, Byzantine, Artucs and Ottoman periods. By the end of the 19th century, it had gained the status of a large city with 22 neighborhoods and 20,000 population living together with various cultures.

Despite having a splendid urban fabric at the beginning of the 20th century, today it has turned into a sad city, which unfortunately has no interest whatsoever it deserves, the buildings are either neglected and devastated or have lost their originality of various negative interventions. The aim of this study is to investigate the structural defects of Kurşunlu Mosque and to make recommendations for the restoration work.

In Harput, the number of buildings reached by the Byzantine period is not enough to be tried. The Virgin Mary's Church, which leans on the eastern walls of the Inner Fortress, is the most important work that has emerged ever since. It is noteworthy that during the Çubukoğulları period, which provided the Turkification of Harput, the zoning activities were too few to be tried. During the Ottoman period, which started in the city in 1516, intensive construction activities were carried out. Keşşunlu Mosque (1740), Meydan Mosque (XVIth century), Ahmet Bey Mosque, Arslaniye (Dere) Bath (XVIth century), Castle Bath (XVIth century), Cemşit Bey Bath (XVIth century), Hoca Bath (XVIIth century) and all the fountains in the city belong to the Ottoman period [2].

2 HISTORY OF ELAZIĞ

The history of Elazığ, a new settlement center, is being examined by historians, along with the history of Harput city, which is the continuation. Really; Harput, located only 5 km from today's city center, It is the first settlement area of Elazığ with its 4000 year history dating back to 2000. Historical sources indicate that the first settlers to Harput were "Hurrilers".

The fact that Harput is located directly above the Asian / Anatolian / Thrace / Egyptian trade routes leads to an important settlement center in every period and conquests of various civilizations.

3 KURŞUNLU MOSQUE

The Kurşunlu Mosque (1738-39), located to the east of Hoca Hamamı, is a rare structure that was well preserved in Harput. [2] The position of the Kurşunlu Mosque is shown in below. 1 [3].



Figure 1. Location of Kurşunlu Mosque

3.1 History of Kurşunlu Mosque

It is one of the most beautiful examples of the Ottoman Period mosques in Harput. It is thought that Osman Ağa made it in 1738 - 1739 [4]. Kurşunlu Mosque is also important in terms of proving that the city center is as far west as the Sara Hatun Mosque and Meydan Mosque in the middle of the 18th century.



Figure 2. Overview of Kurşunlu Mosque [5]

3.2 Current Status of Kurşunlu Mosque

The building constructed with cut stone and rubble stones has a square plan and a dome covered with a dome, the last community place in the north of the harim and the minaret in the eastern corner of the northern ceiling [2]. There are four windows in the dome. This name is due to the fact that its dome is covered with lead [4]. The Mosque door, which is 80 m² in size, is in the form of clover leaf. The last congregation is three units. The central unit is a mirrored monastery vault, and the two side units are covered with a dome. It is entered through an arched slice arch. Transitions of the envelope-covered dome are provided by large tromps . The mihrab cut stone and the half-circle niches are covered with a three-slice outer, rounded inner ring covered with two arches. The minaret is completely detached and made of cut stone, although the last community is built adjacent to the site. The square is passed from the base to the octagonal and deeper nested body, and from there to the rather long rounded body.

There are two inscriptions on the door. One of them is quite ruined. The second book on the door arch reads 1153 date [5].



Figure 3. Cut stone and rubble stone samples [7]



Figure 4. Dome [5]



Figure 5. Entrance to the mosque [5]



Figure 6. Interior view of the mosque [7]



Figure 7. Mihrab [7]



Figure 8. Minaret [7]



Figure 9. The Inscription on the door [7]

Inside the mosque is a minbar with an artistic value made of ebony wood. Kundekâri, who requires a unique skill, skill and special workmanship; is a molding and making technique which is obtained by joining small sized wooden geometric parts with each other and used in wooden works made with oval, cracked, glue and without using nails. In a rare number of mosques in Turkey, it is made using wooden pulpit künde-kâri technique and this is one of the oldest in their pulpit. In the minbar in the baseboard, from the writing master Sa'id Ali. This pulpit is actually owned by Great Mosque. Great Mosque was brought here when it was repaired [4]. The minbar belonging to the Grand Mosque and preserved in the Kurşunlu Mosque is said to be a gift during Murat's 4th campaign in Baghdad.

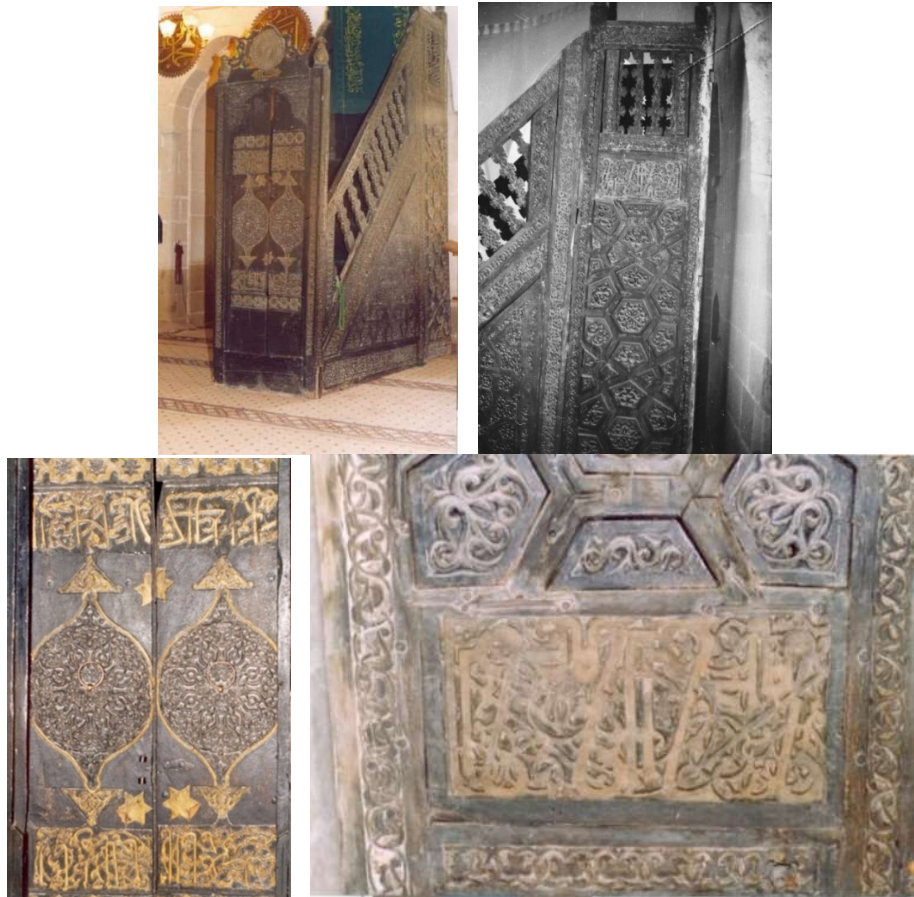


Figure 10. Minber [5]

Another interesting feature of the mosque is the huge plane tree in the courtyard of the same age as the mosque. This plane has a body of 1.60 m in diameter. The monument is registered as a tree and protected. Plane trees in the mosque courtyards, which are common features of the Ottoman mosques; In addition to symbolizing the Ottoman

Empire, in addition to their ability to function as a lightning rod, tree shelters protect the walls of the mosques from moisture thanks to their nematode roots, their leaves keep dust in the air, and the branches and leaves spread over a wide area over time create an umbrella like an umbrella for the mosque community. During the period, the mosque courtyards generally planted plane trees.



Figure 11. Plane tree [7]

4 FACTORS OF STRUCTURAL DETERIORATION

Factors of structural deterioration; depending on the geographical location of the city, surface features, climate structure and geological structure.

4.1 Geographical Position and Surface Shapes

Elazığ is located in the Upper Euphrates section of the Eastern Anatolia Region at Elazığ Plain at a height of 1067 meters above sea level. The face of Elazığ is 9153 km². The distance from east-west direction is 150 km and the distance from north-south direction is 65 km. 9% of Elazığ form dam reservoirs (826 km²). Elazığ is neighbor to Bingöl in the east, Tunceli in the north via Keban Dam Lake, Erzincan in the north, Malatya in the west and southwest via Karakaya Dam Lake, and Diyarbakır Predicates in the south [8].

4.2 Climate Structure

Elazığ's geographical position and morphological characteristics have been the most important factor in the development of this favorable situation. Indeed, Elazığ and its surroundings have a low increase compared to other parts of the region with a mean of around 1300-1400 meters.

Also in the Southeastern Taurus Mountains, which extend like a wall to the south of the field, the passageways such as the Mine Presence and Kömürhan Gorge are helping to bring warmer and moist air masses of the south to the locality from time to time, especially in winter.

Table 1. Meteorological analysis of Elazığ province (between 1938-2016) [11]

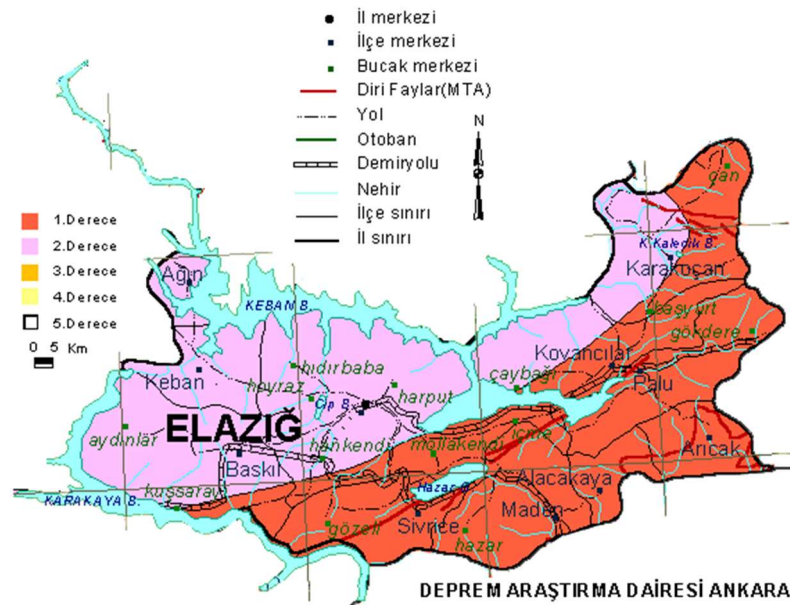
ELAZIĞ	January	February	March	April	May	June	July	August	September	October	November	December	Yearly
Measurement Period (1938 - 2016)													
Average Temperature (°C)	-1.0	0.5	5.5	11.9	17.3	23.0	27.3	27.0	21.8	14.5	7.3	1.8	13.1
Average Highest Temperature (°C)	2.8	4.8	10.7	17.7	23.6	29.6	34.2	34.1	29.3	21.4	12.6	5.5	18.9
Average Lowest Temperature (°C)	-4.1	-3.1	0.8	6.4	10.9	15.3	19.4	19.2	14.5	8.8	3.1	-1.3	7.5
Average Sunshine Duration (h)	2.4	3.4	5.0	6.3	8.4	11.6	11.4	11.6	9.1	6.4	4.3	2.2	82.1
Average Number Of Rainy Days	12.1	11.6	12.4	12.3	10.8	4.1	1.2	0.7	2.2	7.2	9.1	11.6	95.3
Averages of Precipitation (mm)	41.0	43.4	53.8	63.7	51.0	11.7	2.3	0.7	8.0	41.0	49.0	43.9	409.5
Measurement Period (1938 - 2016)													
Highest Temperature (°C)	12.4	18.6	26.4	32.2	34.4	38.6	42.2	41.4	37.8	32.1	24.3	24.6	42.2
Lowest Temperature (°C)	-22.6	-21.4	-17.0	-7.0	0.0	4.0	43652	43506	1.0	-2.2	-15.2	-22.6	-22.6

4.3 Geological Structure

Elazığ periphery is located on the Eastern Taurus Mountains in the Eastern Mediterranean region of the Alpine-Himalayan mountain formation belt and contains metamorphic, magmatic, sedimentary and volcanic rocks of various ages from Paleozoic to Quaternary.

4.4 Main Tectonic Properties of the Region

The structure of the province area is shaped by the formations of various ages and features mentioned earlier. These formations; They are folded, fractured and tilted along the fracture planes as a result of tectonic movements formed by Hercynian, Kaledonian and finally Alpogetic Orogeny and orogenic phases in their various stages [2]. Units in the area, when considered in terms of tectonics in Turkey, located in the south of the Bitlis-Pütürge overlay Hems, located north of the Taurus Mountains (Taurides) are located in the tectonic unit.

**Figure 12.** Fault Line and Earthquake Map [12]

5 RESULTS AND RECOMMENDATIONS

History of 4000 years old history in Harput is about to be erased. Kursunlu Mosque (1738-39) is one of the rare structures that could have survived in Harput at present. The mosque door, which is 80 m² in size, is in the form of clover leaf and stands out due to this feature among the works made during the same period. The altar and minaret were made of cut stone.

The minbar is one of the rare works made from the ebony wood and Kündekâri style. The average annual maximum temperature is 34.2 C, the lowest temperature is -22.6 C, average 81.7 days in the year.

The gaps between the joints should be sanded and cleaned. Joint gaps should be filled with Horasan Mortar. Damaged components can be repaired if they can be repaired according to the original. If it cannot be repaired, structural elements of appropriate size and quality should be obtained from cut stone.

If the Kurşunlu Mosque stands out in terms of differences between the works made in the period of architecture and material, it should be paid attention to the above materials and climate characteristics and the restoration of this work should contribute to tourism.

Resources

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