ARCHITECTURAL SCIENCES AND CULTURAL HERITAGE

TRACES OF THE HISTORY

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PREFACE

Culture's thread is found in the tapestry of time and is a treasure passed through generations binding humankind. From material marvels to spiritual grace, from mosaics of traditions to untold stories, civilizations and their cultures cultivate unique hues to each face of society, enriching and making it whole. In light of this, culture is one of the most important values related to human beings in keeping societies alive and sustaining societies.

Undoubtedly, culture is one of the most important values that are related to human beings and keep societies alive. Culture is what is unique to human societies and which they pass on to future generations; it can be defined as anything material and/or spiritual that brings characteristic features to society. Although there are many definitions of the concept of 'culture' in the literature, the common emphasis in almost all definitions is that it contains 'common features belonging to a society'. With its dynamic, and moving aspects, history has established a system of meanings, organizations, patterns, and importance. Culture is also the system of beliefs, habits and customs that societies or groups of people use to understand, interpret and organize their individual and collective lives.

Based on these approaches, the goal of transferring cultural continuity to the next generation shapes perceptions of the term cultural heritage. ‘Heritage’ signifies both a phenomenon and an object that is inherited, a possession left over from earlier generations. The fact that culture emerges as a legacy transferred from previous generations to the next is the phenomenon of cultural heritage.

Cultural heritage means a path established with the past, a shared bond, belonging to a community. It stands for a person's connection to his or her prior identification codes, as well as to the present and the future. Cultural heritage is not limited to tangible objects that we see and touch. The main factor contributing to the formation of this heritage is intangible culture.

It is possible to state that cultural heritage, which constitutes a social identity and is a reflection of people's selves, builds a bridge between the past, present and future. This meaningful bridge created by cultural heritage should be protected in different ways so that it can serve future generations. International groups such as the United Nations Educational,

Scientific and Cultural Organization (UNESCO) and the International Council on Monuments and Sites (ICOMOS) work to preserve both tangible and intangible cultural heritage. In the 1972 UNESCO Convention on the Protection of the World Cultural and Natural Heritage, the scope of the concept of cultural heritage was determined as Monuments, Building Ensembles and Sites; it was emphasized that they should have the characteristic of having exceptional universal value in every context - in terms of history, art or science. In order to protect and sustain cultural heritage, organizations such as UNESCO, both locally and universally, as well as many ethnic, cultural and historical organizations work for the protection of cultural heritage in local communities.

Remaining from past generations and being preserved and transferred for the benefit of future generations; have universal values; the academic book named Architectural Science and Cultural Heritage has been planned with the awareness of the necessity of preserving historical artifacts / values that have witnessed the tradition, are the product of creative human genius, and represent one or more periods of human history.

Journal of Architectural Sciences and Applications (JASA) started its publication life in 2016. Since 2021, very valuable E-Books have been published and are being published under the editorship of JASA Editor Board Members. In 2023, under the editorship of JASA Editor Board Members and within the scope of cooperation with IKSAD Publishing House, international e-book studies were conducted in English language and peer-reviewed, which will serve the field of architecture. To raise awareness of cultural heritage, the value of protecting and preserving it, and to produce a practical academic book, we set out to write the book 'Architectural Science and Cultural Heritage'. Many applications came in when the call for writing a book chapter was made. By being selective, 30 of these applications were answered positively.

As a result of the intense interest and participation in the book project, it was decided to collect the 30 accepted works in two separate books. Half of the valuable academic studies were edited by Prof. Dr. Kağan Günçe and Assoc. Prof. Dr. H. Hale Kozlu and published in ‘Architectural Science and Cultural Heritage – Historic Matter’. The other half edited by Prof. Dr. Kağan Günçe and Assoc. Prof. Dr. Damla Mısırlısoy and published in 'Architectural Science and Cultural Heritage – Traces of the History'.

This book, titled ‘Architectural Science and Cultural Heritage – Traces of the History’ is one of those books created with the responsibility of ensuring the continuity of traditions and diversity, which reminds societies and its members of a shared past, strengthens the capacity of unity and solidarity, and includes cultural heritage studies from the scale of a single room to the scale of an entire city. The 'cultural heritage issues' that are covered in the book on different scales and dimensions will direct both theoretical and applied questions in the area. The book ‘Architectural Science and Cultural Heritage – Traces of the History’ states in each chapter has been prepared with pedagogical methods and awareness that cultural heritage fosters new learning and development opportunities, especially for young people, makes people live memories, feeds creativity and the innate desire to learn, and broadens one's perspective on the world and life. This book, which deal with studies on different dimensions of tangible cultural heritage, emphasize the phenomena they describe as a reflection of the values, beliefs, knowledge and traditions of the society, the different characteristics of the environment resulting from the interaction between human and space, and the reflections of cultural heritage from the past to the present.

It is a clear prediction that the studies included in this book project titled ‘Architectural Science and Cultural Heritage – Traces of the History’ will benefit / contribute to the literature in the field of cultural heritage and inspire new academic studies in this field. We would like to extend our endless thanks to the author academicians who submitted their valuable academic studies on cultural heritage to be included in this book and to the valuable referees who evaluated these studies.

EDITORS

Prof. Dr. Kağan GÜNÇE
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September, 2023

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The Interpretation of Traditional Çavuşin Houses as a Component of the Historical Urban Texture

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1. Introduction

The Cappadocia Region is an area that stands out in the world as an important cultural heritage, specialised with its traditional settlements shaped by different factors. The region's central location in Anatolia, its easily shaped rocky areas and its wide range of material possibilities have been an important factor in hosting different civilisations throughout history. The geo-morphological and topographical development of the region called Cappadocia has created rich living spaces with different functions for millennia by taking advantage of the easy processing and chipping of soft rocks called tuff. Today, in the region, which is an intensive tourism region as well as an active daily life, it is becoming more and more difficult to preserve the original condition of the buildings despite all protection measures.

Within this area, there are many settlements that differ topographically but have similarities in construction techniques, materials and living culture. After Turkey signed the UNESCO World Heritage Convention in 1985, Cappadocia and Göreme Historical National Park Cappadocia Region was inscribed on the World Heritage List on 06 December 1985 with the qualification of "both cultural and natural heritage" (Görmez, 2002). The province of Nevşehir, the largest settlement centre of the region, and Avanos district centre are outside the borders of the World Heritage Site. However, a part of the territory belonging to Avanos district centre is within the National Park. Ürgüp district centre, Göreme, Uçhisar, Ortahisar towns and Çavuşin, Aktepe (Zelve) villages are within the

borders of both Göreme National Park and World Heritage Site. (UNESCO, 2009).

Çavuşin, one of these settlements, is a village of Avanos district and is also located within the borders of Göreme National Park. The date of settlement is thought to be 56 AD, when Christianity began to spread in the region (Umar, 1998). Çavuşin Village, one of the important settlements reflecting the natural and architectural characteristics of the region, is one of the oldest settlements in Cappadocia. Located on the Göreme-Avanos road, the village is 2 km away from Göreme. The borders of the village constitute important tourism regions such as Kızılçukur Valley, Güllüdere Valley, Meskendir Valley, Zindanönü Valley, Kılıçlar Valley, Fairy Chimney Valley and Ak Valley.

It was decided to relocate 44 families who were exposed to the rock fall hazard in Çavuşin Village in 1963 to Harmanlar in the same region. (Çakırbaş, 2022; BCA, 30.18.1-2-168-3-18). In 1964, as a result of the examination carried out by the ministries, it was decided to declare Çavuşin Village as an area subject to disaster according to Article 2 of Law No. 7269 (Çakırbaş, 2022; BCA, 30.18.1-2-181-67-18).

Since the traditional settlement is mostly abandoned and the village people have moved to new houses in the region, the alternative of "preservation with its own user and original function", which is one of the basic principles of conservation, is becoming more and more difficult for these buildings. For this reason, within the scope of the study, the traditional houses that have survived to the present day in their original form have been examined and the conservation problems that cause damage to the

historical pattern in the region have been examined, and different function alternatives have been proposed in order to evaluate these buildings in order to form a basis for future restoration works and to include Çavuşin in the tourism activities in the region in a healthier way.

2. Çavuşin Traditional Settlement Pattern

The Christian communities that settled in Anatolia initially sought refuge in hidden valleys to avoid the wrath of the polytheistic Roman beliefs. Since the volcanic lands of Cappadocia were not suitable for agriculture to a large extent, the fact that it was not seen as a settlement area by the people caused it to gain importance as a hiding place and to be evaluated advantageously by Christian communities who wanted to spend their time in worship. The fact that the region became a religious centre became evident with the construction of rock-carved monasteries and churches such as the Church of John the Baptist and Çavuşin Church, as well as underground cities (Thierry, 1963).

The dwellings, churches, monks' cells, etc. carved into the fairy chimneys and rocks create the image of a rock-carved city built on the slope of the valley for Çavuşin. The carving and expansion of the space according to the needs provided a flexible growth for the architecture of the region. The dwellings, which were initially created by carving a single floor for the needs of a nuclear family, were enlarged as the family expanded, creating an organic and unlimited growth dynamic (Tuncel, 1998).

Çavuşin, which was used as a settlement centre by different civilisations in the following periods, has become one of the dynamic indicators of this organic growth with the transformation and expansion of the first

settlement units. This rocky region called "Old Çavuşin", which is called "Old Çavuşin" (Figure 1, 2), which is visited by tourists and plays an active role in the promotion of the region, where Vadiler Street, where traditional houses with architecturally characteristic features are densely located, is located in the centre, was severely damaged in the 1960s due to landslides and rock falls. Due to the damage to the traditional houses with the natural disasters, the unusable condition of some of them, the excessive maintenance and repair costs, the inability of local governments to provide the necessary support, the lack of awareness of local and central government incentives for conservation, and the inability of some buildings to meet today's living standards, there has been a tendency to migrate intensively from the Old Çavuşin region or to move to less costly structures. The people settled in an area called "Yeni Çavuşin", which is topographically flatter than other areas. The old and new settlements are separated from each other, and the historical patern is mostly concentrated on the valley slope, while the new buildings are concentrated on the flat area (Figure 3).

Figure 1 - 2. Old Çavuşin village

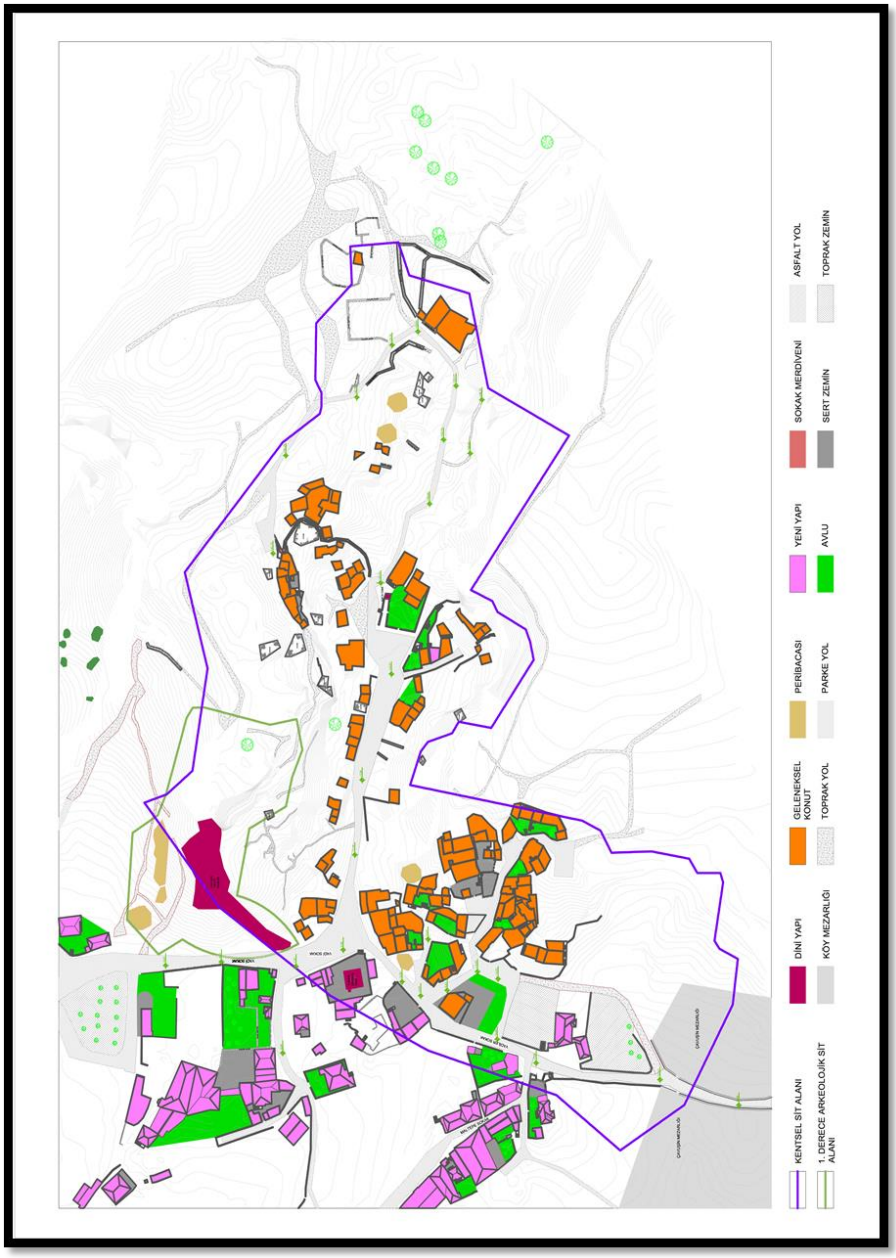


Figure 3. Çavuşin settlement pattern

"Çavuşin Church", located within the borders of Çavuşin village, can be shown as an example of landmark because it is located at the entrance of the village and because it is a high building. Similarly, the Church of St. John the Baptist, which is located in the village and can be reached from the square via Vadiler Street, is another landmark because it is located at the centre of the village at a height that dominates the village. The village mosque in the square in the centre of the village is also one of the important religious buildings that are actively used today. There are four registered monumental buildings in the area, namely Upper Çavuşin Mosque, Kaya Mosque, Church of St John the Baptist and Çavuşin Church.

The old urban pattern formed on a very sloping area overlaps with the organic settlement texture. For this reason, there is no smooth street axis in the Old Çavuşin area due to the necessity to comply with the topography. Depending on the topography of the land, the streets are sometimes straight, sometimes sloping and stairs. Based on the organic form of the Old Çavuşin region, the roads, which reflect the characteristic features of the area to a great extent, narrow and widen in places according to the shape of the building and the parcel. In this area, the main artery of which is Vadiler Street, there are buildings located on the street border. These buildings, which are generally two-storeyed, are made of cut stone and there are windows in pairs on the facade facing the street. In the old settlement area, it is seen that there are generally unpaved roads but the main axis is covered with cobblestones (Figure 4, 5). The road to the cemetery of Çavuşin is covered with asphalt unlike other roads. Although the intensity of movement on the streets within the village is low, there is

an intensity of movement in the Old Çavuşin area with local and foreign visitors. Except for the main street in the village, the other streets are narrow and open to squares such as mosques and village cafes. The elements limiting the streets are generally the garden walls of the buildings. The buildings with gardens located in small parcels have a direct connection with the street through the courtyard. The buildings are generally two storeys and separated from the street façade by the courtyard wall.

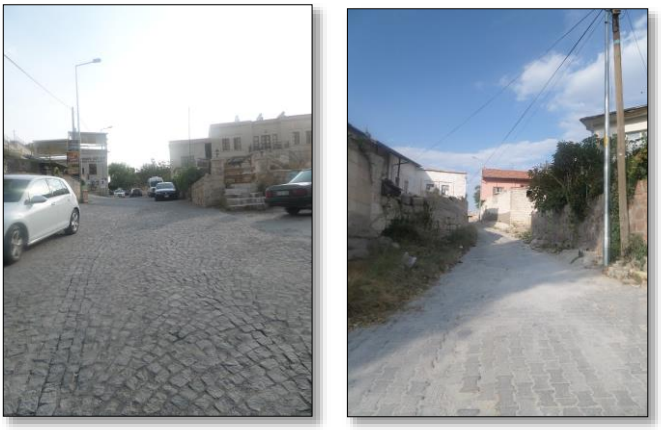


Figure 4, 5. Çavuşin streets

When the New Çavuşin region is examined as a residential area today, it is seen that the traditional architectural features in the Old Çavuşin region are not present in the new settlement area (Figure 6). Although two-storey buildings are built similar to the buildings in the Old Çavuşin region, façade designs, plan types and physical characteristics of the buildings do not carry the characteristic features of the old buildings. In contrast to the organic texture, it is a neighbourhood where detached houses with proper

parcel separation have become widespread, commercial units such as handicrafts and pottery are located, and although the buildings are reinforced concrete or masonry, the characteristic features of the old buildings have been abandoned. In the newly formed settlement unit, there are houses that are generally included in the masonry building group. The masonry buildings in the new Çavuşin neighbourhood are generally single or two-storey. The buildings are generally located in the courtyard. The relationship of the houses with the street is generally provided by the garden wall and gate, and sometimes by the facade of the house adjacent to the street. The sizes of the houses vary according to the needs of the users.

Figure 6. New Çavuşin region

3. Traditional Çavuşin Houses

The fact that the region is covered with easily workable and durable tuffs has enabled rock-carved settlements built in conical formations called "fairy chimneys" and formed by natural factors over time, on valley slopes

and at different elevations, horizontally and vertically developed underground. In addition to the rock-carved dwellings built depending on the geological structure of the region, masonry dwellings were also built from tuff, which is a local material, for reasons such as the fact that tuff is soft when it is extracted from the quarry, easy to process and hardens over time after processing and is a very durable material (Binan, 1994). These properties of the tuffs, which constitute the raw material of rock-carved structures, which are architectural products without architects, have enabled rich spaces to be obtained with the structural freedom brought about by the self-support of the rock structure. This rock-carved settlement tradition has met the shelter and shelter needs of many civilisations throughout history. With the provision of security and the expansion of families, the first examples of the local architecture of the region emerged by adding masonry units to the single-storey rock-carved unit, which is the simplest village dwelling.

The transition from rock-carved dwellings to masonry system stone dwellings, which are characteristic of the Cappadocia region, was intensively realised in the 19th century (Binan, 1994). It is seen that the construction date of the majority of the traditional houses examined in Çavuşin is the 19th century and partly the beginning of the 20th century. The first dwellings were built and developed on the valley slope at the foot of large volcanic tuff rocks by taking advantage of the topographic structure (Figure 7). Open-ended dwellings, which fulfil the need for shelter, can be expanded horizontally and vertically in line with the need.

Figure 7. First settlements in the region

When the traditional dwellings in the Çavuşin region are compared with the other masonry buildings in the Cappadocia region; although there are some differences in plan design and decoration features, they show similarities in terms of construction systems, material use, mass design and building elements. When the traditional dwellings in Çavuşin are analysed, it is seen that a plan typology cannot be established in rock-carved dwellings and rock-carved sections of mixed dwellings. Rock-carved dwellings were formed around tuff rock. The rooms are connected to each other by tunnels, corridors and stairs. For this reason, rock-carved dwellings, which have open-ended and reproducible features, vary in size according to user needs.

In masonry and mixed houses, two elements that affect the plan type come to the fore. These elements are the courtyard and the sof. The basic units that shape the distribution of interior space are rooms and sofas. When the sofa, which provides distribution to other rooms and is also used as a living

unit, is analysed on the basis of the classification developed by Eldem, it varies according to whether it is open or closed, and whether it is formed next to or in the middle of the rooms (Eldem, 1968). For this reason, within the scope of the study, two types of classification were made in traditional Çavuşin houses, sofa-oriented and courtyard-oriented in terms of plan fiction.

3.1. Sofa Oriented Classification

The plan schemes of the traditional Çavuşin houses are shaped as without sofas, with outer sofas and with inner sofas. There is no house with a central sofa plan scheme.

Houses without sofas are, in their simplest form, single-space houses. Here the house consists of only one room. As the number of rooms increases, one or two wings are added to the house. In other words, other surfaces of the courtyard are also surrounded by the house. The transition between rooms in the plan type without sofas is provided from the courtyard. In some examples, this transition is made with an iwan. (Eldem, 1968). The courtyard on the ground floor serves as a sofa in the few buildings in Çavuşin, which are designed with a plan scheme without a sofa (Figure 8, 9). The centre of the house is the open courtyard. Both floors of the buildings consisting of ground and first floors consist of a single room. On the facades of the buildings facing the road, there is usually a single window on the ground floor, while the windows on the upper floor are in pairs. Entrance to the upper floor is provided by a stone staircase from the courtyard from the side or rear facade of the building.

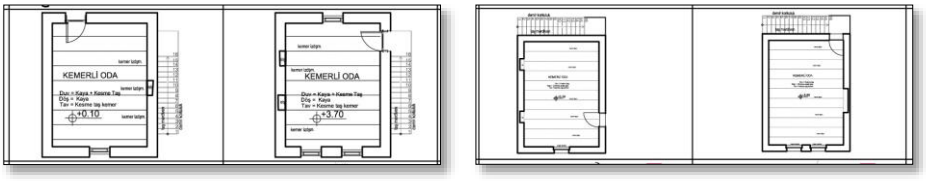


Figure 8, 9. Houses without sofas on Vadiler Street, Block 7, Parcel 8 and Parcel 2088

Houses with outer sofas are the first stage of the sofas. Sofa can be open on three sides or open on two sides according to the room arrangement. In this plan type, the rooms are connected to each other with the help of the sofa. The sofa, which is a common space that provides the relationship between the rooms, emerged at this stage. It is a free plan type (Sözen & Eruzun, 2001). The few buildings in Çavuşin, which were designed with an outer sofa, were designed as two storeys, the ground floor and the first floor (Figure 10). On the ground floor, there are service spaces consisting of arched and rock rooms. When the rock staircase leads to the upper floor, there is an arched room with access from the outer hall and rooms connected to a hall opening to the outer hall. There are double window groups on the facade of the arched room facing the view. In some buildings, there are arches between columns and columns in the outer hall. Various decorations were made on the arches and column heads, resulting in rich facades.

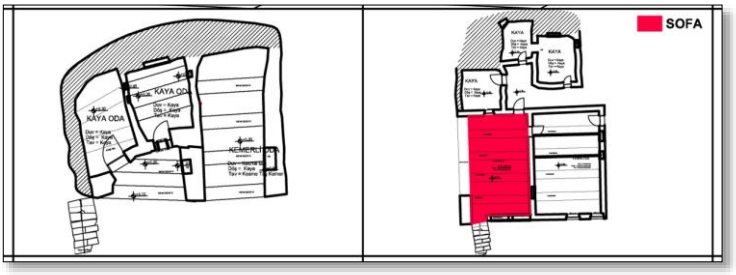
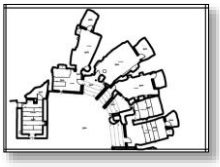
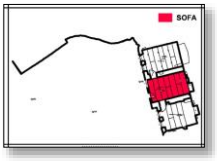
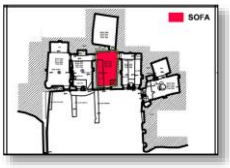
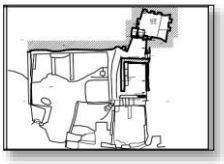
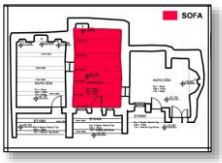
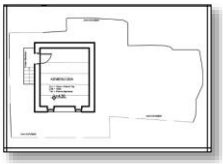
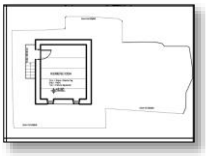
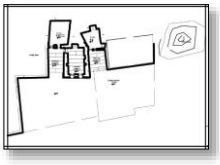
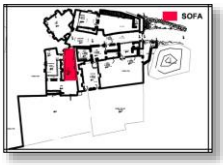


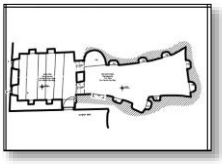
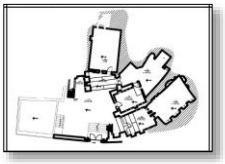
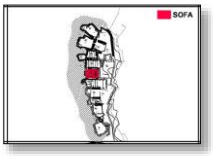
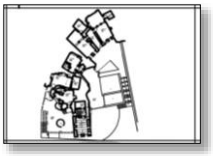
Figure 10. The building with an exterior room on the Vadiler Street 2019 parcel

The second stage of the plan development, the buildings with inner sofas, is formed by enclosing the two sides of the sofa with rows of rooms. Sometimes iwan, side sofas or stair sofas were added in the inner sofa plan and the sofa space was expanded (Eldem, 1968; Günay, 1998). The plan type with inner sofas is the most common group among Çavuşin houses. In some buildings, while a more organic and free plan design is observed on the ground floor in connection with the development scheme of the rock-carved spaces, the plan scheme with a sofa shows itself on the upper floors. In some of the buildings, the plan with inner sofas was also applied on the ground floor. The design of these buildings, which are characterised as interior sofas, also shows changes in the context of the sofa-room-rock-carved space design. For example, in the buildings coded G01 and G03, there are two arched rooms to the right and left of the sofa. In the building coded G02, access to the rock rooms is provided from both sides and back of the hall. Three units are reached from the inner hall on the upper floor of the building coded G05. The sofa spaces on the last level of the building coded G14 provide access to the rock rooms. In the ground floor of the

building coded G16 and consisting of two floors, it is a housing type with a transition from the courtyard to the hall and divided into four space units from the hall. On the upper floor, it provides the transition to the two units on the right and left of the hall, but there are spaces added to the sides of the two units due to the ability to expand according to the need in rock-carved structures. In the buildings coded G17 and G18, unlike the other buildings, the sofa unit is located on the ground floor (Table 1).

Table 1. Plan schemes of examples of houses with interior sofas

Building Code	Ground Floor Plan Scheme	1st Floor Plan Scheme	2nd Floor Plan Scheme
G01 (Vadiler Street)			
G02 (Vadiler Street)			
G03 (Vadiler Street)			
G05 (Vadiler Street)			

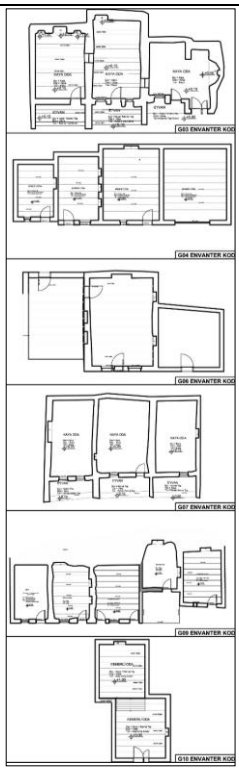
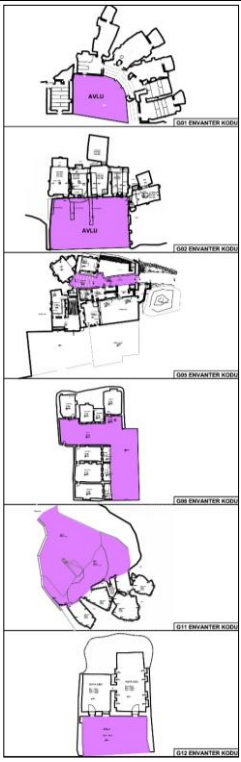
G14 (Vadiler Street)			
G16 (Vadiler Street)			
G18 (Vadiler Street)			

3.2. Courtyard Orientated Classification

In Çavuşin traditional houses, both courtyard and courtyard-less houses are observed. In the buildings without courtyards, the entrance to the building is provided directly from the street. In the courtyard plan type, the entrance from the street to the courtyard and from the courtyard to the building is provided. In these buildings, the entrance part of the courtyard to the building is paved with stone, while the rest of the courtyard may be earthen, and there are also courtyard types with a completely earthen floor. Pfeifer and Brauneck categorised courtyards according to their location (Pfeifer & Brauneck, 2008). Accordingly, courtyard types are classified as one-sided, two-sided, three-sided and four-sided according to the facade of the building facing the courtyard. Although the courtyard plan type is very common in the masonry buildings in Çavuşin houses, no two-sided,

three-sided or four-sided courtyards were found in the examined buildings. In all buildings, the courtyard was designed as one-sided (Table 2).

Table 2. Examples of Çavuşin houses with courtyards or one-sided courtyards

Examples of houses without courtyard	**Examples of courtyard house**
	

4. Deterioration and Causes in Historical Buildings and Region

The causes of damages in historical buildings are analysed in two groups as internal and external causes. The problems arising from the building's own characteristics, location, initial design and materials are called

internal causes, while the problems caused by natural factors and people that the building has faced over time are called external causes. (D'Ossat, 1972; Ahunbay, 2019).

Among the internal causes, which are defined as damages caused by the location of the building, ground properties, material and design errors used in construction, poor workmanship and faulty repairs in the past periods, the most common damages in Çavuşin are the damages caused by the location and ground properties of the building. As a disadvantage of the geological structure of the region, cracks and crevices in the rock structure are reflected on the superstructure. The fact that the majority of the buildings are constructed with rock-carved spaces or positioned on the bedrock causes all movements in the rocks to manifest themselves as cracks in the building walls (Figure 11, 12).

Figure 11. Crack in the facade wall
Figure 12. Crack in the vault of Çavusin Church

The external causes, which are defined as long-term natural factors, natural disasters, biological factors and damages caused by humans, are all

observed in the buildings in the traditional texture of Çavuşin. The water flowing along the slope surface erodes the weak tuff layer, resulting in the suspension of the block above the eroded part and its fall due to the tension cracks formed after a while. The water that descends from the façade or eaves with precipitation or rises from the ground with capillarity moves inside the structure with the help of the discontinuities of the rock and causes an increase in moisture in the interior compartments. Especially in unused and abandoned buildings, the physio-mechanical properties change and the deterioration process accelerates due to the lack of prevention of moisture and water (Bilgili, 2014) (Figure 13).

Figure 13. Effect of water and humidity on structural deterioration

The cause of some deterioration in buildings is the unconscious repairs made to eliminate the aging process. Again, some temporary repairs cause

more damage as they cover the main source of the problem. Another cause of deterioration is the loss of the originality of the building or the space by assuming different functions other than the current function of a part or all of the dwelling. Most of the repairs and additions were made without using local materials and original construction techniques. Along with these unqualified repairs, extensive interventions such as adding floors, adding new space units, combining rooms and structures also affect the original building. This situation, which is encountered especially after restoration works, is the most damaging interventions to the original structure (Figure 14).

Figure 14. An example of a repair not in keeping with the local material

Especially in the periods when reinforced concrete buildings emerged and the perspective on comfort conditions changed, the process of wear and tear of the historical pattern in the region accelerated. Due to the natural disasters in the region and the abandonment of rock-carved and masonry

houses, the demand for traditional buildings in the region has decreased. Modern dwellings that have the comfort conditions of today and have places such as WC, bathroom and kitchen have become the most admired and preferred dwellings for the inhabitants. Some historical buildings have been converted into hotels and restaurants in line with the development of tourism (Figure 15). In these functional transformations, the inability to use the buildings correctly according to their original spatial purposes has caused formal and structural deterioration in the whole building or in its spaces. Deterioration at the spatial scale has generally occurred in connection with the change of life-comfort schemes depending on the developing living conditions and requirements. In line with the changing requirements, apart from the deterioration caused by the removal of some elements within the space or the addition of new elements, there are also deterioration caused by the change of the original use of the space, in the form of a change in the spatial fiction and organisation logic. Changing the existing plan layout by adding new spaces to the dwelling or demolishing them leads to the deterioration of the principles that constitute the objective characteristics of the dwelling in terms of form, such as spatial configuration and organisational logic (Binan, 1994).

Figure 15. A dwelling converted into a hotel

At the beginning of the conservation problems arising from social life is the migration from village to city due to changing living conditions with modernisation. In this process, production decreased due to the decrease in agriculture and animal husbandry, and reasons such as the large size of the surrounding provinces, inaccessibility to services such as education and health caused the population in the village to decrease rapidly. Today, migration out of the city has slowed down with the increase in tourism activities in the region and thus the increase in job opportunities.

Conservation awareness of the users of the settlement is another issue that should be emphasised. In addition to the lack of continuous maintenance of the buildings due to abandonment, it is an important problem that the maintenance and repairs made by the users are not suitable for local materials. At this point, although the fact that the buildings are not

registered brings about unqualified interventions, the inadequate awareness of the users that their buildings are cultural assets in need of protection is a more dominant problem.

Changes in the special lifestyles of local communities and the abandonment of traditional uses and functions can have negative impacts on historic towns and urban areas. If the nature of these changes is not taken into consideration, it may lead to the migration of the inhabitants to another place; thus, the cultural traditions of the abandoned place may disappear and its identity and character may be lost. This may result in the transformation of historic towns and urban areas into a place that is not suitable for the daily life of the local people, but only for tourism and holidays (ICOMOS, 2011). In recent years, the intensification of tourism activities in the region and the increase in the number of visitors have created diversity in the factors threatening the protected areas. As stated in the Declaration of ICOMOS marking the 50th anniversary of the Universal Declaration of Human Rights, human communities have the right to have authentic testimony of cultural heritage respected as an expression of their cultural identity (ICOMOS, 1998). This intensity in the Cappadocia region, which is one of the most visited tourism regions in the world, causes changes in cultural identity. The change in these areas, which are shaped and evaluated mainly with the concern of rent, damages the right of present and future generations to perceive the region in its original form. On the other hand, tourism not only diversifies the threat factors but also emerges as a driving force for the maintenance, repair and protection of

cultural assets. However, the flow of visitors in the region reaches a level that threatens cultural and natural assets and has a corrosive effect.

The uncontrolled entry and exit of visitors to rock-carved places, for example, the fact that there is no attendant in the Church of St John the Baptist, the lack of visitor control, the destruction caused by illegal constructions (Figure 16), the abandonment of these illegal structures after a while, and the lack of any kind of supervision are extremely damaging to cultural and natural assets. Another threat factor is that cultural assets are abandoned and unclaimed and exposed to vandalism. The frescoes in the churches have been damaged by scraping with pointed tools, the walls of the abandoned buildings have been damaged with writings (Figure 17) and building materials have been stolen.

Figure 16. The building added to the Church of St John the Baptist
Figure 17. Vandalised walls in abandoned houses

5. Re-Use Decisions and Conservation Recommendations for Çavuşin Village

The most effective problem for Çavuşin Village is the migration and abandonment situation experienced with the change of living conditions and the natural disaster experienced. This migration also affected the

traditional houses and triggered the physical problems that will occur in the buildings. The abandonment of the buildings and the lack of maintenance-repair and conservation works cause the collapse of the buildings and the rapid deterioration of the original texture.

In preserving the architectural and historical character of monumental buildings, the needs of modern life should be taken into account and the adaptation of old buildings for new purposes should be carried out taking into account economic, social and cultural needs (Council of Europe, 1985). The same rule applies to the functional transformation of traditional houses. In Çavuşin Village, traditional dwellings are concentrated on Vadiler Street. Some of these buildings have been converted into accommodation structures with simple or extensive repairs, while some of them are in danger of extinction due to lack of maintenance and repair. After the necessary physical interventions are made in the buildings and topography, the continuity of the settlement should be ensured by ensuring the return of the users to the region if possible, re-functionalising and revitalising the buildings that cannot be used with their original function, thus strengthening the economic situation of the people living in the region and preventing them from migrating from the village. At the same time, social activities in the region should not be limited to the coffee houses in the village square, but social and sportive activity areas should be created for young people and visitors in the village and projects that can meet these needs should be developed. These projects, which integrate with the traditional texture and do not harm the original values visually and physically, are an approach that can change the face of the urban texture

with open and closed social spaces and make the village a point of attraction like the tourism settlements located in the Cappadocia Region and very close to Çavuşin Village.

Within the scope of the re-use proposals; it is suggested that the traditional buildings, which are especially abandoned and under the danger of collapse, be re-functioned with detailed restoration projects and be opened to the use of both local and foreign visitors. In line with this proposal, it is foreseen that the Vadiler Street, which is aimed to become a centre of attraction with the buildings to be re-functionalised, will be closed to vehicle traffic by arranging a car parking area against the vehicle density that may be experienced on Vadiler Street. In addition, it is proposed that the functions designed on the street, which can only be accessed on foot, are not only for visitors but also for the use of the living public. These structures should be organised as commercial structures, entertainment structures, food and beverage areas, cultural structures, sports structures, health structures and at the same time, usage proposals should be designed by creating green areas. In this context, it is suggested that the abandoned residences be used as promotional offices, traditional handicrafts sales place, carpet rug weaving and exhibition workshop, wine production and tasting centre, course centre, workshop, restaurant, cafeteria, show / seminar building, pharmacy, playhouse, yoga and fitness centre.

In order to preserve the original architectural characteristic in Çavuşin traditional pattern, it is necessary to improve the physical conditions of the buildings as well as increasing the resident population living in the village and ensuring the use of the buildings.

6. Conclusion and Suggestions

As the Nara document on authenticity emphasises, the diversity of culture and cultural heritage constitutes an irreplaceable richness of feeling and thought for all humanity (ICOMOS, 1994). The settlements in the Cappadocia region, which is one of the effective reflections of this diversity both in the world and in Anatolia, contribute to this richness with their differences in settlement scale, although they show similar characteristics in general. However, as in many historical settlements, traditional structures and historical texture in the Cappadocia region are faced with various dangers. It is an important issue to correctly determine the factors and types of deterioration that cause deterioration in the traditional texture and structures, and to evaluate the settlement and building scale in the conservation decisions and practices of the region while determining these reasons and the solution proposals created.

The most important problem in the preservation of the historical texture in Çavuşin is the neglect of the abandoned buildings and the fact that the maintenance and repair works are not integrated with the traditional texture. Another problem is that the conservation awareness of the public has not reached a sufficient level. It is a general moral obligation to protect cultural heritage and to pass it on to present and future generations (ICOMOS, 2018). This obligation is not only the responsibility of local and national administrations, but also of the users living in historical areas. In this context, it is necessary to raise awareness of the users, to encourage them to repair and use the buildings, and to register the buildings. In order to carry out conservation works in a healthy way, as a first step, awareness-

raising activities should be carried out through local administrations and non-governmental organisations. Conservation awareness of the users directly affects their relations with the buildings and forms the basis of the activities required for the protection of the physical environment. It should be understood by the users that the changes to be made in the buildings should be decided by experts and conservation works should be supported by scientific data. Through periodical and non-periodical publications, seminars and conferences, and events organised by local administrations, users should be made aware and encouraged to carry out maintenance and repair in the right way.

The people living in Çavuşin Village do not want their buildings to be registered, protection laws and sanctions. The support of the people should be obtained for the protection of the buildings by providing economic aid or state support. The registration of the buildings as cultural assets is among the measures to be taken for the protection of traditional buildings. Documentation work should be carried out together with survey - restoration - restitution projects for traditional buildings and state support should be obtained for financial and technical assistance. In this way, it should be aimed to prevent the demolition of buildings in poor structural condition or their transformation into ruins and unqualified maintenance and repair works.

Historic or traditional areas are part of daily life. Their preservation and integration with modern society form the basis of urban planning and development activities (ICOMOS, 2011). There is no conservation zoning plan for Çavuşin Village. This situation leads to constructions that damage,

push back and destroy the traditional housing texture. In order to ensure protection in the region in accordance with universal conservation principles and the quality of World Cultural Heritage sites, a conservation zoning plan should be prepared together with the site management and any construction should be carried out in accordance with the conservation zoning plan. It should be noted that there are no registered buildings among the traditional houses of Çavuşin and the registration of the buildings is the most important and urgent conservation work. In this context, it is thought that combining the conservation proposals will provide data for the conservation zoning plan to be made or for other studies to be carried out.

In addition to the advantages of tourism in the region, its disadvantages also arise due to the lack of high-scale decisions for conservation and lack of awareness. Tourism may be the most important resource and the phenomenon that provides development for the settlements declared as urban and natural sites. However, it should not be forgotten that the historical and natural environment, which encourages tourism, should receive a larger share from tourism. The most important issue that should be taken into consideration while making the necessary arrangements for the tourism movement in such settlements is that tourism is not the main purpose of conservation, but a potential tool that can provide economic benefits and accelerate the event in the conservation of the settlement. In the relationship between conservation and tourism, the balance between the purpose and the means should be adjusted very well. The economic benefits provided by touristic activities in historical settlements are the

driving force for the conservation of these local architectural textures with touristic attraction (Ulusoy Binan, 1989).

Due to the restorations that have developed in the region in the form of investors combining multiple buildings and converting them into accommodation units for tourism purposes, the original plan schemes of the buildings are largely disrupted, new rock-carved spaces are added to the buildings or existing units are expanded, thus making it difficult to trace the original plan character in future documentation / conservation studies (Abdik, 2013). Thanks to the location of Çavuşin Village, which is close to the cities where tourism is intense in the Cappadocia Region, its historical richness and traditional architectural texture, alternative tourism models that combine cultural, natural and agricultural values should be produced instead of practices where only cultural features are emphasised. The village can be turned into a centre of attraction with cultural tourism, agricultural tourism and nature tourism. Long-term sustainable visitor management strategies are needed to ensure that the value and integrity of the protected structures are not diminished over time against threatening factors. Strategies should maximise the benefits that visitors bring to the sites and remove the negative aspects as much as possible.

In line with the needs, opinions and wishes of the people living in Çavuşin Village, traditional houses can be converted into accommodation structures in order to develop the tourism activities of the region and to develop the region economically. However, in this case, in the restoration works to be carried out by experts, care should be taken to preserve the plan and facade features that constitute the original architectural

characteristics of the buildings and the architectural integrity based on the traditional building - parcel ratio. The new buildings to be built should adapt to the layout of the street and should not disrupt the continuity. It should act as a continuation of the historical texture with its gabari, façade width, occupancy - void ratios.

Since social development is related to the physical environment, it cannot be considered independent of the physical environment, and activities that will affect social life will indirectly change the physical environment. As a result of the inadequacy of the village settlement to meet today's needs, the physical space cannot be used sufficiently because the young population leaves the traditional houses and either settles in the Yeni Çavuşin region or migrates to other cities. In this context, it is necessary to increase the number of users in the settlement by planning the adaptation of social life to the present day and to support the village with new users.

In order to protect natural and geological values, to ensure the sustainability of traditional architectural examples and to protect them with their original features, main decisions should be taken at the upper scale within the framework of a holistic conservation approach and these decisions should be customised at the settlement scale (Yavuz & Asatekin, 1998).

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Author Contribution and Conflict of Interest Disclosure Information

All authors contributed equally to the book chapter. There is no conflict of interest.

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1. Introduction

Anatolia, which is considered the *'Cradle of Civilizations'*, has been the most important asset of the road networks created or used by all civilizations (Hittites, Assyrians, Phrygians, Persians, Greeks, Romans, Seljuk Turks and Ottomans, etc.) that have dominated Anatolia for thousands of years. For this reason, Anatolia is one of the busiest cultural bridges of the world in the historical process (Kemer, 2018). Most of the historical roads with historical strategic importance (especially military, religious, commercial, and social, etc.) have deteriorated or disappeared or lost their historical importance. Nevertheless, historical ancient settlements, structures, and connection points on these roads are recognized as universal heritage values, especially in terms of cultural tourism due to their location. Road networks are defined as a cultural spatial area where history is processed in a cultural interaction, which has been built to sustain the lives of people since the existence of human beings and to ensure their dominance in the region (Yeşil Zeliha, 2020).

Historical roads in the past were built to provide connections between settlements and important economic and strategic centers. Road routes were determined by taking into account geomorphological, climatic, and environmental factors to make transportation fast, safe, and easy. The routes of the historic roads were generally chosen to take advantage of green valleys and waterways with abundant water and food, mountain passes, mountain ridges with wide and open views, and in some cases shortcuts across open plains, man-made threats, and security measures. In the early

period, historic roads often connected communities and cultures in a single line, but over time, additional routes developed, alternative routes emerged and were integrated into extensive road networks spanning continents. For example. Silk Road, Persian King's Road, Hadrian's Road, etc. (Kemer, 2018).

Historical ancient roads have become the most important component of cultural tourism today. Today, it is aimed to realize the recognition of a region on a national and international scale, to develop tourism, and to contribute to the local economy with "cultural tourism" that prioritizes its natural, cultural, and historical values (Gül et al., 2020a). According to Kurt Konakoğlu, (2021), cultural tourism corridors are roads with linearity, multifunctionality and connectivity that enable access to natural, historical and cultural resource values, including tangible and intangible heritage values, and the realization of various touristic activities.

Historical ancient roads, which were used for military, religious, commercial, and social purposes in the past, are becoming increasingly functional in the protection and promotion of cultural and natural heritage and are being put into practice as "cultural routes" (ÇEKÜL, 2015). A cultural route;

- It has been created today or used in a certain period of history,
- The importance of cultural and/or natural heritage values on the route,
- Preservation of heritage values, rural development, and tourism development,

- It can be defined as a local, regional, or national transportation corridor.

The most basic components common on cultural routes can be summarized as tangible and intangible cultural heritage items and natural formations. The concept of cultural routes became important when UNESCO declared cultural routes as one of the 4 main heritage categories in 2005 within the scope of the World Heritage Convention. After this date, the ICOMOS International Committee on Cultural Routes published the "ICOMOS Cultural Routes Declaration" in 2008. The main objectives of this Declaration are to set out the basic principles and methods in the research of cultural routes; to determine the principles regarding the use of routes; and to establish mechanisms that will ensure the accumulation of knowledge and experience in the evaluation, protection, and management of routes (ÇEKÜL, 2015).

Türkiye has many cultural routes that are highly preferred by international visitors. For example; Hz. Abraham Trail (Şanlıurfa), Evliya Çelebi Trail, Küre Mountains Trail-(Kastamonu), Idyma Trail (Muğla), Ararat Trail (Ağrı), Yenice Forests Trail (Karabük), St. Paul Trail (Antalya-Yalvaç), Lycian Trail- (between Muğla and Antalya), Lycian Trail (between Antalya & Dalaman), Via Sebaste Culture Trail etc. However, there are not enough policies and practices for the planning/design, protection, and sustainability of existing cultural routes. There is no legal regulation on cultural routes in Türkiye yet. In this context, they need to be legally and administratively defined by granting protection status (Gül et al., 2020b).

The Ancient Döşeme Boğazı is located 2.5-3 km. northeast of Kovanlık neighborhood in Antalya Döşemealtı District, where the plain ends and the first elevations of the Taurus Mountains begin. It is recognized as one of the roads connecting the cities of *"Pamphylia"* and *"Psidia"* in ancient times. This road consists of approximately 4 meters wide paved stones built by the Romans of the Roman Period in the Derbent Boğazı. Local people; *"Döşeme"* called the Boğazı where the road passes *"Döşeme Boğazı"* and the plain under the trail; *"Döşemealtı"*. The name of *"Döşemealtı District"* also comes from here (Döşemealtı Belediyesi, 2023).

The tangible and intangible values that emerge as a result of the interaction and interaction between human-culture-space and environment are considered a vital cultural heritage value in the transfer of culture, establishment, and preservation of collective memory (Gül & Gül, 2021).

In this study, suggestions have been made for examining, introducing, and emphasizing the importance of the *"Ancient Döşeme Boğazı Trail "Alexander Road"* in terms of cultural heritage and ensuring sustainability.

2. Material and Method

In this study, a comprehensive field study based on qualitative research methods and observation was carried out. For this purpose, the literature on the Ancient Döşeme Boğazı was reviewed, the data obtained as a result of observations and examinations in the field were analyzed and recommendations and actions were developed by associating them with cultural tourism.

3. Findings and Discussion

3.1. Döşemealtı District General Information

Döşemealtı District is located in the north of Antalya Province. It is 12 km. away from Antalya City Center. Döşemealtı District is bordered by Bucak in the north of Burdur Province, Konyaaltı in the south, Kepez in the east, and Korkuteli in the west. Döşemealtı settlement is one of the oldest settlements in Türkiye. It is a settlement established on the plain near the Karain Cave, which bears traces of a long-term settlement from the Lower Paleolithic period to the Late Roman-Early Byzantine period. Its surface area is 673.1 km^2 (Döşemealtı Belediyesi, 2023).

Döşemealtı District is named after the road consisting of stones laid by the Romans about 4 meters wide in the Roman Period in the Derbent Boğazı, 2.5-3 km. northeast of Kovanlık Neighborhood, where the plain ends and the first elevations of the Taurus Mountains begin and which was one of the roads connecting the cities of *"Pamphylia"* and *"Psidia"* in ancient times. It has not been determined exactly by whom it was first used. However, it is understood from the stone inscriptions that the ancient Roman road called *"Via Sebaste"* (also called *Alexander Road*) was built by Augustus (Octavius), who was emperor for forty years, especially to fight Cilician pirates. The paved road, which continued to function during the Byzantine, Seljuk, and Ottoman periods, was used as a migration route by Yoruks until recently (Döşemealtı Belediyesi, 2023).

Passing through the ruins built in the Ancient Period, this route called *"Döşeme Boğazı"* or *"Derbent Boğazı*" reached near the present Dağ

District. The Villages under the road built with these paving stones were called the Villages under Döşeme by the local people and in time it turned into its current name *"Döşemealtı".* For this reason, the local people called the Boğazı where the road passes through "*Döşeme"* as *"Döşeme Boğazı"* and the plain under the road *"Döşemealtı*" (Döşemealtı Belediyesi, 2023).

It is still used as a pedestrian road by the local people. For 2000 years, this road has functioned as a military mansion in various periods for control purposes and there are structures and ruins (Döşemealtı Belediyesi, 2023).

Today, it is possible to see traces of wheels on the paved stones remaining from the Roman period, a significant part of which is intact (approximately 4 km). In addition, many rock-carved sarcophagi on this route, and the remains of a small settlement built of stones used as a police station are still observed. This 4 km route has a strategic importance as a cultural heritage value and it is of great importance to protect it and bring it to tourism.

Döşemealtı region has rich cultural heritage values such as traditional architectural structures, Termessoss Ancient City, archaeological artifacts, Kırkgöz Inn, water cisterns, caves (Karain cave, Güvercinlik cave, etc.), inscriptions, statues, paintings (Figure 1).

There are many protected areas in Döşemealtı District (Döşemealtı Belediyesi, 2016; Tabiat Varlıklarını Koruma Genel Müdürlüğü, 2020); **Natural Protected Areas:** Düzlerçamı Forest, Güver Cliff, Termessoss Ancient City and National Park, Kırkgöz Water Springs, Harunini Cave, Kızılin Cave, Öküzini Cave, Koyunini Cave, Mustanini Cave, Macarini Cave, Karain Cave, Çarkini Cave, Suluin Cave, Kocain Cave Tabak 1 and

Caves, Kilise Düden Cave, etc. (Vuruşkan & Ortaçeşme, 2009; ÇSİB, 2018).

Archaeological Sites: The areas outside the site boundaries in Antalya Province, Döşemealtı District, Kovanlık Neighborhood, Döşeme Boğazı Derbenti and Gözlek Tepe, Sulu Obruk and Göçyolu Locations around the Ancient Road. Archaeological remains such as the ancient road section, building remains, Khamasorion tombs, sarcophagi, observation post, Döşeme Boğazı and Ancient Road, Termessoss Ancient City, Kırkgöz Water Springs, Yağca Village: Harunini Cave, Kızılin Cave, Öküzini Cave, Koyunini Cave, Mustanini Cave, Macarini Cave, Karain Cave, Çarkini Cave, Suluin Cave, Kocain Cave, Ariassos Ancient City in Akkoç Village (Vuruşkan & Ortaçeşme, 2009).

In addition, Archaeological Sites are Dağbeli Mahallesi İncirlik Mevkii (1. Degree Archaeological Site), Düzlerçamı Mahallesi Yukarıkaraman (1. Degree – III. Degree Archaeological Site), Near Uzunkuyu Cistern, Düzlerçamı Mahallesi Yukarıkaraman (1. Degree Archaeological Site), Ancient Water Canal, Düzlerçamı Mahallesi Evdirhan and its immediate surroundings, the area where the Tumulus is located just west of Evdirhan (1. Degree Archaeological Site), Ancient Water Canal, Evdirhan and its immediate surroundings in Düzlerçamı Neighborhood, the area where the Tumulus is located just west of Evdirhan, (1. Degree Archaeological Site).

a

b

c

d

e

f

Figure 1. Examples of traditional architecture in Döşemealtı District (a-b-c-d.), Examples of the ınteriors of buildings (e-f) (Original Photo: Öncü & Gül, 2022).

Termessoss Ancient City: It is an important ancient city founded by the Solyms, descendants of the Luwians, one of the oldest peoples of Anatolia, in the valley between the peaks of Mount Solymos, which today bears the name *"Güllük",* in the southwestern part of the Pisidia Region called *"Milyas"*. It is one of the most striking ruins protected in the forest and is protected as a National Park. The ruins on Güllük Mountain can be reached from the 24th kilometer of the Antalya-Korkuteli highway by a special road climbing to the left. The city made its debut on the stage of history when Alexander the Great besieged the city in 333 BC and the people of Termessos did not surrender the city by making a strong defense. After Alexander's death, the city was taken by the *"Ptolemies*". In 189 BC, the people of Termessos who captured the neighboring city *"Isinda"* were punished by Manlius Vulso, Commander of the Roman Forces in Anatolia, upon the complaint of the people of Isinda. There was probably a war between Termessos and the Lycian League at the same time. In 71 B.C., the Roman Senate accepted and confirmed that Termessos, which had a "friendship and alliance" with Rome, was independent in its affairs and that they would make their laws. Termessos has many temples and very large cemeteries. The variety and decoration of the tombs are quite rich. Among them, the tomb of "*Alketas*" (319 BC), one of the important commanders of Alexander the Great period, and others are also important in terms of shedding light on the history of the city (Antalya İl Kültür ve Turizm Müdürlüğü, 2012).

Figure 2. Termessoss Ancient City in Döşemealtı District (Original Photo: Öncü & Gül, 2022).

Karain Cave

Döşemealtı District has many cave potentials that are important for natural life and historical dimension. The most important of these caves is Karain Cave, which is located approximately 30 km. northwest of Antalya city center and northeast of Yağca neighborhood. It is the most intensively researched Paleolithic center of Anatolia. It is known to be the only cave in Anatolia that contains skeletal and dental remains of Neanderthal man and traces of homo erectus (Lower Paleolithic) in Anatolia, allowing the Middle Paleolithic chronology to be established (Kartal, 1999; Yalçınkaya & Özçelik, 2012). It was continuously inhabited by humans from the Lower Paleolithic period until the Late Roman-Early Byzantine period (Yalçınkaya, 1988) and is the most important cult center of Meter Orei, which means "*Mountain Mother*" or "*Goddess Sitting in the Mountains*" in the Pamphylia Region (Akın, 2016).

a. A view from Karain Cave

b. Wall painting of a Neanderthal Human found to have lived in Karain Cave (Antalya Archaeology Museum)

c. Rock ınscription near Karain Cave entrance

d. Interior view of Karain Cave

Figure 3. Karain Cave in Yağca Neighborhood, Döşemealtı District (Original Photo: Öncü & Gül, 2022).

Figure 4. Kocain Cave is located within the boundary of Ahırtaş Neighborhood in Döşemealtı District and inside the cave, there are writings on the wall and a building (Original Photo: Öncü & Gül, 2022).

There are many dens in Döşemealtı District where Yörüks lived before settling down (Figure 5).

Figure 5. Lairs where Yörüks lived before settling down in Döşemealtı District (Original Photo: Öncü & Gül, 2022)

Kırkgöz Hanı (Inn), built during the Seljuk Period, is located on the Antalya-Burdur route and in the Kırkgöz locality. Completed in 2009, Kırkgöz Hanı (Inn), is used as a tourist attraction. Although the Kırkgöz Hanı (Inn), inscription states that the building was built during the reign of the Seljuk Sultan Gıyâseddîn Keyhüsrev II (1237-46 AD), only thirteen is written on the last line of the inscription containing the date. Not only does the inscription depict Sultan Gıyâseddîn Keyhüsrev II as the owner of the crown, banner, and sash, which had never been seen before among the signs of Seljuk sovereignty, but it is also an original and unique example in that the function of the ribat is stated for the first time as a place to host those traveling from east to west (Kültür Portal, 2021).

Kırkgöz Hanı (Inn), has a rectangular form extending in the north-south direction. It was built in two building masses with its spaces lined around a large courtyard and a closed/shelter section. The exterior walls of the khan

are supported by square prismal buttresses and corner towers that reach the height of the facade and are designed as protruding masses. The crown gate in the center of the south façade is designed as a protruding horizontal rectangular prismal mass rising beyond the façade walls. It consists of an iwan opening to the façade in the form of a pointed arch eye surrounded from the sides and top by wide borders and moldings left plain and unprocessed (Kültür Portal, 2021).

It has a rectangular courtyard with a pointed barrel-vaulted entrance iwan accessed through the flat arched door opening of the crown door. The courtyard is a large area surrounded by closed and semi-open spaces. On the eastern and western sides, there is a double-row portico organization that sits on square legs and opens to the courtyard by connecting to the walls with pointed arches. The two opposite spaces in the northwest and northeast corners of the courtyard are each a room with a pointed barrel vault. Two rooms on the south wing of the courtyard and adjacent to the crown gate on both sides are covered with pointed barrel vaults extending in the east-west direction (Kültür Portal, 2021) (Figure 6).

a) b) c)

Figure 6. a) The entrance gate of Kırkgöz Inn, b) Rear view of Kırkgöz Inn c) Interior view of Kırkgöz Inn (Original Photo: Öncü &Gül, 2022).

There are many water cisterns in Döşemealtı District. In the research conducted by Ercenk (1992), it was determined that water cisterns were built in different styles on the migration route of Yoruks. Especially Kovanlık, Karataş, and Ilıcaköy are very rich in terms of groundwater (Figure 7).

a b

Figure 7. Döşemealtı Kömürcüler Neighborhood Water Cisterns (Original Photo: Öncü & Gül, 2022).

3.2. Historic Ancient Döşeme Boğazı

During the Roman Empire, road networks were one of the most important symbols of its sovereignty and instruments of power. All Roman Emperors attached great importance to the construction of better and shorter roads, road maintenance, and inspection to be able to learn what was happening in the lands under their sovereignty as soon as possible. The courier organization (*cursus puplicus*), which carried news from the provinces to the central administration, enabled the entire empire to be ruled from Rome. The 1994 road guidance monument found in Patara shows that Emperor Claudius, immediately after the provincialization of the region in 43 A.D., had 67 routes connecting the cities of Lycia built through the first Governor Quintus Veranius and had their distances measured one by one (Varsak Belediyesi, 2007; p7).

It has not been determined exactly by whom the "*Ancient Döşeme Boğazı*" was first used. It is understood from the inscriptions on the stones that the ancient Roman road called "*Via Sebaste*" (also called *Alexander Road*) was built by *Augustus* (*Octavius*), who was emperor for forty years, especially to fight Cilician pirates. One of the 3 stones recovered from the Döşeme Bosphorus shows that "the road in question was built by Augustus through Cornutus Arruntius Aquila, governor of Galatia Province, in 6th BC and was named "*Via Sebaste*". This stone bears the following inscription. (Varsak Belediyesi, 2007).

"Imparator. Caesar Divi F. Augustus pont. Maxim. [cos. XI desig. XII] imp. XV [trib]potest. XIIX viarn Sebasten curante Cornuto Aguila leg. Suo [pro praetore] (vac.) fecit (vac.) CXXXVIIII".

"It is accepted that Emperor Caesar Augustus, son of the God (Julius Caesar), who became Emperor for the 15th time and held the power of public administration for 18 years, built this road known as "Via Sebaste" and its construction was supervised by the Governor (*legatus pro praetor*) Cornutus Aquila. It is seen that a significant part of the pavements of the "*Ancient Paving Boğazı*" road within the borders of the Kovanlık neighborhood approximately 4 km; is on the surface. According to the archaeologists who deciphered the milestones of the Döşeme Boğazı; this beautiful road called "*Via Sebaste*" with a history of 2000 years and 139 miles of stone-paved; It is one of the oldest roads of strategic importance that connects the cities of Lycia, Pissidia, and Pamphylia, especially the cities of South and South East. 139 miles of stones found in the Döşeme Bosphorus indicate that the Caput Viae (starting point of the road) is Pisidia Antiokheia in Isparta / Yalvaç (Varsak Belediyesi, 2007).

It is estimated that this historical ancient road was built in the 6th year BC, starting from Pissidian Antiokheia (Yalvaç), Neapolis (Şarkikaraağaç), Hüyük, Iconium (Konya), Misthia (Beyşehir), Side, and especially after circumnavigating the Beyşehir Lake, one arm to Syedra and the other to Antiocheia and Osione via Tarsos, i.e. Syria and Mesopotamia (Çekirge, 2014) (Figure 8).

The ruins and milestones found at certain points of the Ancient Döşeme Boğazı have determined that the roads were controlled by establishing military centers that controlled the passage of traffic on the roads. It is seen that very few trade and transportation routes were formed due to the geographical characteristics of the region. It is stated that the smallest conflicts on these roads, which are very sensitive and constantly monitored, cause road traffic to stop (Takmer & Önen, 2008; Çekirge, 2014).

From the starting point of the Ancient Döşeme Boğazı to the location of the NATO facility (approximately 4 km distance), it is seen that there are still paved stones and even wheel marks on some of the roads. Another important detail is that at a distance of approximately 2.5 km from the beginning of the Döşeme Boğazı the remains of an ancient military outpost are still present and it is understood that soldiers are stationed there. There are also many sarcophagi carved out of the rock around the outpost and on the sides of the paved road, which are thought to belong to military commanders. However, most of them have been destroyed (Figures 9, 10, 11, 12, 13, 14).

The ancient road was not only used militarily, but also for commercial, political, diplomatic, or missionary purposes between different societies that were far away from each other and are thought to have played an important role in the transmission of technical and cultural developments. For thousands of years, the ancient road carried songs, stories, religious ideas, philosophical views, and scientific knowledge through travelers and helped to keep them up to date. In addition, exotic animal and plant species,

foodstuffs, agricultural products, traditional handicrafts, paper production, printing, and other important inventions were transported and spread to the interior regions through these routes.

Located at the northern foot of the Mercimek Mountain at the western end of the Ancient Döşeme Boğazı, the "*Üstün Ağzı Ruin*" a few km east of Ariassos at the northwestern end of the "*Çubuk Boğazı*", which the ancients called Melli Asarı, is a place where the Döşeme Boğazı road, which connects Antalya Port to Western and Central Western Anatolia, gets rid of the stream bed it passes through and reaches the high plain, where it is divided into lines extending in different directions, that is, where the road forks (Ercenk, 1992) (Figure 15 and 16).

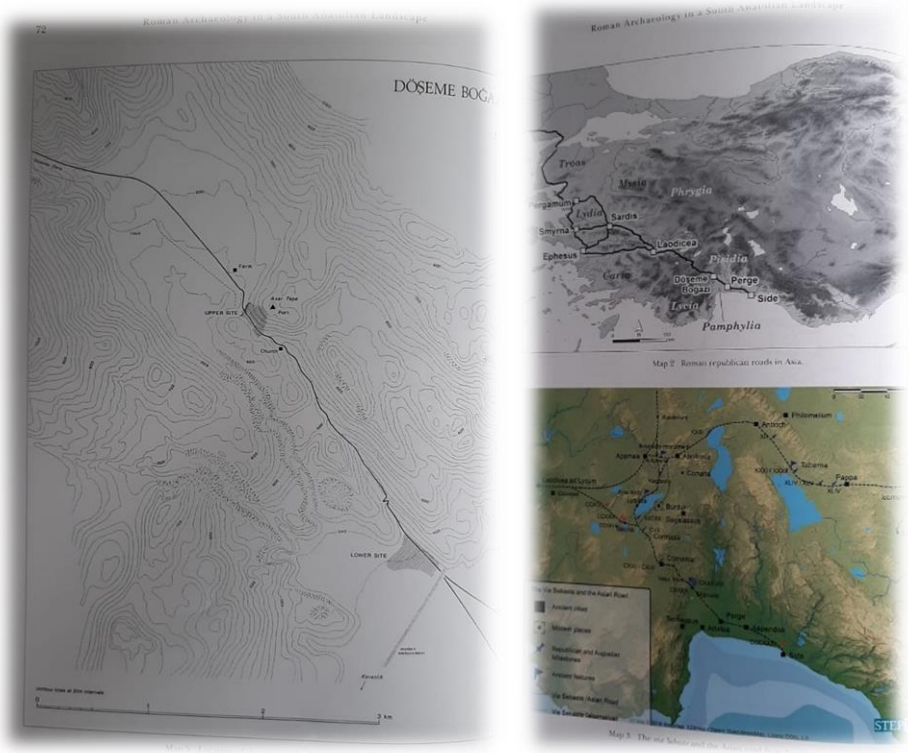

Figure 8. The historical location of the sites in the Döşeme Boğazı (Mitchell, Wagner & Williams, n.d).

With the decision of "*Antalya Kültür ve Tabiat Varlıklarını Koruma Bölge Kurulu*" dated 16.05.2011 and numbered 5090, the Ancient Döşeme Boğazı and Ancient Road was registered as a Grade I Archaeological Site (Tabiat Varlıklarını Koruma Genel Müdürlüğü, 2020).

Figure 9. The entrance to the "Ancient Döşeme Boğazı" near the Kovanlar Neighborhood (Original Photo: Öncü & Gül, 2022).

Figure 10. The paved stone road is still preserved in the Ancient Döşeme Boğazı (Original Photo: Öncü & Gül, 2022).

Figure 11. Wheel marks on the paving stones in the Ancient Döşeme Boğazı (Original Photo: Öncü & Gül, 2022).

Figure 12. Outpost control point located on the Ancient Döşeme Boğazı (Original Photo: Öncü & Gül, 2022).

Figure 13. Water cistern located at the Outpost Control Point on the Ancient Döşeme Boğazı (Original Photo: Öncü & Gül, 2022).

Figure 14. Views of the remains of numerous sarcophagi on the Ancient Döşeme Boğazı (Original Photo: Öncü & Gül 2022).

Figure 15. View of the Döşeme Plain from the route from Üstünağzı Ruin to the Döşeme Plain on the Ancient Döşeme Boğazı (Original Photo: Öncü & Gül 2022).

Figure 16. The Üstünağzı Ruin a few kilometers east of Ariassos, is located at the northwestern end of the Çubuk Bogaz (Melli Asarı) at the northern foot of the Mercimek Mountain at the western end of the Ancient Döşeme Boğazı, Dağ Beli quarter (Original Photo: Öncü, 2022).

4. Conclusion and Suggestions

"Cultural Heritage" represents all the historical knowledge produced and used by the people living in that geography in the historical process. This accumulation of knowledge is being destroyed or destroyed due to all kinds of external and internal factors through its current local dynamics. To protect, maintain, sustain, and transfer cultural heritage and local cultural identity to new generations, awareness should be raised and turned into action by all relevant stakeholders (administrators, political will, institutions and organizations, NGOs and local people, etc.) carrying out joint work

Antalya is the most important tourist destination in Türkiye after Istanbul. Antalya region has a rich cultural heritage values with various natural and cultural values (historical and archaeological ancient roads, ancient cities, etc.). This situation provides an important advantage, especially in terms of cultural tourism. Although the Historic Ancient Döşeme Gorge is an important attraction center in the cultural tourism planning and management of the Antalya Region, it has not yet been brought to tourism due to the lack of awareness and insufficient importance of the Ancient Döşeme Boğazı by the relevant stakeholders.

For this reason, strategic recommendations for the preservation of the Ancient Döşeme Boğazı, its association with cultural tourism, and its transformation into added value can be summarized as follows.

- The fact that the historical traces of the “Ancient Döşeme Boğazı”, which is located in the Kovanlar neighborhood of Döşemealtı District (Antalya), are still preserved on the approximately 4 km road

is of great importance for the protection and preservation of this road as a cultural heritage value.

- However, the “Ancient Döşeme Boğazı, which seems to have been abandoned, should be projected within the scope of cultural tourism and turned into added value and transferred to future generations.
- A strategic action plan should be developed in cooperation with the Ministry of Culture and Tourism, Municipality, Universities, NGOs and other stakeholders to make the "Ancient Döşeme Gorge" sustainable. Local government should perform the prioritization and coordination function in this regard. According to Kurt Konakoğlu et al. (2019), especially for the sustainable development of tourism, local governments should take every precaution for its protection as well as promotional policies.
- "The connection of the Ancient Döşeme Boğazı with other ancient roads should be investigated and linked to create an integration of “*Cultural Ancient Roads”* that ensure sustainability with a specific plan.
- A holistic natural and cultural inventory of the Ancient Döşeme Boğazı should be prepared, updated, and developed through scientific research. All data should also be digitized.
- The participation and support of local people should be ensured in all planning and administrative processes related to the Ancient Döşeme Boğazı. Local people should be prioritized in all kinds of investments.

- For the Ancient Döşeme Boğazı, the "principle of conservation and use compatible with conservation" should be applied.
- Local identity is a determining factor in cultural tourism planning and management (Gül et al., 2019). Awareness of cultural identity should be created through educational activities for the local people.
- Written and visual materials and touristic products should be produced to promote the Ancient Döşeme Boğazı and raise awareness
- The number of scientific research projects should be increased and scientific events (congresses, symposiums, workshops, etc.) should be organized to produce and share information.
- Coordination and cooperation should be ensured between the "Ministry of Culture and Tourism" and "Municipalities", "Universities" and "NGOs" to make Cultural Heritage sustainable at the local scale. For this purpose, municipalities may be authorized by the Ministry to carry out the procedures and implementations related to the immovable cultural and natural assets that need to be protected and to carry out their inspections. The establishment of a protection, implementation, and inspection bureau "KUDEB" within the municipality can be made compulsory. City Councils established in municipalities can be more effective and directive in cultural heritage values.
- The protection and preservation of cultural heritage values should not be the monopoly of political will and decision-makers. Relevant stakeholders should be involved in all decision-making processes.

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Author Contribution and Conflict of Interest Declaration Information

1st author contributed 40%, 2nd author 40% and 3rd author 20% to the article. There is no material or moral conflict of interest with anyone.

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An Evalution on New Function Suggestion in Worship Buildings: Akşehir Armenian Church

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1. Introduction

Some historical buildings cannot maintain their original function today due to various reasons. It can be observed from the literature that there is a social benefit in preserving the life of such buildings with a new function. Giving a new function to monumental buildings has become a common practice in architectural fields, especially with rapid urbanization after the 1970s. Although this trend gained momentum in the 1970s, similar observations were made in previous years and were the subject of international meetings. In 1931, the concept of re-functioning was emphasized in Article 7 of the Carta Del Restauro, defined by ICOMOS as the Restoration Charter (Carta Del Restauro, 1931). This charter relates the concepts of re-functionalization and additional building, providing suggestions for these concepts. It stresses that in the consolidation of the monument, in case of partial or complete additions, the new elements should be kept to a minimum. These elements, desired to be simple and structural in character, should continue the existing lines of the building. To revitalize the historical value and sustain the life of the building, clear and comprehensible applications should be made, addressing the issues evaluated within the scope of this declaration. Reprogramming these buildings with a new function will ensure the transfer of natural and cultural resources to future generations. Given the importance of this application, a profound research and scientific approach are deemed necessary for the re-functionalization issue.

When examining restoration practices related to new function suggestions, it is evident that this concept should be evaluated directly within the framework of 'conservation.' The primary purpose of selecting a function in

re-functionalization is to transfer cultural heritage to the city with the given function, taking measures to sustain the life of the historical building and increase awareness of the cultural richness. These objectives align with the content of the concept of conservation.

1.1. New Functions and Worship Buildings

Among monumental buildings, worship buildings hold particular importance as public spaces within cities. Many cities are shaped around and with reference to these worship buildings, which are open to the public and are known and protected by almost every urbanite. The concept of re-functionalization is especially important in terms of maintaining the relationship that such buildings establish with the city and its inhabitants. Besides their physical characteristics and the values they embody, preserving their public features while re-functionalizing them is crucial.

Abandoned worship buildings, due to reasons such as war, migration, and loss of users, hold a unique position among public worship buildings. These buildings, which have lost their users due to social transformations, might face challenges in being adopted and used by urbanites of different ethnic origins and beliefs. Church buildings are the most common monumental worship structures in Anatolian cities. In Anatolia, many worship places have been left abandoned, unused, or misused. Although converting a place of worship into a place of worship for a different faith is seen as a positive approach in theory, the results of such practices are questionable due to negative interventions during the conversion. In our country, there are very few examples of reusing worship buildings with a different function, and decision-makers often lack understanding and practical experience in this

matter. The existence of these spaces, preserved and re-functionalized as a whole with the spatial potential and historical fiction of the building and its decorative elements, is quite limited.

In addition to numerous church structures worldwide, the Ottoman Empire had a policy of tolerance towards pre-existing government and religious beliefs in conquered places. Especially in the 18th century, with the Treaty of Aynalı Kavak in 1779, a moderate approach was shown towards non-Muslim places of worship. Additionally, as a result of pressures from England and France, the Tanzimat Edicts of 1839 and the Reform Edicts of 1856 aimed to ensure equality between Muslims and non-Muslims in this regard. These practices and facilities paved the way for the construction of churches, schools, hospitals, and non-Muslim buildings in the 19th and 20th centuries, creating a new field of architecture. This situation continued until the exchange of Armenians with the Relocation and Settlement Law (Akman, 1996).

The main subject of this study is the Armenian Church in Akşehir, which is inseparable from the existing physical and historical features. To shed light on the future urban development of Akşehir, the historical buildings were analyzed in relation to the society and time they belong to. Based on the observations, it is evident that certain measures need to be taken to enable this magnificent structure to become a cultural destination and contribute to newly developing tourism routes and housing texture. One of the most important measures is the qualified restoration of the building and its adaptation to a function that serves the whole city. As part of this study, a

field study was conducted to involve citizens in the decision-making process concerning the entire city, and the results were obtained.

Within the broader framework of this study, an evaluation and research on the reuse possibilities of the Akşehir Armenian Church were conducted. The relevant building was observed before conservation practices began, and all processes were monitored during the restoration application. Considering the place of the Armenian population in Akşehir's history and their professional activities, it is evident that they made significant contributions to the architectural heritage of the city. The church, as a public building among the examples of civil architecture, aims to reintegrate itself into the city with a new function. In line with these objectives, geographical and historical definitions were made for the area where the church is located, and Akşehir's city memory and architectural development were also evaluated in the context of the building.

The concept of re-functionalization makes it easier to evaluate the existing functional potentials of buildings. By applying new functions to the buildings:

The life of the buildings is extended, and they become sustainable in urban terms. Buildings of historical value that remained idle are restored to their former glory. It contributes to the economy, as the cost is lower compared to rebuilding a structure from scratch.

The new function brings economic and cultural revitalization and contributes to the city's identity in structural and environmental terms.

It offers effective protection for spaces that have completed their functional life. Since it is approached holistically, the historical processes that form the identity of the buildings are not ignored.

2. Examples of Re-Use of Worship Buildings

Instead of viewing architectural monuments as mere income-generating tools, they should be regarded as cultural products that deserve evaluation, utilization, preservation, and passing down to future generations. Addressing changing needs and wishes, as well as protecting historical and cultural heritage, are fundamental concerns in world architecture. The practice of giving monuments a new function different from their original one dates back to ancient times (Eroğlu & Yaldız, 2006).

The concept of re-functioning represents a transformative process, especially significant for registered buildings. It not only brings a building back to life but also provides society with a chance to reconnect with its own past beyond fulfilling its current needs. This interplay between re-functioning and "Public Memory" is striking (Selçuk, 2006).

After restoring and re-functionalizing the Akşehir Armenian Church, which still has not reached the end of its structural life, it will lead to both economic and social benefits on an urban scale. Future visitors will not be satisfied with merely observing the building; they will want to hear its legends, immerse themselves in the cultures of its time, and feel the essence of the place. The church structure can serve as a pivotal tool in achieving these objectives. Historic buildings offer a unique opportunity to transfer

available data in the clearest way possible in terms of character and structure.

2.1. Examples of Re-functionalization of Churches

When examining examples of churches worldwide in terms of functional changes, it is evident that they generally continue to serve their original functions under the influence of Christianity, a widely practiced religious view. However, buildings that have lost their original functions and fallen into disrepair have been repurposed to serve culture and art activities, contributing to the country's economy. Additionally, in some countries like the Netherlands and the USA, churches have been transformed into residences after renovating elements with religious significance, such as doors and windows. To maintain the interior order, naos sections were considered as public focal points according to the new function. Interventions such as coating or material changes were made in interior elements like columns, steps, and stairs to reflect the new purpose of the space. Furthermore, lighting and sound systems were designed in harmony with the new function without compromising the building's structure.

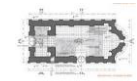
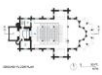
While many church buildings, holding symbolic meaning for cities and their congregations, continue to serve their worship functions with respect to their memories, considering their economic dimensions, a change of function becomes inevitable for those that would otherwise remain idle.

In Türkiye, re-functionalization in historical buildings was first applied in Istanbul after the Tanzimat Period, with Topkapı Palace transformed into a museum in 1924 (Uğursal, 2011). Hagia Irini Church in the courtyard of Topkapı Palace became a museum, displaying significant artifacts in 1846,

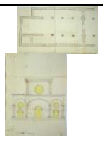
and was renamed Museum-i Hümayun (Imperial Museum) in 1869 (Aydın & Şahin, 2018). Another notable example in our country is Hagia Sophia Church, initially built as a church in 537, converted into a mosque after the conquest of Istanbul, and transformed into a museum in 1935 (Yüceer, 2016).

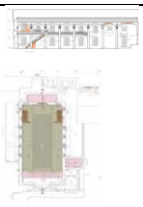
Table 1. Comparison of re-functionalised examples

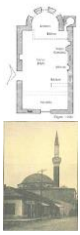
Church	Condition of Structure	Plan Diagram-Facade Layout	Negative Change	Positive Change	Material-Technical	Function Review
CHIESA DI SAN VIDAL	-After many disasters and repairs, it is still in use today.		Exposure to many different repairs over time, -Additions to the façade from the original structure as well as the reconstructi on product from the 17th century,	-There has not been any application contrary to its original state spatially. -The columns were covered with fabric and the sound system was adjusted and it was tried not to damage the structure.	-Gothic style, stone building element, -Interior design in colours and models suitable for the church	-Classical music concert hall; wide openness and acoustic function

SAINT PARASKEVA	-As a result of the architectural competition, it continues to be engraved on the city silhouette with contemporary intervention.	 	-The elevation of the building perimeter has remained high due to subsequent construction and no solution has been provided.	-Cephe düzenindeki özgün durum korunarak bütünlük sağlanmaya çalışılmıştır.	-Integrity was tried to be ensured by preserving the original situation in the facade layout.	- Documentary and visual exhibition hall where the historical development of the city is explained,
BETHEL MISSIONARY	-The church, which was renovated as a result of storm and fire, is in use in accordance with the project in 2009.	 	-The facade material was changed to brick at the end of the 1900s, so it could not preserve its originality.	-The original seating arrangement of the church was used in the interior. -Stained glass panels emphasising the history were preferred on the facade.	- Contemporary construction style with brick, steel trusses and polycarbonate stained glass panels	-Breathing space in a dense urban area as a city park and monumental exhibition
CHRITUS CHURCH	-After the 1980s, the interior space was included in the design and became a living structure.	 	-Since the interior was neglected in the 1980s design, the building has dampness from the walls.	- Selection of interior materials suitable for the church material, -Exposing structural brick elements by not painting them	-Oak bleachers and panelling to match the Neo-Gothic style of construction	-Choir centre and chapel for the high school; additional function appropriate to the structural system with originality

EBENEZER METHODIST KİLİSESİ	-It was built for the industrial population and has now been adapted for private use.	 	-It has lost its public character as it has been converted into private property.	-The reconstruction project was drawn and statics were provided in accordance with the original. -The building was repaired after water ingress was prevented.	-Gothic style elements suitable for stone building material	-Residence; mezzanine floor in a single space has provided a floor for the need and tourism.
ST.STEPHANOS	-Low wear and tear due to the location away from the settlement, but also far from use	 	-No solution has been provided with urban design for its situation far from the city.	-The repairs it has undergone over time are recorded with inscriptions.	-Monastery complex with a combination of Urartan, Parthian, Greek and Roman styles	-Next to the church, a part of it has been adapted for the exhibition.
AZİZ SAVIOR CHURCH	-Waiting for an appropriate response to the visual studies and the suggestion survey in 2018	 	-Will not exclusively serve religious beliefs contrary to its specific situation.	-User needs and opinions were determined through a questionnaire study.	-Early central plan and stone building material	- Building island as open air theatre, library, conference hall

KAPUSEN CHURCH	-A living and used building with the right function proposal		-Tables and bookcases were placed by ignoring the original structure in the interior.	-An environment of interfaith tolerance as the first educational structure,	-Social and architectural formation of the stone and brick period	-As a children's library, its place in the city memory has become strong.
KENDİRLİ	-Since it has no congregation, its functionality has been preserved with the new function.		-Social activity units are given to the nearby Latin School and therefore serve only cultural purposes.	-Different functions such as a cultural centre were tried to find a suitable function.	-Basilical plan with a single main space of stone and brick	-Witnessing the history he witnessed as the Martyrs and Veterans Association
AYA İSHOTYA	-It is interesting because it is the first example in terms of function in Turkey.		-With the cafe built in the garden, the possibility of encounterin g unconscious users is high.	-It has found the opportunity to serve the rose and related objects, which are cultural heritage like itself.	-Large and small limestone, coloured marble, Ottoman style	-A different purpose and service with the Rose Museum

ARMENIAN SİVRİHİSAR CHURCH	-Restoration was started in 2010 and it was opened for use.		-There is no suitable project for the building, which was originally proposed as a museum, but is intended to be used as a cultural centre.	-The dividing walls added to the plan scheme and the original interior have been removed.	-Red cut stone, three nave basilical plan scheme	-Cultural centre function with the idea of use suitable for wide open space
AYAHARALAMBOS	-The restoration was completed in 2012 and opened for use.		-It was rebuilt in the 19th century since its original state in the 18th century was demolished and there are no documents related to its first state.	-The vegetation on the exterior façade has been taken under control. -Excess places and additions on the roof and terrace were removed. -Interior decoration and motifs have been preserved.	-Three nave basilical plan scheme	-It has been a place used for artistic activities such as exhibitions.
SURP VORTVOTS	-It has been reopened for use since 2010.		-The glass screen added to the entrance in the previous years was a distant approach to contemporary restoration techniques.	-It has survived many dangers such as earthquake, fire and destruction by preserving its structure.	-Stone and firebrick basilical plan	-As a cultural centre, it is an important example of state-community cooperation.

FATİH MOSQUE	-With the last repair in 2002, it continues to be used as a mosque.		-It was converted into a mosque after the conquest, but remained neglected for a long time.	-It preserves its original purpose as a place of worship.	-Stone-built, single nave, partly basilical plan with a single main room	-The minaret, which was added for the mosque function, is adjacent to the building, but has an independent construction style.

In the examples analyzed in Table 1, the priority is clearly given to preserving and protecting the building. Church buildings, typically constructed with stone and brick materials in masonry style, refrain from making changes to their body walls and facade layouts unless absolutely necessary. In both Turkey and other parts of the world, churches whose congregations have dispersed for various reasons are often repurposed into museums and exhibition spaces. These buildings are well-suited for functions that require large openings in terms of plan scheme and ceiling arrangements. The economic benefits of imposing a new function on the existing structure are also considered.

In contrast to examples from around the world, Turkey has historically seen periods of an unconscious approach to ornamentation and decorations, leading to certain challenges in restoration works. Common issues during restoration include stone deterioration caused by ground and external factors, especially in buildings with structural problems. It is crucial to

maintain the traces of the original period after strengthening the structural elements, such as stone material and columns.

Considering the re-use of worship buildings, conservation practices play a vital role in protecting the buildings while providing them with a suitable function. Qualified restoration applications are essential before reusing these spaces. The functions given to these buildings are carefully chosen in alignment with their forms. Large-span buildings, except for mosques with continuous worship functions, are often re-purposed to respond to the needs of the community.

Regarding the Akşehir Armenian Church, restoration and re-functionalization would lead to economic and social benefits on an urban scale. Future visitors are not only interested in observing the building but also in experiencing the legends, cultures of the period, and the essence of the place. The church structure can serve as a powerful tool in achieving these objectives, transferring historical data effectively through its character and structure.

3. Akşehir History, Architectural Heritage, and Akşehir Armenian Church

Akşehir, situated in the Konya Department of the Central Anatolia Region, has a rich cultural history dating back to the Neolithic Period (8 thousand BC). Its first known names include Thymbrion, Phomelium, or Philomelion. In local records, it was referred to as Akyanus, and later became known as "Belde-i Beyza" and "Şehr-i Beyza" due to its white houses resembling bird nests amidst lush green trees (Akşehir translates to "white city" in Turkish).

The city has been a significant trade center along trade routes during the Ottoman period (Bayar, 2013).

Akşehir boasts a diverse cultural mosaic, with surviving Seljuk and Ottoman architectural works such as the Imaret Mosque. The "Akşehir Houses," most of which are now registered and owned by Turkey, reflect true Turkish culture. The city has undertaken protection activities to preserve these architectural gems, and restoration efforts have yielded positive results. Various buildings, including archaeological sites, natural sites, mosques, masjids, baths, fountains, and administrative structures, contribute to Akşehir's rich heritage.

The history of Armenians in Akşehir traces back to Çağrı Bey, who established a settlement in the region. Anatolian Seljuk Sultan Alaaddin Keykubad appointed Alanya Bey Kir Farid as the governor of Akşehir, leading to the presence of Christians in the city descending from Kir Farid (Bayar, 2013).

Akşehir Armenian Church, located in Çimenli Neighbourhood, Değirmen Street, was constructed in the mid-19th century by the Armenian community (Alkan, Karpuz, 2012). The church features a basilical plan with three naves and is primarily built with rubble cut stone and brick, with a hipped roof covered in alaturka tiles. The east facade includes a half-dome and arched apse with an oculus and two semi-circular apsiscices. Wooden mezzanines can be accessed from both sides of the entrance door, leading to a baptism room on the north side and a priest's room on the south side. The priest and baptism rooms have original arched openings, and from these rooms, single-leaf doors lead to the apse along the east facade (Figure 1).

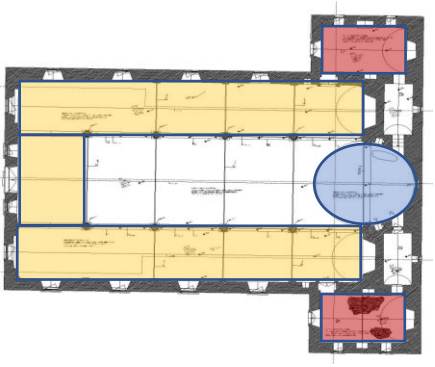


Figure 1. Plan of Akşehir Armenian Church

Within the scope of the "Nasreddin Hodja Humour Village Project" prepared in cooperation with the local administration and the Konya Plain Project Regional Development Administration of the Ministry of Development of the Republic of Turkey, Gazi Mustafa Kemal Primary School is planned to be used as the Akşehir City Museum and the church as the World Humour Masters Art House. The gathering and cultural garden of the city museum and art house is specified as the garden of the church and the school. It is envisaged to create spaces for the masters of local and world humour to work and use for meetings and presentations (PGLOBAL Küresel Danışmanlık ve Eğitim Hizmetleri A.Ş., 2016).

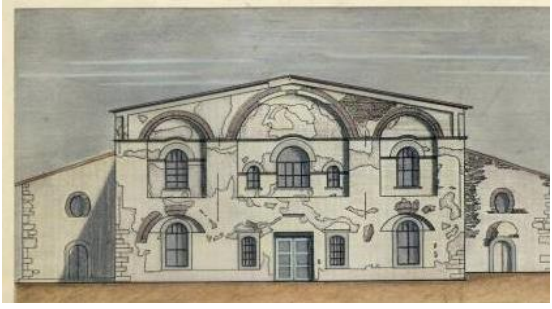
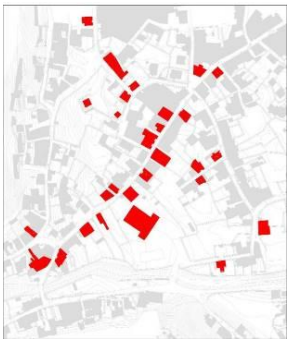


Figure 2. Akşehir Armenian Church (C. Bektaş archive)



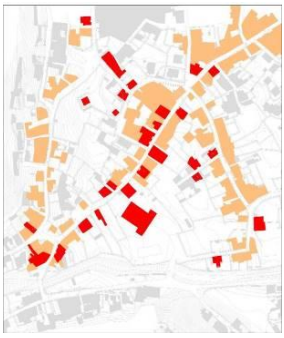


Figure 3: The condition of the church and the registered buildings around.
Figure 4: Preservation status of the church and the registered buildings around.

The buildings marked in red in the first figure show the church and the buildings around it, which are registered on a single building basis (Figure 3). Considering the density of registered buildings along Değirmen Street where the church is located and the church together with its surroundings, it is understood that the conservation process will proceed easily due to its location in a historical built environment. Because in such cases, the people living there should be able to look at the issue consciously and help. When the preservation status of the church and the surrounding buildings is examined, it is understood that as a result of the street sanitisation practices, all the buildings along the streets, whether registered or not, are tried to be preserved (Figure 4). Akşehir Armenian Church, which is located in the urban protected area, is within the important region where maintenance and repair works are carried out by the Ministry of Culture, local administration and various companies through tenders. It is located in an area where there are dwellings that have undergone simple repairs, street sanitisation, where

the façade and roof can be preserved, or where arrangements are made in order not to disrupt the silhouette of the façade, considering the buildings that have disappeared over time. In this case, it has an accelerating effect on the conservation process of the church.

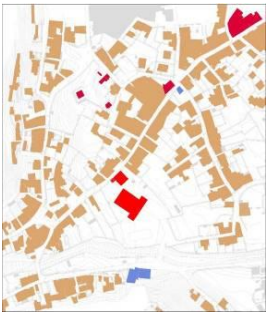
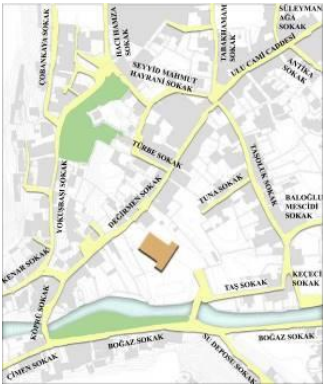


Figure 5. Full-empty analysis of the church and surrounding buildings
Figure 6. Functional analysis of the church and surrounding buildings

It is located in an environment with a significant occupancy rate due to the adjacent buildings on the entrance façade and other sides (Figure 5). Only the gardens of the adjacent buildings and the gaps on the side facing the Akşehir Stream behind the church stand out.

Functionally, the majority of the area is dominated by residential buildings. Apart from these, there are a few historical-religious buildings, a grocery store and a workshop. This workshop is a building where materials and equipment used for restoration works are stored and prepared. Apart from this, there is Gazi Mustafa Kemal Primary School, which is located in the same garden with the church and which suffers the fate of being idle together with it. Most of the houses are still in use in their current state. There are a few houses that have been transferred to the ownership of the municipality and are awaiting repair and are planned to serve various cultural projects.

The small grocery store located at the beginning of Değirmen Street on the side facing Çınaraltı Square has remained as a small commercial area serving the people of the neighbourhood.



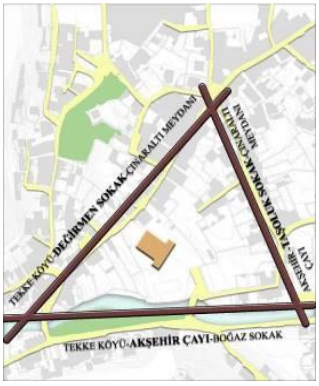


Figure 7. Conditions limiting the church and its surroundings
Figure 8. Roads and streets in and around the church

The sign elements of the church and its surroundings were analysed according to the five main criteria identified by Kevin Lycnh, who is famous for his urban studies, as roads, borders, foci, zones and landmarks. For the church, which is a landmark in itself, it was possible to analyse the other four elements.

When we look at the roads and their names seen in and around the church, all of them have taken their shape and name from the meaning they have been attributed over time. Değirmen Street, which is the most important and provides access to the church, is an important passage on the route from the city square to the urban forest. Apart from this, Boğaz Street, which is located on the back facade of the church, is in a situation where the church can be seen even though it is lower due to the elevation difference. The

Bogaz Street, which runs parallel to the road formed by the Aksehir Stream, reaches from the Nasreddin Hodja Tomb to the Tekke Village and the Urban Forest (Figure 7) There are three issues that limit this church in Aksehir. The first of these is the important historical streets mentioned above. Değirmen Street in the northwest and Taşoluk Street in the northeast. However, the existence of Tuna Street extending from Taşoluk Street to the church cannot be ignored. The second boundary element is the elevation difference on the rear façade. It will also be possible to take the Akşehir Stream as the third element here. These boundary tools, which play an active role in access to the church and at the same time in determining its borders, are situations that develop spontaneously over time through natural means. In this respect, they do not constitute any obstacle in terms of using the data of the area (Figure 8).

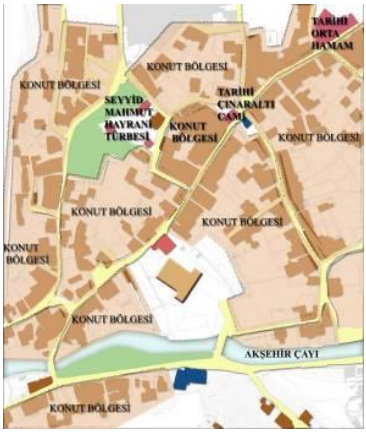


Figure 9. The church and the surrounding areas
Figure 10. Focal points in and around the church

The striking situation in the area where focal points are determined is that most of the focal points are squares formed by street intersections. Focal

point number 1 represents Akşehir City Square, which is slightly outside the area. No. 2 is the Tekke Village and the Urban Forest. The square where the historical Çınaraltı Mosque is located is 3, the intersection of Hacı Hamza Street-Yokuşbaşı Street-Turbe Street in front of Seyyid Mahmut Hayrani Tomb is 4, Yokuşbaşı Street-Değirmen Street-Kenar Street intersection is 5, Water Depot Street-Taş Street-Boğaz Street is 7, Taşoluk Street-Taş Street-Baloğlu Mescidi Street intersection is 8. Apart from this, the focus numbered 6 stands out in the part that partially leaves the historical environment and returns to the promenade area (Figure 9).

The church in the residential area has remained as a public space in this area together with Gazi Mustafa Kemal Primary School. As a green area, the garden of Seyyid Mahmut Hayrani Tomb and a small park built on the edge of Akşehir Stream at the back are visible. Apart from this, the gardens of the residences, although they are green areas to a significant extent, are far from being public. The church and its immediate surroundings have the potential to be a cultural and historical area as an inner garden. It will also be useful for Gazi Primary School located in its garden in terms of providing the necessary perception process (Figure 10).

3.1. New Function Suggestions for the Church

The majority of the participants would like to see the church as a museum and exhibition area, preserved as it is. In addition, it is possible to say that there are also participants who want to see it as a library, cultural centre, theatre centre. The meaning attributed to the church is more orientated towards the functions where the user density will be high in accordance with the benefits of the form. In this respect, the Priest's Room and Baptism Room on the side facades are imagined to be service areas serving this main space.

In functions where acoustics come to the forefront, such as concert halls, it is at the forefront that this option should be evaluated for conscious organisations. Otherwise, no matter how functional it has become, this important structure will be consumed unconsciously. Those who think that Akşehir cannot participate in culture-art tourism at a sufficient level except for the festival times envisage a function in this direction. However, those who think that its function cannot be continued while preserving its original structure think of it more as a monumental exhibition and a 'Monumental Exhibition' where various activities are held in its garden. As a result of the meaning attributed by the form to the function, it is revealed with the proposed functions that this building with its large opening and majestic vaults is a suitable place for visual and auditory arts. Another function that draws attention here is the library. Although this function seems to be appropriate in terms of form and spatial benefits, there is a prevailing opinion that it will be difficult for children and young people in terms of transportation and location. In this case, we come across once again that the

space cannot be considered independent of its location. As mentioned before during a film shot in the church, the church, which has a favourable acoustic condition, is considered to be more suitable for functioning as a place serving visual arts.

3.2. Evaluation of New Function Suggestions

In the results based on the survey data, certain functions were obtained in line with user opinions. The most prominent of these functions is "Museum / Exhibition Hall" and the least suggested function is "Library". Within the framework of these six proposed functions, some evaluations were made on the originality value of the building, its plan scheme, façade layout and its effect on the city. The evaluations were made by taking into consideration some criteria such as the variety of users, the frequency of use of the space, the transportation status according to its location, and the structure of being considered independent from its original function.

In all of these functions, a new function suggestion could be brought without any change in the façade layout. In this way, the window layout, size and forms; the location and form of the entrance door; the stone body walls with joints and brick jambs can be made interesting for the new function (Table 2).

Table 2. Analysis of new function suggestions for Akşehir Armenian Church

Function Name	Effect on originality value	Impact on the plan diagram	Effect on facade layout	Impact on the city	Negative effect of function
LIBRARY	*It will continue to be a cultural and public space. *It will preserve its silence in its original structure.	*Main area seating units and bookcases should be added.	*The front can be maintained in its current state without any changes.	*An easy-to-reach working place will be provided for children and young people living in the neighbourhood.	*It may be a risky function in terms of the functionality of the building according to the user diversity and the reading rate of the city.
CONCERT HALL	*The public status of the building will continue. *Interior acoustics will come to the fore.	*Elements may need to be added for the sound system. *It may be necessary to cover the columns as in the examples.	*Can be converted to the proposed function without changing the facade layout.	*As the acoustics of the place becomes interesting for those who are curious about the acoustics of the place, the rate of concerts will increase and it will be a living city element.	*The high density of users may be risky due to its location on the fault line and also due to vibrations.
CULTURE CENTRE	*It appears as a structure whose publicity continues. *Cultural and artistic activities will be possible.	*Sitting units, heating system and meeting areas will be needed.	*There is no need to make changes to the front.	*Users of all ages are likely to come for various activities.	*The seismicity hazard of the building may increase due to the intensive user factor.
THEATRE CENTRE	*As in the concert hall function, publicity and acoustics will be emphasised.	*Sound, light and heating system should be added and seating units should be adjusted.	*The facade layout may not change as it contains the visuality required for the function.	*It achieves user diversity. *It is interesting for those who want to see the acoustics.	*Since the possibility of unconscious users will increase, the situation of unconscious consumption of the structure may increase.
MONUMENTAL EXHIBITION	*Silence and visuality come to the fore.	*It does not need to undergo any changes.	*no changes are required.	*It will be effective for the ethnic group who are interested in the traces of the past and who lived in this neighbourhood in the past.	*Since it will remain only as a monitored structure, the functionality aspect may remain in the background.

MUSEUM/ EXHIBITION HALL	*Publicity will continue.	*Service areas and light system should be added.	*There may be no need for changes in the front.	*It can join the circulation of other museums in the city.	*Considering the museums and exhibition areas in the city, a situation of loss of publicity may occur within the housing texture.

In the building protected as a cultural asset, publicity can be prioritised in most of the functions. Because worship buildings are the first functional buildings where publicity comes to the fore. In addition, when evaluated as an interior space, the acoustically favourable condition of the church will facilitate the new functions to be given. Even if it does not require a change in the plan scheme, functions such as cultural centre, library, theatre centre will require seating units and cabinets to be placed in the interior. These elements and also sound, light and heating systems for all functions should be added without damaging the building. Apart from this, when the "Monumental Exhibition", which is another remarkable suggestion, is considered in the re-functioning application, it is seen that it has disadvantages in terms of functionality. Because, as can be understood from the section where the advantages of imposing new functions on the existing shell are mentioned, cultural assets should be put into use without energy and labour consumption. However, in such a case, the possibility that the first building we encounter will not be able to get rid of the idle situation it has been in for years will increase. Because for a function like this, which has no functionality, the worship structure, which is a cultural heritage from the past to the present, will remain only as a spectacle object instead of being reused.

3.3. Swot Analysis on New Function Suggestions

Since it is an important method to give a new function in terms of conservation and to continue the use of the building, the good and bad aspects of the current function to be given and the opportunities and threats it will create were evaluated. As seen in the swot analysis table obtained as a result of the evaluations, evaluations were made about the proposed functions in line with the survey data. The sustainability of the socio-cultural benefits that will be provided to the environment in the church, which will also become a commercial building by giving a new function, is also necessary. It should be able to continue its contribution to the socio-cultural values formed in the historical process despite all the negativities of the function. In the swot analysis method, the opportunities and threats of the research for re-functionalisation were revealed. The demographic characteristics of the participants, the current location of the building, and the benefits of the space scheme enabled both qualitative and quantitative evaluation.

According to the Swot analysis data, when the church is re-functionalised in Akşehir, which hosts a few buildings from Armenian architecture that have survived to the present day, it will be seen as a reference to other Armenian buildings in the city. In addition, this place, where 17th-18th century Ottoman tolerance and intercultural interaction formed by social richness, can be made interesting with the new function to be given to the people who lived in the city and had to leave with the exchanges. The

situations that emerged around all these data are grouped in the table below according to functions (Table 3).

As can be understood from the comparative analyses, various functions have been proposed that could contribute to the promotion and touristic value of the city. Ensuring sustainability in re-functioning is also crucial in this regard. One way to achieve sustainability is by transferring the spatial elements to future generations with minimal changes. Adding modern equipment such as sound, light, heating systems, and seating arrangements could potentially damage the building's form and authenticity. Additionally, when different user groups start using the building, there is a risk of causing damage to its original condition due to unconscious consumption. For example, if the building is re-purposed as a Theatre Centre to cater to users of all ages, it would require service areas to accommodate the diverse public.

Table 3. Akşehir Armenian Church new function suggestions SWOT analysis

Function Name	Good aspects	Bad Aspects	Opportunities	Threats
LIBRARY	*The silent structure will be preserved. *The Baptism and Priest room can be used as a service space and storage room without the need for an extension.	* Seating unit and bookcases can reduce the perception of the main space	*It is a sharing space for women and children living in the neighbourhood.	*There is a possibility of being exposed to unconscious consumption. *Its structure far from the centre may continue its idle state.
CONCERT HALL	*It is more likely to perceive the main plan scheme in the interior. *It can become public again.	*Sound and light system can damage the interior elements.	*Acoustics, one of the elements of form, comes to the fore.	*Sound and vibration may damage the structural structure. *The wear and tear rate may be high since intensive use will be seen.
CULTURE CENTRE	*Past public status can be maintained. *The plan scheme may not be changed.	*The sound, light and heating system may damage the interior elements.	*The cultural status of the place of worship will continue.	*It is a function independent from its environment and can be detached from the environment.
THEATRE CENTRE	*It is a function where publicity and acoustics are at the forefront.	*Seating units can divide the main space. *The need for a service space arises.	*It can be a place where users of all ages can experience. *The state of being cultural will continue.	*The possibility of encountering unconscious users will increase.
MONUMENTAL EXHIBITION	*It will not require any intervention to the original structure.	*There will be very few users.	*It is possible to transfer the traces of the period to the present day without changing them.	*It is likely to remain idle.
MUSEUM/ EXHIBITION HALL	*The exhibition status of the original structure is utilised. *Publicity continues.	*Additions can be made in the interior space due to the need for a service area. *The light system may damage the structure.	*The possibility of being placed in the city memory together with other museums in the city is high.	*It may encounter with unconscious users. *Being far from the centre may reduce visitation.

The SWOT analysis revealed that the main threats are related to user density and the equipment required for the interior space. However, the main opportunity of re-functioning is the creation of a shared space where historical traces can be exhibited, and the interplay between form and function can be observed.

4. Conclusion

In conclusion, this study aimed to holistically evaluate the Armenian Church in Akşehir concerning the function to be given after restoration, considering the historical and cultural context, the relationship between the environment and people, and the function suggestions that align with the traditional texture of the city. Restoration practices for Armenian Churches often focus on individual buildings independently of their surroundings. However, it was concluded during the study that the church in Akşehir is not just a standalone structure but an essential urban reference point that has shaped the city's identity over time. Despite technical challenges due to the building's location on a fault line, efforts have been made to preserve this cultural asset and bring it back to life with necessary measures and reinforcements.

The research included a questionnaire study involving various social groups to gather function suggestions for the building. The majority of Akşehir's citizens expressed their desire for the church to function as an exhibition hall and museum, considering its historical significance. The SWOT analysis highlighted that re-functioning the historical building as an exhibition and museum space would be a qualified and original use and

would be highly valued by the public. However, the risk of natural disasters in crowded settings should be taken into account.

The reuse of the Akşehir Armenian Church, once an important building for the city, will allow future generations to experience a history-conscious urban environment with unbroken ties to the past. The majestic form of the church, visible from various perspectives in Akşehir, makes it an integral part of the city's residential area. Restoring its cultural significance and incorporating it into daily life will promote cultural interaction. Even with a change in function, the building is expected to maintain its public nature as a worship structure, recalling its historical purpose and the social dynamics of its era.

Considering the historical significance of Akşehir, which once stood on the historical Silk Road and the King's Road, it has the potential to become a stopover for tourism groups traveling from Konya to Pamukkale today. As an immovable cultural asset within Akşehir's historical fabric, the church's sustainability is crucial for contributing to cultural heritage. Preserving its monumental structure while adapting it to meet the needs of the modern world is vital. The church's integration into the urban space fosters a sense of local identity and promotes a connection to cultural history.

Overall, the re-functionalisation of the Akşehir Armenian Church, considering its comprehensive relationship with the surrounding city, can serve as a model for similar restoration projects in the future. The study emphasizes that the church is not just a standalone monument but an integral part of the city's fabric. Sensitivity to the city's cultural heritage is essential to ensure the preservation of this historical asset and set a precedent for its

future use. Worship buildings, as monumental structures, play a significant role in shaping the visibility of a city and reflecting the socio-cultural characteristics of the era in which they were built.

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-The article complies with national and international research and publication ethics.

-Ethics Committee approval was not required for the study.

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All authors contributed equally to the article contributed. There is no conflict of interest.

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Investigation and Development of Landscape Design Proposal for Van Zeve Martyrdom Area as a Cultural Heritage

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1. Introduction

Cultural landscapes of a wide variety, represent different parts of the World. They can be defined as an areas that gain value over time through the with the interaction between culture and natural environment. The landscape are expressed through their natural, cultural, visual and semantic qualities and they can be geographically limited. According to the World Heritage Convention in 1992, natural and cultural heritage sites were gathered under the concept of cultural landscape. According to this, the cultural landscape is "the cultural qualities that show all kinds of human, cultural and symbolic dimensions, which are formed by nature and human hand in hand, and explain the evolution of society and settlement over time with the effect of social, economic and cultural forces as well as physical constraints and opportunities created by the natural environment". (Rodwell, 2007). According to Madran & Özgönül (1999), cultural landscape; It has been shaped by various combinations of human and natural elements that describe the evolution of human society, its behavior patterns and settlements in space and time. In this respect, the cultural landscape encompasses a very wide heritage with its memories and all tangible and intangible components. It is emphasized that the idea that human beings are a part of nature was influential in the emergence of the concept of cultural landscape (Xingkuan & Shan, 2011). For this reason, cities and even "urban fringes" where human activities have been

exhibited since historical or prehistoric times are included in the cultural landscape. Cultural landscapes are special places such as plants, waterways, gardens, fences, cemeteries, structures and village squares that have emerged as a result of the interplay of both natural and built textures, the harmony of people with the land and the environment and their use (Weiland, 2011).

It is known that during and after the wars throughout history, these natural natural and cultural landscapes have been affected in various ways. Among these landscapes, the battlefields are the most common special areas in the world with their attractive features (Smith, 1998). It is necessary to distinguish these traces as spatial and eventual attractions. While battlefields, castles, city walls, mausoleums, museums, army roads and headquarters are spatial attractions, military days, war anniversaries, liberation anniversaries and peace treaty anniversaries are the main event attractions (Doğaner, 2006). As a result of these effects, some social and cultural values emerge in a tangible or intangible way in the society. This situation affects the values of nations like art, literature, design and architecture. Designing memorial gardens, memorial parks, statues and martyrdoms to emphasize these values has also gained importance (Gough, 1998; Aliağaoğlu, 2008; Yeşildağ, 2010; Karahan et al.; 2010; Ilgar, 2015; Aşur et al., 2022). As places of remembrance, commemorative landscapes are simultaneously instructive spaces (Sack, 1997; Aşur, 2018;

Rofe & Ripmeester, 2023). Martyrdoms, mausoleums and memorial parks, which are shaped according to social life style, culture and religious beliefs, are important cultural heritage areas in the preservation of the historical memory of the society and transferring it to future generations. Memorial parks, memorial gardens, monumental cemeteries, martyrdoms and similar areas have an impressive and remarkable design approach that integrates with the landscape based on the concept they have. The monumental buildings used in these areas impress the visitors with their physical features such as construction materials, structure, color, performance, and dimensions, as well as the aspect that prompts them to be emotional and think, and their emotional significance that can empathize with people. It is important for those who design these areas to reflect the design to reflect the emotionality of the events (Shirgir, 2005; Kılıç et al., 2011; Kurnaz, 2013; Aşur, 2018).

1.1.The Tradition of Mausoleums and the Importance of Mausoleums

Walter, (1993) on the basic definition of cemeteries: “When the meaning of the word cemetery in different languages is examined, an idea can be obtained about the attitudes of cultures towards death. For example; The word "cemetery" in English is derived from a concept meaning "sleeping place" in ancient Greek. The open-green space problems in urban spaces, especially in recent times, have caused the martyrdom areas to be updated. While there were not many studies on this subject before, martyrdom areas

have gained importance as areas that need to be planned recently (Güçlü et al., 2011).

In European countries, cemeteries have been arranged with a more serious planning philosophy compared to our country. They made their martyrdomp lanning by considering them as sustainable landscapes. It has been determined that they have reorganized the martyrdom areas that have ceased to be used in a way that will meet the recreational needs of the city. During the Middle Ages, cemeteries were established in the center of towns or cities, but cemeteries were removed from the settlement area due to the decline of the church's power and new scientific recommendations and different approaches to medical and sanitary burials (Grosser & Keller, 1993). In other examples, Architect Fuksas in Italy arranged the cemeteries with a different approach. In his work, he planned the martyrdom like a train station. According to his beliefs, he designed the units in the martyrdom on a road and built stations. The aimed to minimize the cold feeling of cemeteries that give people chills. Describing the cemeteries as the last stop of the world, he did not include religious symbols. He mostly dominated the idea of traveling in the martyrdom (Mohl, 1991).

1.2. Planning Principles of Mausoleums Areas

Monumental tombs are a form of land use that should be in or around residential areas such as housing, industry, and trade. However, since it functions as a burial ground, it is considered a green area with a special

landscape, especially due to rapid urbanization (Ak & Kesim, 2013). In addition to the religious and traditional dimensions of the commemorative tombs, which are planned according to certain standards, the ecological, functional and aesthetic contributions of green organizations should also be taken into account. Planning principles for mausoleums are as follows (Uslu, 1997; Ak & Kesim, 2013):

• ***Site Selection:*** According to the Municipal Law No. 3030 in Turkiye; martyrdom location determination, facility and operation were given to metropolitan municipalities. Although there is no law or regulation regarding the site selection in the mausoleum facility; The following points have been taken into consideration in order of importance for the selection of the site for the establishment of the mausoleums planned in the cemeteries;

-Property: Due to the ease of expropriation, treasury lands are chosen for this purpose.

-Economy: Administrative buildings of existing cemeteries, gasil hane, morgue etc. Places close to old cemeteries should be chosen to make common use of the facilities.

-Soil: Ground features, distance to residences and slope issues are also decisive criteria for site selection.

• ***Geological Structure:*** The burial site should be easily excavated and have a water-permeable soil layer.

• ***Groundwater Level:*** The distance of the groundwater level to the soil surface must be at least 2.5 meters. Otherwise, with the decomposition process of the corpse, unwanted odor, gas release and reproduction of microbes will be inevitable.

• ***Soil Structure:*** It should have a porous and permeable soil structure. Clay or coarse gravel soils are not suitable for burial due to water retention and difficulty in digging.

• ***Slope***: It is ideal for mausoleums to have a slope of 0-10%. Monuments should not be built in heavily inclined areas; instead, water surfaces, living-resting areas or structural elements should be included.

• ***Size of the Site:*** Conditions such as the size of the person whose mausoleum will be built, his will, the criteria of the person who designed the mausoleum, the land structure, the size of the monument (directly proportional to the size of the land) are effective in choosing the size of the area.

1.3. Landscaping Principles of Mausoleums Areas

The physical dimension of the mausoleum should be supported in terms of religion and philosophy, both in structural and plant arrangement works. Structural arrangements should be combined with appropriate plant arrangements in the planning of monumental tombs (Uslu, 1997; Behbahani et al., 2013; Pouya et al., 2014; Aşur, 2018).

1.3.1. The principles of planting organization

Plant selection is very effective in preserving the mystical atmosphere of the Mausoleum areas and fulfilling its function. According to Uslu (1997) and Alp (2015), plants to be used in cemetery areas,

- Should have low moisture demand,
- Should be slow growing
- Should have broad root, if they are to be used around graves.
- Should be selected from species that are suitable for pruning and shaping.

The most commonly used plants in cemeteries are; *Anemone coronaria* L., *Fritillaria imperialis* L., *Celosia argentea* L., *Delphinum orientale* J. Gay, *Lathyrus sativus* L., *Lupinus termiş* L., *Iris* × *germanica* L., *Narcissus tazetta* L. (Akdoğan, 1962; Alp, 2015). According to Uslu (1997), Ak & Kesim (2013), each plant used in these areas has a certain effect on the design (Table 1).

Table 1. Effects of plants on the environmental design of the Mausoleum

Plant species	Effects
Broad leaves	It creates a feeling of being in the park and creates a peaceful environment.
Coniferous and broadleaf trees	It enriches the appearance with its decorative features (leaf, flower, fruit, stem, seasonal, color, etc.).
Grass fields	They create an open landscape area and expand the space.
Conifers	Together, they attract attention with the contrast effect they provide.

Planting works to be carried out in the mausoleums; should be handled in two stages; in the whole area and the grave plot. Throughout the Mausoleum; Appropriate species selection should be made for road afforestation, ceremony area, shading of seating and resting places, and car park afforestation. In the grave plot; Appropriate plant species should be selected on the grave and in the immediate vicinity of the grave. The use of a single plant, especially in the afforestation of the main axis and secondary roads connected to it, will facilitate orientation in the Mausoleum. In addition, the use of decorative plants on and around the grave will create a focal effect (Uslu, 1997).

1.3.2. The principles of structural organization

In the face of the naturalness of death, their design using natural local materials in their monuments gains importance as meanings to be attributed to the texture function in terms of sustainability (Haseki, 1977; Uslu, 1997; Lambert, 2014; White, 2016; Demir et al., 2016):

- There must be at least one controlled entrance to mausoleums, and if more than one entrance is to be given, these entrances must also be controlled.
- Administrative structure, advisory, security unit, florist, etc. of the structural units to be located in the area. It should be placed together as much as possible.

- Although the Mausoleum is a burial area, ceremonial areas, sitting/resting units should also be arranged in these areas.
- In the structural arrangement within the Mausoleum, the structural elements with the vegetation and water, some interesting design elements such as fountains and birdhouses should be included, and the naturalness of the area should be strengthened with attractive places created for fauna such as birds, butterflies and insects.
- At the entrance gates of the Mausoleum, there should be enough parking spaces to be used when intensive visits are required.
- As far as possible, vehicles should not be allowed to enter the area, except for the service vehicles.
- Should be determined according to the size of the ceremony area and the maximum number of visitors.
- If there is to be a lectern in the ceremony area, it should be positioned where it can be seen by all visitors.
- The size of the monument should be directly proportional to the size of the land.

In this study, a century after its construction, the Zeve Mausoleum, located in Van, has been handled within the framework of landscape design.

In the study, the area was evaluated in terms of its place in the cultural landscape texture and design principles and criteria. In terms of the sustainable cultural landscape over time, the importance of the

management, protection, maintenance and repair works of the area as an attraction point in terms of tourism have been emphasized and suggestions for the design of the area have been developed. In the selection of the Zeve Mausoleum study area; This area has an important cultural heritage landscape.

2. Material and Method

The main material of the study consists of the Zeve Martyrs' Cemetery, which was built in memory of those who were martyred by the Armenians in 1915, in the village of Zeve, formerly Zaviye, within the borders of the Tusba district of Van. Zeve Martyrs' Cemetery, Zeve Village, which was erased from the map during the events that took place between 1915-1918, when World War I continued in Eastern Anatolia, is located on the coast of Karasu Delta. The graves of a group of approximately 2.000-2.500 people collected from 8 villages in the vicinity are located in this area (Davutoğlu, 1963; Başaran, 1990; Kırzıoğlu, 1990). The Immovable Cultural and Natural Heritage High Council of the Ministry of Culture and Tourism of the Republic of Türkiye decided to register the Zeve Martyrdom in Van Province, Central District, in accordance with the law dated 26.06.1986 and numbered 2863. The historical site where the martyrdom is located has a total area of 144.600 m² within the boundaries of the protected area, there is a martyrs' cemetery, area, a commemorative forest area, the first martyrdom area and a martyrdom area with a

monument (Anonymous, 2012). The construction year of the Zeve Martyrdom dates back to 1963 (Davutoğlu, 1963). The distance between the center of Van and Zeve Martyrdom is 29 minutes by car, 9 hours 35 minutes on foot, 2 hours 45 minutes by bicycle (Figure 1).

The research method; consists of four main stages: the definition of the research purpose and scope, the presentation of the design principles and criteria of the Memorial Cemeteries with a wide literature review, a close examination of the Zeve Martyrdom area, the determination of the current situation, the evaluation of the design criteria of the landscape project, the findings and discussion, the conclusion and suggestions.

Figure 1. The location of the study area

Evaluation of the Current Situation: Zeve Martyrs' Cemetery is located within the borders of the registered historical site, and it is located on the borders of the Karasu delta, which has an international value (Figure 2), and at a point that dominates the Van Lake. For this reason, the visual landscape value is high in terms of the location where the cultural heritage is located. However, today it does not have a satisfactory circulation and visit, and its historical and cultural features are not known enough.

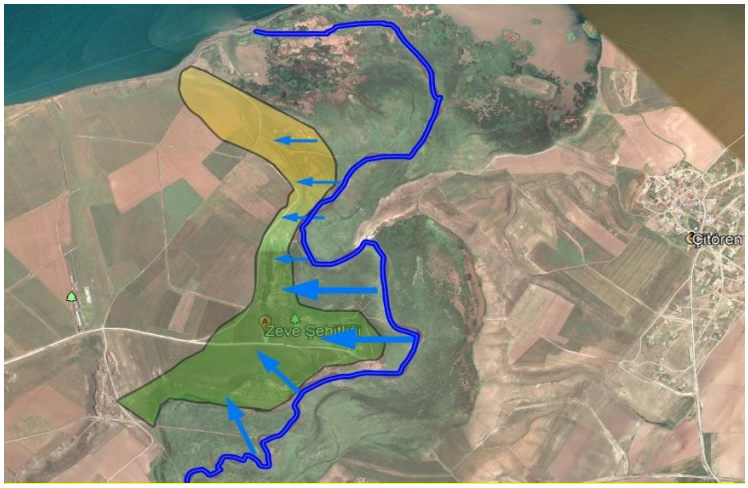

Figure 2. Zeve Martyrdom, new green corridor via black water

In the historical site, an area of 400 m² was built first. It turned out that maintenance and repair work had not been carried out in the area for many years. *Fraxinus excelsior* L. and *Rosa canina* L. were used as herbal materials. There was no monument in this area, which was built at a point overlooking the martyrdom in the historical site. The floor of this area, which has a hard floor, is concrete. Small retaining walls were made of

natural stone. The area consists of a door surrounded by wire fences and an entrance door with iron bars (Figure 3, Figure 4).

A few years later, a martyrdom was built at a distance of about 330 m in the south of this area, with a monument, richer in terms of plant and structural reinforcement elements, with an area of approximately 5,000 m². While the short front wall at the entrance is surrounded by natural stone, the rest of the martyrdom is surrounded by metal railings. Approximately 1.320 m² of this area consists of a hard floor paved with keystones. It includes a special pattern for ceremonies used on official memorial days on the two-colored hard floor. There is a monument at 56 m distance from the 4 m wide entrance gate. The octagonal marble covered monument, consisting of three levels, rises on a pedestal with a height of approximately 1, 1.50 m and 1.70 m. Just behind the pedestal and the monument, at a distance of about ten meters, there are two marble-covered half-moon shaped memorial walls on which the names of the martyrs are written. Some structural elements used have symbolic meanings. There are 7 rectangular blocks, approximately 3.500x76x115 cm in size (the size of each varies slightly), close to and relatively surrounding the monument. These works represent 7 villages (Derebey, Atmaca, Yemlice, Hıdır, Göllü, Otluca and Gülsünler) whose people were massacred in May 1915, when the war took place. The height of the monument is 19.15 m, representing the year 1915. The monument is made of aluminum

composite. The white marble used as the marble covering material in the immediate vicinity of the rising monument symbolizes the purity and purification of the spirits of the martyrs. There are also flag poles as reinforcement elements and a small fountain with a marble coating of 106x106x102 cm in the area. In the far left corner of the area, there is a guardhouse, which is not used today, on an area of 5x5 m.

When the martyrdom area is examined in terms of plantation, it deciduous plants along with evergreen plant species that are dominant in their studies was used mostly around the hard ground These plants are; *Thuja orientalis* var. aurea, Thuja *orientalis*, *Robinia pseudoacacia*, Pinus *sylvestris*, *Pinus nigra, Cupressus sempervirens, Fraxinus excelsior*, *Rosa. Canina*, *Rosa* spp. and *Euonymus japonicus* var. aurea Thunb.

Figure 3. First memorial site

Figure 4. Martyrdom area built later

Because of its historical connection, the area appears to need to be understood, appreciated and protected. In the landscape design of Zeve Martyrdom, an original design philosophy and the materials used here

should have symbolic meanings those are specific to the area. The problems that came to the fore in the investigations on the Zeve martyrdom area are given below:

- The inadequacy of the roads used to reach the martyrdom can be an obstacle.
- Neglected plants in the area prevent the aesthetic appearance.
- There are not enough seating areas to meet the visitors.
- It has been determined that the water resources close to the martyrdom are not used adequately.
- The neglect and irregularity of the graves in the back of the monument are striking.
- The introductory text of the monument does not form a color harmony with the monument and this disrupts the aesthetic integrity.
- The existence of walls with two different heights around the monument was found positive.
- There are no introductory panels that provide sufficient information.
- Negative use and changes made at the plan level should be determined in the examples of civil architecture that are too large for today's conditions, they should be planned and repaired by considering them in detail.

- Raising awareness of general public for better concervations. The awareness of the necessity of transferring the cultural heritage of the city to the future in terms of reflecting the past periods and preserving it as a historical document should be spread by bringing it to the local agenda. Archival studies related to the area should be done.

3. Findings and Discussion

In this study, a concept project has been prepared that can reflect the story of the Zeve martyrs and remind the day of the massacre. The site plan of the Zeve Cemetery is given in Figure 5, and the proposed project section of the Zeve Cemetery is given in Figure 6.

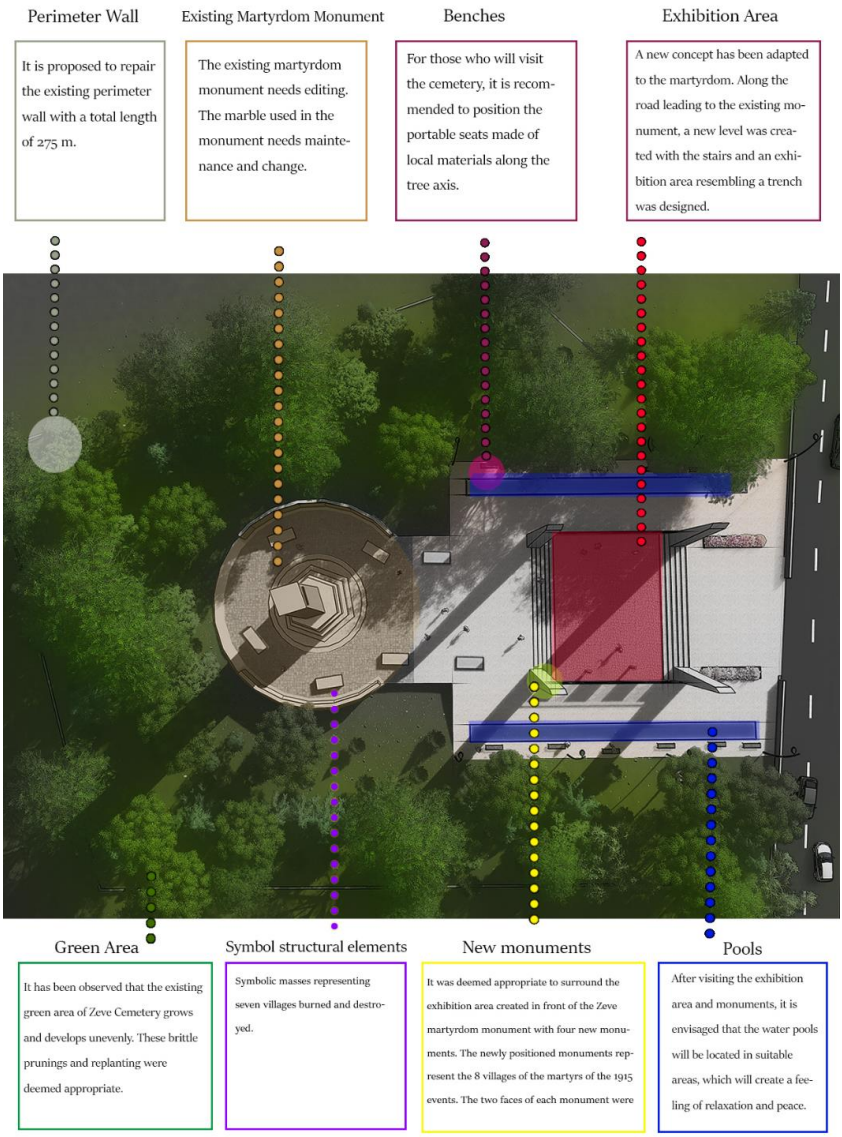

Figure 5. Zeve Martyrdom proposed project layout plan

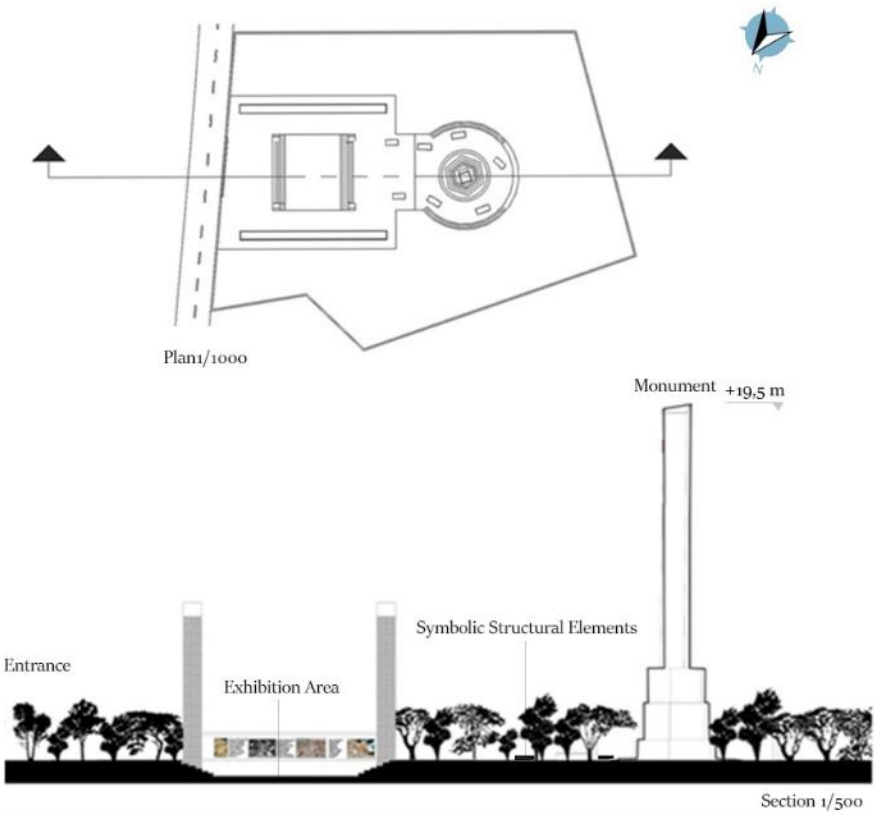

Figure 6. Zeve Martyrdom proposal project section

The two heights in the design escaped by being trapped between the two hills of the martyred Muslims. In the proposal project, a new area was created to remind this historical, emotional moment, especially the pit where the martyrs were buried. With this area created, it is thought that the

visitors coming to the Zeve Martyrs Monument will symbolize the hill where the villagers who fell martyrs descended by descending 5 steps (Figure 7). When visitors descend to the lowest level, they will find themselves surrounded not only by the grand monument but also by newly installed information boards. Moreover, they will have the opportunity to read, watch, and admire photographs displayed on elegantly designed glass panels without losing their attention.

Figure 7. The proposed Zeve Martyrdom monument site design proposal

The concept of erecting 4 new monuments in front of the currently erected monument that symbolizes the 7 destroyed villages is used as a complementary element. The area of the martyrdom monument is expanded and long narrow pools are built on both sides. It is aimed that the water provides a sense of relief after leaving the monument. The

entrance of the area is taken in the middle of the land and it was aimed to bring the visitors to the front of the monument on a straight axis. Seasonal colorful flowers are deemed appropriate before coming to the exhibition and information area (Figures 8, 9, 10).

Figure 8. Design proposal for the Zeve Martyrdom main axle

Figure 9. Suggestion for the Zeve Martyrdom water image

Figure 10. Zeve Martyrs' exhibition panels design proposal

To mitigate the cold and unwelcoming image associated with concrete walls, it was proposed to encircle the martyrdom area with plant materials

that thrive in the city's seasonal conditions. Additionally, the flooring will be laid out in a more spacious manner when approaching the monument, encouraging visitors to walk with care and show respect when standing before it (Figure 11).

Figure 11. Zeve Martyrs' proposed design - renovation of the floor

In order to provide a certain standard for the constructions in the martyrdom areas, the martyrdom structures are developed using the infrastructure, and it is proposed to expand the lighting system, especially around the area. Road, stairs, ramps, etc. inside the martyrdom islands. It is thought that the operation will continue and the existing ones should be maintained in a suitable way for everyone (physically handicapped etc.) (Figure 12).

Figure 12. Illumination of the Zeve Martyrs' memorial area

The fulfillment of the following suggestions, together with the proposal project, will play an important role by increasing the landscape quality of the area and making it an attraction point for the tourism sector.

- Arranging the planning of the fountain in the martyrdom,
- Creating a parking lot outside the area,
- Increasing the visual effect of the entrance doors and placing museum signage promotional signs suitable for their texture,
- Constructing a gate in accordance with the spirit of the martyrdom,
- The use of water surfaces around the cemetery due to the relaxing nature of the water,

- Renewing the grass areas and planting, and including reinforcement elements such as benches, canopies, fountains, and garbage cans to ensure the sustainability of the martyrdom areas within the open green area system.

4. Conclusion and Suggestions

Cultural heritage is a set of values that reflects the past of society, undertakes the task of creating and carrying the social memory, directing the formations that will be formed with the accumulations and transmitting them to the present and the future, by enabling societies to continue their existence. The preservation and sustainability of cultural heritage are important for societies, as well as for capturing cities' past experiences, images and identities, and transmitting them to the future. In this context, the determination of cultural landscape values, the protection of these values and their sustainability, and the management of changes in these areas have a great role in the protection of cultural heritage.

It turns out that the Zeve Martyrdom, which is important in terms of cultural heritage and historical landscape terms, has its characteristics. In this study, the Zeve Martyrdom Area in Van was examined in terms of landscape planning and design principles. Suggestions were made about the deficiencies identified, a proposal project was prepared in the monument area, and a new concept study was carried out by preserving the existing monument in line with the suggestions, and it was evaluated

in terms of open green space systems. What the concept of the monument is, the development of the concept in the historical process. In our country, the development of the concept of monument in the law of conservation of antiquities and the content of 'conceptually monument' and its content in the conservation laws should be emphasized, and the classification of monuments and what should be the defining features of monumentality should be emphasized. In this respect, the protection and arrangement of the Zeve Martyrdom and the proposal of a new project; In the historical process, with the development of the concept of urban identity and the concept and scope of monuments, it will naturally create a new focal point of development. Considering the reasons that cause deterioration of the aesthetic understanding and the visual values of the environment, new aesthetic criteria have been specified, considering that the monumental concept buildings built in addition to the existing monument will serve the same contextual integrity.

Unfortunately, there is not enough information in the archives in terms of architecture and landscape architecture about the construction of the Zeve Martyrdom. In this regard, it would be appropriate for the local history groups, relevant non-governmental organizations and volunteers in Van that want to help keep the records of the original documents, to add any new documents to the records when necessary, process them into national databases and to create archival information. After raising conservation

awareness, the most important obstacle to conservation is economic inadequacy. In this context, project and loan opportunities should be increased. Existing financial, personnel and technical opportunities should be utilized effectively and non-governmental organizations should play an active role in this regard.

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Architectural Sciences and Cultural Heritage
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CHAPTER-5

An Integrated Cultural Landscape Assessment Approach for Collective Memory: The Case of World Heritage Cultural Landscapes

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1. Introduction

In the historical process, landscape is any site of collective memory that affects the behavior and lifestyle of individuals and societies. Built environments, which bring to life historical cultural landscapes, are produced as a result of the interaction of man and nature, giving unique values to the place in that geography. In cultural landscapes, which result from the common efforts of nature and man, the knowledge of producing value from the space is continued collectively, inherited from generation to generation and eventually creates memory topography. In this sense, human memory, and the existence of a collective memory formed by it, have made these geographies unique. Over time, this continuity of cultural landscapes formed by the interaction of nature and human beings, and formed by certain cultural groups, is what activates in our memory lifelong experiences, and the history of these values will be living landscapes – if they can be sustained. Otherwise, the geographies that lose their populations, for a variety of reasons – beyond historical loss – result in the loss of collective memory, and, consequently, the discontinuity of the living landscape. Sustaining everyday life, with its existing space and production, will ensure the continuity of 'bio-cultural' habitats.

The aim of this study is to examine the definition of cultural landscape via different disciplines, and, consequently, its relationship with memory through sample areas. In this context, two phases are assessed. In the first, the definitions of 'cultural landscape' are analysed by methods of discourse analysis within the context of the literature chronologically, and

by so doing the main cultural landscape components are identified. In the second phase, 116 sample areas registered by UNESCO as cultural landscape areas are examined within the scope of these components.

Nora's (2006) definitions of the memory of place, lieux de memoire and milieux de memoire, have been examined in the sample areas as existent or non-existent. Only those cultural landscape areas listed in UNESCO's official web site have been used as case studies. Areas listed in Turkey have also been evaluated, within the parameters of registered cultural landscape areas. In our country, only five areas have been registered in the tentative list since 2020; observations on these may guide future studies in terms of their unique geography. It is hoped that classification studies and evaluation criteria developed for this purpose, will make it easier to detect and identify cultural landscape areas and shed light on future studies.

1.1. Historical Background of Cultural Landscape Terminology

The terminology of cultural landscape was first mentioned in German literature in the 19th century (Potthoff, 2013). Geographer Carl Georg Ritter defined this term as those areas where people leave cultural trails by spatially making physical interventions to the geography (Potthoff, 2013). Carl Vogel broadened the meaning of landscape to include mountain, plain, forest, and cultural landscapes (Potthoff, 2013; Liebetrut, 1851). Three types of landscapes for historical geographies is described: historical natural landscapes, historical cultural landscapes, and historical political landscapes. For Wimmer, both cultural and natural landscapes are types of landscapes that in space and time are located within the land of human activity (Potthoff, 2013; Wimmer, 1981).

The first emergence of the concept of cultural landscape as an academic concept was in the work of Friedrech Ratzel from a geographical perspective in 1890 (Jones, 2003). The term ‘cultural landscape’ includes in his two volumes on the United States of America, in which he presents natural characteristics, population and society, and economy (Potthoff, 2013; Ratzel 1893). In 1890, following Ratzel’s definition of cultural landscape as "human-shaped landscape as opposed to the idea of primitive-natural landscape", German geographers began to use it widely (Sauer, 1963). In the early 20th century the concept of landscape was divided into natural (Naturlandschaft) and cultural (Kulturlandschaft) by the geographer Otto Schlüter. Carl Sauer’s 1925 article "The Morphology of Landscape" described cultural landscapes, in the following words: "Culture is the agent, the natural area is the medium, the cultural landscape is the result" (Sauer, 1925). The American geographer Sauer was the first to translate the German term Kulturlandschaft into English-language geographical literature (Potthoff, 2012). Sauer developed the discipline of cultural geography over the years, following his work in the field of cultural landscape. By the 1990s, the concept of cultural landscape was more commonly accepted and used in terms of cultural heritage (Aitchison 1995; Fowler 2001). The World Heritage Convention of 1992 was the first international legal document to recognize and protect cultural landscapes. As a result of the efforts to recognize cultural landscapes, the criteria have been expanded In this context, and the term ‘cultural landscape’ was begun to be used more widely.

The concept of cultural landscapes was first defined in geography, and then evolved into an interdisciplinary term, expanding its meaning. Especially in the last 40 years, it has begun to include intangible as well as tangible heritage values and it is also used in various geographical settings, from urban to rural areas. The concept of cultural landscape is included in the publications of various institutions, such as UNESCO-ICOMOS, and also in international principal texts and guidelines. Cultural landscape, today, finds an expression in a holistic sense, including concepts such as intangible heritage values, the spirit of place, belonging, identity and memory, whereas previously it was mainly restricted to large monuments, and archaeological and urban sites.

2. Material and Method

In this study, the parameters of cultural landscape are determined through a review of the current literature. Uses of the term in different disciplines are listed chronologically and in tables. The primary and subcomponents are described using discourse analysis, which is understood as a perspective on social life, methodological and conceptual, and is defined as a way of assessing discourse (theoretical and meta-theoretical elements) and presenting it as data. Discourse analysis is a technique that is not an integrated theory, method, or application in this respect. Instead, the different disciplines represent a qualitative research area, with various characteristics, and conducted within several different ways of research (Tonkiss, 2006).

In the second phase, the cultural landscape components emerging in the discourse analysis are tested in 116 areas listed by UNESCO as "cultural

landscape". The continuity or discontinuity of collective memory is examined using gap analysis, and the result was divided into continents and expressed comparatively. Gap analysis is used as a method in which development decisions are revised when necessary by identifying and generating information of strategic value to control the functioning of commercial or public organizations, to determine whether their requirements have been met, and to determine the temporal application and operating gaps, obstacles and potentials that will enable them to improve their future performance. The space used in this method is to determine the gap/range between the point/level intended to be expressed by the term space and the point/level in the current state. The accuracy needed to eliminate the gap in between and reach the intended level is related to how well this gap is detected. The method of gap analysis in this study is used to determine the continuity or discontinuity of collective memory. Nora's descriptions of lieux de memoire and milieux de memoire were used to explain the result of the gap analysis applied in cultural landscape areas. According to these concepts, if the area is now more active in tourism and commercial activities, and the indigenous culture and traditional living landscape is mostly lost, they are identified as lieux de memoire. On the contrary, if the economies of indigenous peoples can continue with traditional forms of sustaining a living landscape that is specific to that region, then there is a presence of collective memory in that region, and thus these areas can be identified as milieux de memoire. Those identified as milieux de memoire are evaluated positively, whereas those identified as lieux de memoire negatively.

3. Findings and Discussion

3.1. Phase 1: Discourse Analysis

Table 1. Chronological discourses on the term "cultural landscape"(Kevseroğlu & Ayataç, 2022).

Authors	Discourses	Keywords
Zhang & Taylor, 2019	The relationship between people and landscape – the cultural landscape – is both personal and public, profoundly and richly associated as it is with human memories, cultural values, identity and sense of place.	People & landscape, personal & public, human memories, cultural values, identity & sense of place
Durrel, 2015	It is not objects that surround the human, it is a part of humanity; it is a human landscape	Identity & sense of place, people & landscape
Taylor & Lennon, 2012	It is necessary to see landscape not only as the production of history or physical culture, but also as a cultural process that reflects human action over time with multi-layered meanings and human values.	Identity & sense of place, people & landscape socio-cultural values
Taylor, 2009	Cultural landscapes do not merely represent physical changes brought about by human intervention; they also represent evidence of material culture manifested in the landscape and thereby reflect human relationships with our surroundings. They are an inextricable and coherent part of our intellectual and cultural background.	Everyday landscapes, human intervention, natural landscape, human activity, values, ideologies, physical changes, material culture,
Graeme Aplin, 2007	Cultural landscapes are formed through the interactions between people, expressed through their cultural, economic, and spiritual systems, and nature, although the strength of the human imprint varies markedly.	Cultural, economic, spiritual systems, nature, human imprint
Punekar, 2006	The cultural landscape approach can be a means of reuniting fragmented approaches to valuing and constructing the environments we inhabit, a means of overcoming distinctions between historic environment and new development, nature and culture, built heritage and context… "devoid of the socio-spatial context … contributes to a deterioration of the [wider] urban physical fabric."	Historic environment, nature & culture, built heritage & context, socio-spatial context, urban physical fabric
Rössler, 2006	"Cultural landscapes are at the interface of culture and nature, tangible and intangible heritage, biological and cultural diversity – they represent a closely woven net of relationships, the essence of culture and people's identity … they are a symbol of the growing recognition of the fundamental links between local communities and their heritage, humankind and its natural environment."	Culture & nature, tangible & intangible heritage, biological & cultural diversity, culture & people's identity, local communities & natural environment
Madran & Özgönül, 2005	Cultural landscapes are areas that witness the development and changes of societies and settlements within time and space, shaped by the complex relationships of physical and natural components, and gained cultural and social values.	Built environment, natural environment, socio-cultural values
Fowler, 1999	The concept of "cultural" in the landscape covers human interaction with the environment and all the tangible and intangible cultural values in the landscapes.	Tangible & intangible, heritage, people & landscape
Lowenthal, 1975	A discussion on the role of history, tradition, memory and heritage and social links with the past.	History, tradition, memory, heritage, human, past

The notion of ‘cultural landscape’, which was widely expanded by Sauer as an academic term in 1925, has become a concept frequently expressed by various fields after UNESCO subsequently accepted it within the cultural heritage and conservation discipline in 1972. The concept of cultural landscape, which had further widened its meaning after the 1970s,

is discussed chronologically in this article, and the selected interdisciplinary discourse is listed in chronological order. The landscape components adopted are those of Lowenthal (1975), i.e. history, tradition, memory, heritage, and human interaction with the past (Table 1). Fowler (1999) emphasized environmental and human interaction and went on to say that the term covers all tangible and intangible values. Madran and Özgönül (1999) stressed the importance of socio-cultural values in addition to factors linked to the built and natural environment. Rössler (2006) described this concept as physical environments formed as a result of culture-nature, tangible-intangible, culture-human interactions. Punekar (2006) discussed the theme within the context of nature-culture, which includes historical and new developments, and consequently socio-spatial and physical urban fabric. Aplin (2007) generalized everything that is changed by human agency, while Taylor (2009) expanded his meaning by looking at everyday life, including human interactions, values, ideologies, exchanges, and interventions. Taylor, with Lennon, emphasized the value added by human activities to the environment over time, and Zhang went further still, by including memory, belonging and cultural values, bringing the meaning of the term to the present day.

When looking at this chronological development (Table 1), it is apparent that landscape is an essential part of the memory and identity of people and communities, and the concept of landscape has now a wider meaning, covering vast regions – both at urban and rural scale. Cultural landscape components may be understood as the result of human-nature interaction, and consequently include tangible and intangible heritage values. When the keywords obtained as a result of this discourse analysis are clustered, it is possible to divide cultural landscape under the main components of social, natural and built environment (Figure 1).

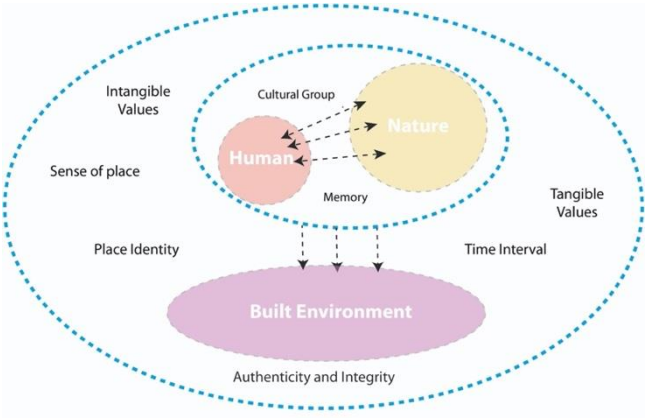


Figure 1. "Cultural Landscape" components as a result of discourse analysis (Kevseroğlu & Ayataç, 2022).

The indicators created as a result of discourse analysis defined under these three main components: intangible values of the built and natural environment; and the socio-cultural and socio-economic layers of the socio+ environment. Components of the built environment may be at various scales from a single unit and its surroundings, to generalized residential or regional characteristics. Components of the natural

environment cover all living/non-living elements in that area. Intangible values are defined as socio+ components, and includes socio-economic, socio-demographic, and socio-cultural elements. Under these, vertical sub-elements include historical layers, horizontal sub-elements include tradition and know-how, and perceptional sub-elements include memory, sense of belonging and identity. These three main components are classified as tangible or intangible values (Table 2) (Figure 2).

Table 2. Components of the cultural landscape (Kevseroğlu & Ayataç, 2022)

	Components	Main Elements	Sub-Elements
Tangible Values	**Buit environment**	Spatial elements (micro scale)	Architecture of buildings and traditional features Monuments Engineering construction Gardens
		Local elements (mezo scale)	Urban Fabric
		Regional elements (macro scale)	National parks, culture routes, agricultural fields, industrial areas
	Natural environment	Non-living elements	Topology, hydrography, geomorphology Climate, soil Geographical features, natural landmarks
		Living elements	Land cover, vegetation, habitat
Intangible Values	**Socio+ environment**	Socio-economic elements	Livelihood
		Socio-demographical elements	Inhabitants, ethnicity, indigenous
		Vertical elements	Historical, ethnographical, archeological values
		Horizontal elements	Customs, traditions, everyday landscapes, social practices, knowhow (methods & techniques), handicrafts, material cultures Beliefs, rituals, ideologies, ethnicities, symbols
		Perceptional elements	Memory, sense of belonging, identity

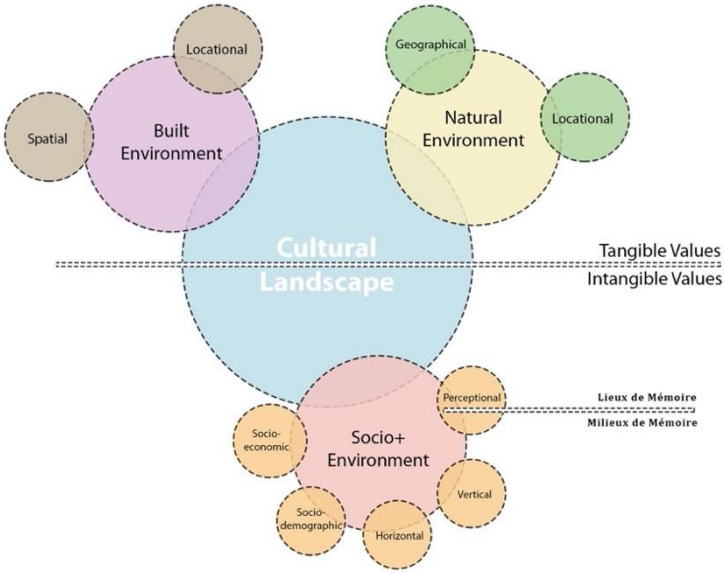


Figure 2. Components of the cultural landscape (Kevseroğlu & Ayataç, 2022).

In the table of components (Table 2), based on the analysis of discourse, the built environment emerges as a result of human-nature interaction. The values that make the built environment unique and that are inherited from generation to generation are defined as socio+ components. Collective memory, sense of belonging and identity sub-component in the perceptional component, which human beings produce individually and collectively, creates an interaction between human and nature: "Intimately connected with these landscapes are people's stories and the things of which memories are made: the cultural richness that promotes a sense of local distinctiveness" (Taylor, 2008).

Nora focuses on the holistic relationship between urban topography and memory; he emphasized that there is no spontaneous memory, but that

places make sense when they are based on a narrative, a ritual or a symbol (Nora, 2006). Nora described these places as memory places or lieux de memoir. This notion gives prominent attention to the various ways in which memory is spatially constituted: "Landscape is not simply what we see, but a way of seeing; we see it with our eye but interpret it with our mind and ascribe values to Landscape for intangible – spiritual – reasons. Landscape can, therefore, be seen as a cultural construct in which our sense of place and memories" (Taylor, 2008). On the other hand, the relationship between memory and place is most apparent in the realm of material culture, in landscapes. In a powerful sense, memory provides our lives with continuity; it gives us a coherent picture of the past that puts current experience into perspective.

These geographies, which bear the traces of different cultural groups, who lived there in the past and live there today, may be viewed as a scene in which the daily-life is formulated and collectively represented. In order for the collective memory of a settlement to be still sustained, the inhabitants there continue to act in the 'living landscape'. It is possible to refer to such geographies as environments of memory or milieux de memoire according to Nora. If settlements form a historic scene but have significantly lost their inhabitants, they are termed as places of memory or lieux de memoir.

3.2. Phase 2: UNESCO's criteria for Listing Cultural Landscape Areas

"In 1992, the World Heritage Convention became the first international legal instrument to recognize and protect cultural landscapes. This decision was based on years of intensive debate in the World Heritage

Committee on how to protect sites where interactions between people and their natural environment are the key focus. The World Heritage Committee adopted three categories of cultural landscapes qualified for listing: clearly defined landscapes designed and created intentionally by humans (Type 1), organically evolved landscapes (Type 2), and associative cultural landscapes (Type 3)" (Rössler, 2006). UNESCO identifies six main criteria for evaluating buildings/areas for the World Heritage List. In abbreviated form, these six criteria ask that a nominated property be one or more of the following:

"(i) a masterpiece of human creative genius.

(ii) an important interchange of human value, over a while or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design.

(iii) a unique or at least exceptional testimony to a cultural tradition or civilization, living or disappeared.

(iv) an outstanding example of a type of building or architectural or technological ensemble or landscape which – a key, and much-misunderstood phrase – illustrates (a) significant stage(s) in human history.

(v) an outstanding example of a traditional human settlement or land-use, representative of a culture (or cultures), especially when under threat.

(vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance" (Fowler, 2003).

UNESCO's criteria are based on the result of interactions between man and nature in a more material-oriented assessment approach. However in heritage literature, cultural landscapes are seen as the representations of the collective memory and identity of communities. Therefore, the evaluation of such areas need to be provided with approaches focusing on human beings in an understanding of preserving and respecting inhabitants' values and sustaining those who live there. What makes that geography unique is the human population it houses. In addition to UNESCO's criteria, an evaluation criterion is sought based on the people who create the interaction between the landscape and collective memory. Thus, in terms of the continuity of cultural landscapes, it is recommended to include the relationships between the socio-spatial situation and built environment, bio-cultural habitat and natural environment, human and the socio+ environment, and the balance between all these components with each other.

3.3. Phase 3: Gap Analysis

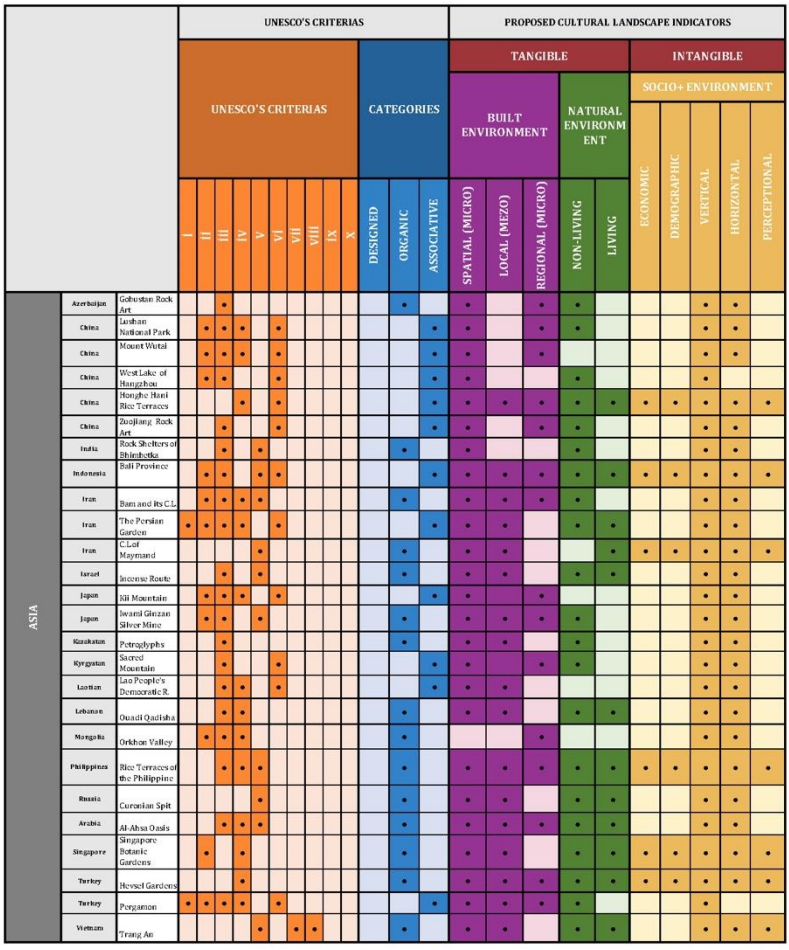
There are 116 areas registered as "cultural landscapes" on UNESCO's World Heritage List. Distributions of these fields by categories are shown in Table 5. The number of designated areas, from highest to lowest, are in Europe, Asia, Africa, and America.

Table 3. Distribution by continents and types (Kevseroğlu & Ayataç, 2022).

Continents	Number of Cultural Landscape Areas	Categories
Asia	25	15 Organic C.L (Type 2) 10 Associative C.L (Type 3)
Africa	15	7 Organic C.L (Type 2) 8 Associative C.L (Type 3)
Europe	57	3 Designed C.L (Type 1) 46 Organic C.L (Type 2) 8 Associative C.L (Type 3)
America	14	1 Designed C.L (Type 1) 7 Organic C.L (Type 2) 6 Associative C.L (Type 3)
	111	

In this study, the cultural landscapes are examined by continents, within registered types and criteria (Table 3). These areas are assessed according to their built (man-made) and natural elements, tangible and intangible components, socio-economic, socio-demographic, vertical, horizontal and perceptual components. According to the gap analysis method, the presence of each examined area and component is represented by a point if it is positive. Empty spaces indicate that components do not exist, and thus, contain a negative meaning. Since this study questions the relation between people and memory, it is necessary to indicate points of perceptual sub-components under intangible components, so as to be able to express the positiveness of an area – Nora's concept of milieux de memoire. The others are expressed negatively, as in Nora's concept of lieux de memoire. These results are presented by continent in (Table 4, 5, 6, 7).

Table 4. Cultural Landscape Areas in Asia (Kevseroğlu & Ayataç, 2022).



When an assessment is made based on Table 4, for places listed as cultural landscape sites in Asia:

- Areas registered as cultural landscape areas in China, Indonesia, Iran and the Philippines are located in rural areas. The traditional

production activities of these geographies are continuing, and this ensures the continuity of the socio-demographic structure.

• The area in Singapore is a landscape area designed as a botanical garden from its inception. The development of knowledge (know-how), education, and plant production activities have continued from the past to the present.

• In Turkey, Diyarbakır Fortress and Hevsel Gardens in are still used by the inhabitants, and although agricultural activities have decreased compared to the past, they are still sustained.

Table 5. Cultural Landscape Areas in Africa (Kevseroğlu & Ayataç, 2022).

			UNESCO'S CRITERIAS										PROPOSED CULTURAL LANDSCAPE INDICATORS										
			UNESCO'S CRITERIAS										CATEGORIES			TANGIBLE					INTANGIBLE		
																BUILT ENVIRONMENT			NATURAL ENVIRONMENT		SOCIO+ ENVIRONMENT		
			i	ii	iii	iv	v	vi	vii	viii	ix	x	DESIGNED	ORGANIC	ASSOCIATIVE	SPATIAL (MICRO)	LOCAL (MEZO)	REGIONAL (MICRO)	NON-LIVING	LIVING	ECONOMIC	DEMOGRAPHIC	VERTICAL	HORIZONTAL	PERCEPTIONAL
AFRICA	Chad	Ennedi Massif		•					•		•			•		•		•	•				•	•	
	Ethiopia	Konso Cultural Landscape			•		•							•		•	•	•	•	•	•	•	•	•	•
	Gabon	Lopé-Okanda			•	•					•	•		•		•	•		•	•			•	•	
	Kenya	Sacred Mijikenda		•				•	•						•	•	•		•	•	•	•	•	•	•
	Madagascar	Royal Hill of Ambohimanga			•	•		•							•	•	•		•	•	•	•	•	•	•
	Morityus	Le Morne Cultural L			•			•							•	•	•		•	•			•	•	
	Nigeria	Sukur Cultural Landscape			•		•	•							•	•	•	•	•	•	•	•	•	•	•
	Nigeria	Osun-Osogbo Sacred Grove		•	•			•							•	•	•		•	•	•	•	•	•	•
	Senegal	Saloum Delta			•	•	•							•		•		•	•	•	•	•	•	•	•
	Senegal	Bassari Country			•		•	•							•	•	•	•	•	•	•	•	•	•	•
	Northland	Mapungubwe C.L		•	•	•	•							•		•	•	•	•				•	•	
	Northern Cape	Richtersveld Botanical					•	•						•		•	•	•	•	•	•	•	•	•	•
	South Africa	Khomani Cultural L					•	•						•		•	•		•	•	•	•	•	•	•
	Togo	Koutammakou						•	•						•	•	•	•	•	•	•	•	•	•	•
	Zimbabwe	Matobo Hills			•			•	•						•	•	•	•	•	•			•	•	

When an assessment is made based on Table 5, for places listed as cultural landscape sites in Africa:

- It is possible to see the everyday lives continue with indigenous peoples in cultural landscape areas of Ethiopia, Kenya, Madagascar, and Nigeria. Therefore, collective memory has survived in these areas up to the present.

- Traditional production techniques (agriculture and animal husbandry) continue in Senegal, North Nose, South Africa and Togo. The transfer of knowledge – the use of traditional production methods – still continue, therefore collective memory is sustained.

When an assessment is made based on Table 6, for places listed as cultural landscape sites in Europe:

- Cultural landscape areas according to the diversity of living landscape type are: ecological landscape areas (Hungary, Norway), agricultural living landscape areas (France, Italy, Spain, Portugal), animal-husbandry-based living landscape areas (Hungary and Norway), pastoral (both agricultural and livestock management) landscape areas (Spain, England), semi-urban built and semi-urban landscape areas (Austria, Hungary, France, Germany). Collective memory is preserved in these the living landscape and settlement areas are still sustained; traditional production methods from the past continue with the economic continuity of such settlements, and accordingly with their inhabitants. Despite the pressures of tourism, there is still talk about a bio-cultural life and the continuity of collective memory.

Table 6. Cultural Landscape Areas in Europe (Kevseroğlu & Ayataç, 2022).

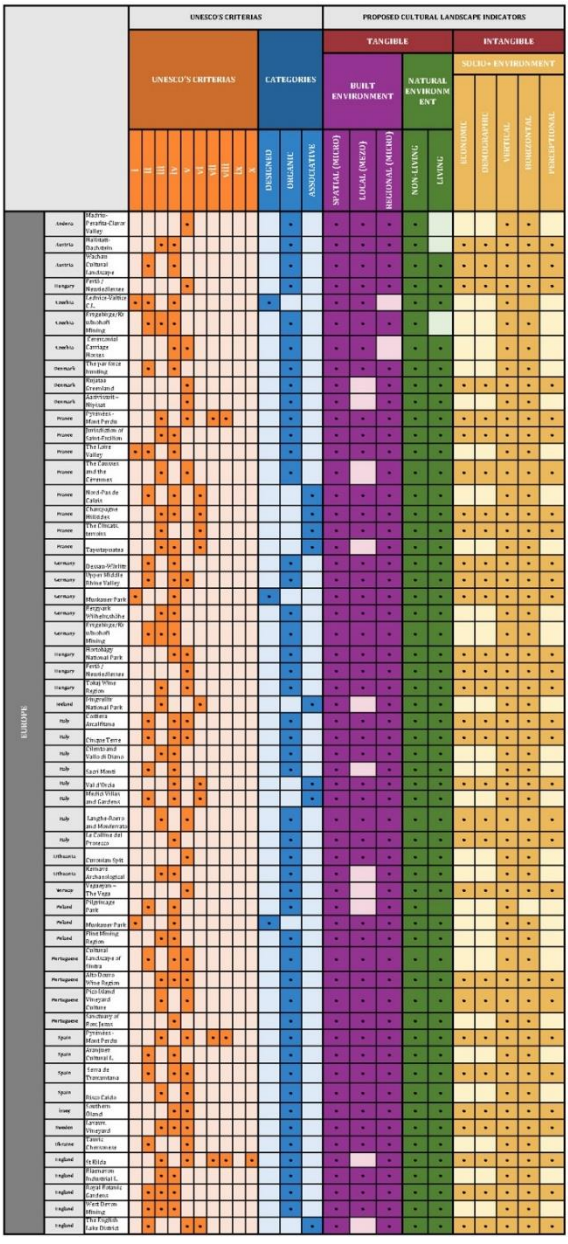


Table 7. Cultural Landscape Areas in America (Kevseroğlu & Ayataç, 2022).

			UNESCO'S CRITERIAS										CATEGORIES			PROPOSED CULTURAL LANDSCAPE INDICATORS								
			UNESCO'S CRITERIAS													TANGIBLE					INTANGIBLE			
																BUILT ENVIRONMENT			NATURAL ENVIRONMENT		SOCIO+ ENVIRONMENT			
			I	II	III	IV	V	VI	VII	VIII	IX	X	DESIGNED	ORGANIC	ASSOCIATIVE	SPATIAL (MICRO)	LOCAL (MEZO)	REGIONAL (MICRO)	NON-LIVING	LIVING	ECONOMIC	DEMOGRAPHIC	VERTICAL	HORIZONTAL	PERCEPTIONAL
AMERICA	Canada	Landscape of Grand Pré					•	•							•	•	•	•	•	•	•	•	•	•	•
	Canada	Pimachiowin Aki		•				•			•				•	•		•	•	•			•	•	
	Canada	Writing-on-Stone / Áísínaí'pi			•									•		•		•	•	•			•	•	
	N. America	Papahānaumo kuākea			•			•	•		•	•			•	•		•	•	•	•	•	•	•	•
	Argentina	Quebrada de Humahuaca		•			•	•						•		•		•	•	•			•	•	
	Brasil	Rio de Janeiro: Carioca						•	•						•	•	•	•	•	•	•	•	•	•	•
	Brasil	Pampulha Modern	•	•		•							•			•	•	•	•	•			•	•	
	Brasil	Paraty and Ilha Grande					•					•		•		•	•	•	•	•	•	•	•	•	•
	Colombia	Coffee C.L of Colombia						•	•						•	•	•	•	•	•	•	•	•	•	•
	Cuba	Viñales Valley				•								•		•	•	•	•	•	•	•	•	•	•
	Cuba	First Coffee Plantations			•	•								•		•	•	•	•	•			•	•	
	Mexico	Agave Landscape		•		•	•	•							•	•	•	•	•	•	•	•	•	•	•
	Mexico	Prehistoric Caves			•									•		•		•	•	•			•	•	
	Uruguay	Fray Bentos		•		•								•		•		•	•	•			•	•	

When an assessment is made based on Table 7, for places listed as cultural landscape sites in the Americas:

- In Canada and Brazil, socio-spatial continuity exists in capital cities, and therefore the collective memory is continued.
- Colombia, Cuba, and Mexico reveal agricultural living landscapes, whereas Brazil demonstrates a livestock-based living landscape. The agricultural skills and collective memory have been sustained using traditional methods.

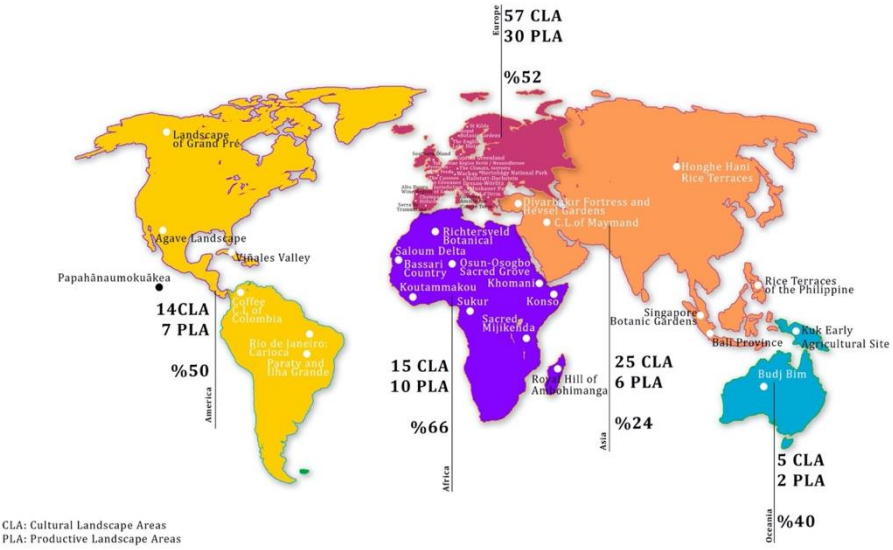
- In North America, there are regions where indigenous peoples live, and the continuity of tangible and intangible aspects of cultural heritage depend on them.

3.4. Evaluations and Discussions

In this study, the main aim was to develop an interdisciplinary analysis for the concept of 'cultural landscape', to identify cultural landscape components, and to examine these components and places listed as cultural landscape areas by UNESCO, using gap analysis. Gap analysis, based on the continuity or discontinuity of cultural habitat, presents a theoretical infrastructure, developed using Nora's concepts of lieux de memoire and milieux de memoire. 116 cultural landscape areas, listed by the World Heritage Committee (WHC), were evaluated in this context: i.e. whether economic development and income can continue in regions with living landscapes, and whether collective memory, and therefore 'bio-cultural' habitats can also continue. In the case of preserving the habitats and collective memory, these unique geographies will be quethed from generation to generation as memory landscapes.

Cultural landscape areas listed by UNESCO are divided into two categories: 'Living memory landscapes' or environments of memory (milieux de memoire) are sustained by the collective memory of their inhabitants. 'Non-living memory landscapes' or places of memory (lieux de memoir) are the opposite, producing in effect 'museums', and no longer sustain continuity for their inhabitants' living landscapes, and result in interruptions in the collective memory. Living memory landscapes grouped by continent are as follows:

Figure 3. Living Landscape Areas by continent (Kevseroğlu & Ayataç, 2022).



(Figure 3) were identified as living cultural landscapes and there are 55 examples that fit this definition. This corresponds to 47% of listed cultural landscape sites. When you look at the continents, it may be seen that living landscapes are higher in concentration in Europe whereas the highness in proportion in Africa is probably due to the fact that the inhabitants still sustain their traditional lifestyles. The situation in the Americas, especially in South America, results from the continuity of bio-cultural life, sustained through the presence of indigenous peoples similar to the situation in Africa. In Asia, an economically sourced bio-cultural lifestyle provides agricultural areas where production is still based mostly on traditional methods.

The document "Cultural Landscapes: Difficulties in Conservation" (UNESCO, 2009) addresses a wide range of issues, including the

challenges of preserving cultural landscapes over time; the many failed collaborations between countries; the regional imbalances (i.e. the limited implementation of a global strategy for a more balanced World Heritage List) and the fact that most of the listed areas are in Europe; an inadequate capacity to offer reliable cultural landscape space; the lack of resources for effective management; the difficulties in maintaining traditional land use patterns that can sustain cultural landscape areas; rapid socio-economic changes; the inability to cope with tourism; the cultural landscape concept; and the weakness of the bonds between other identification systems in this area.

Focusing for a moment on Turkey, there are two regions listed by UNESCO as cultural landscape sites. The first of these is Diyarbakir Fortress and Hevsel Gardens, with its several historical phases and remarkable remains of stone architecture; additionally, Hevsel Gardens are of significant botanical and horticultural value. Accordingly, the site is listed as a cultural landscape within the scope of criteria (i), (ii), (iii), (iv) and (v), as it includes features of cultural and historical significance with many layers of history. In the scope of this study, it is categorised as a 'living landscape' (milieux de memoire) as it has been sustained despite various threats represented by the pressure of urbanization (that we now see at Diyarbakir Fortress and Hevsel Gardens).

The other site is the ancient city-state of Pergamon, a multi-layered cultural landscape area. This site, home to various cultures from the Hellenistic Period to the present day, represents one of the unique examples Hellenistic and Roman urban planning. It is listed under UNESCO's

cultural landscape criteria (i), (i), (iii), (iv) and (vi). Pergamon, as a multi-layered cultural landscape area, is classified as a ‘non-living landscape’ (lieux de memoire), as a result of it now being a ‘museum’ and protected from other uses. lthough not scoring highly, due to the ineffectiveness of the activities of the local population, the archaeological value of the site ensures that its museum status will continue.

In April 2020, UNESCO provisionally added further sites in Turkey to the tentative list: Historic Town of Beypazari (Ankara), Historical Port City of İzmir, Karatepe-Aslantaş Archaeological Site (Osmaniye), Koramaz Valley (Kayseri), and Zerzevan Castle and the Mithraeum (Diyarbakir). As a guide for future research, the implementation of a management action plan based on a inhabitant-oriented approach is important for the preservation of such areas as living landscapes. To sustain these regions, inhabitants and activities, it is necessary to identify the built, natural and socio+ components of these cultural landscapes and to undertake a range of assessments and inventory work on them. The preservation approach should not only aim to protect the built environment but also to protect the socio-economic, socio-demographic, and socio-cultural features. Sustainable management and the use of natural resources should be determined in establishing intercultural dialogues with local inhabitants within their rural and cultural landscapes. A conservation action plan should be carried out in an environment where all stakeholders, including indigenous peoples living in these regions, are included in this process. In addition to the part local communities play in shaping and maintaining landscapes, it is necessary to understand their specialized knowledge. In

this way, it will be possible to discover local cultures and traditions, provide scientific and technical solutions, and to pass on collective memories from generation to generation.

4. Conclusion and Suggestions

The cultural landscape may be understood of as a scene of human and nature interaction in a particular place that has developed over time. This situation is more prominent in rural areas, where a tradition of mutual interaction produced unique conditions. Some of these interactions and activities may be abandoned or dysfunctional at the present as a result of socio-economic conditions. However, they may be retained in collective memory for a longer period as determinants for the behaviour and life-style of communities; life-long practices and learning are powerful tools for remembrance.

Landscapes are areas where collective memory and everyday life overlap, affecting the behaviour and lifestyle of communities. The built environment is produced as a result of the mutual interaction of human activity and nature; the contribution of humans creates a series of unique values within those geographies. The tangible and intangible heritage values, articulated in layers in historical continuity, the collective memory of those who lived, and still live, in these areas must be preserved. In this study, cultural landscape components were identified based on an interdisciplinary theoretical discourse concerning the concept of cultural landscape. It has been observed that the continuity of cultural landscape areas is only possible by ensuring the sustainability of the bio-cultural habitat in the region. Therefore, in addition to UNESCO's evaluation

criteria, the concept of collective memory is vital. The continuity or discontinuity of collective memory in these areas listed as a cultural landscape sites by UNESCO has been examined using gap analysis method. Nora's terminology of lieux de memoire and milieux de memoire formed the theoretical framework. UNESCO's criteria are the result of the interaction of man and nature on the basis of a material-oriented assessment approach. However, the discourse analysis in this study proves that cultural landscape areas are seen as both the collective memory and identity of society in general and communities in particular. Therefore, this study proposes an addition to UNESCO's cultural landscape evaluation criteria, in order to develop approaches that preserve the existing communities in these regions and emphasize the continuity of their collective memory. To improve the quality of life within these sites, it is recommended that cultural landscapes are viewed holistically in order to preserve the natural and the built environment as well as to preserve and sustain the socio+ environment – the resident communities – when management action plans are developed in these types of regions. In order to ensure the continuity of cultural landscape areas, it is recommended that attention is paid to the relationship between socio-spatial situations and the built environment, the bio-cultural habitat and natural environment, human and socio+ environments, and the balance among all of these components. The preservation of cultural heritage is not only possible through the protection of the physical environment, but also by preserving the intangible activities and values that make a place unique. Fowler (1999) expresses that the "cultural" in “cultural landscape” covers human

interaction with the environment and all tangible and intangible values. Rössler (2006) states that cultural landscape, culture and nature are the interface of tangible and intangible heritage, biological and cultural diversity, and represent the close network of these relationships, the essence of culture and human identity. By recognizing cultural landscapes, we can describe ourselves as products of tradition that may seem ordinary but some places are produced unconsciously and collectively.

The sites now protected as museum / monument sites cannot be sustained as living landscapes. Such areas have lost their spirit and have become commercialized and commodified in a manner. It seems apparent that only built environments can be preserved as museums/monuments in such sites. However, the preservation of bio-cultural habitats is possible if the socio+ cultural landscape component is sustained. Thus, rather than museum/monument status preservation, it is possible to maintain such sites as living cultural landscapes. Experts are required to develop contemporary, alternative scenarios. As Mitchell (1996) states, "The work of the vision that affects representations is closely linked to the ongoing production work of the landscape." The challenges concerning the continuity of cultural landscape sites as living landscapes, are keeping past and present relationships, sustaining collective memory, and having the flexibility to allow adaptation. To bring traces from the past to the present, a holistic conservation approach needs to be implemented to meet today's challenges. Priority must be given to ensuring the sustainability of these regions as living landscapes, and of the necessary economic resources to assist the continuity of traditional methods and bio-cultural habitats. An

area should not merely be regarded as a cultural heritage site linked to the past but rather as a living landscape. Therefore, instead of replacing the old values of the location with entirely new and different interpretations, value may be added by including the inhabitants and communities to use the place and letting their participation shape the collective memory for the future. Cultural heritage reflects on the collective memory that humanity has kept alive throughout history, handing it down from generation to generation. Intangible cultural heritage includes practices that communities, groups, and in some cases, individuals inherit as a set of experiences from previous generations.

The concept of cultural landscape, which has been discussed since the 19th century, may involve a wide range of issues, including traditional production methods and life-styles, technological knowledge, places transformed by the practices of many, and physical, social and cultural environments that have experienced change and transformation. In this sense, approaches should be adopted to continue the values of such integrated settlements and communities but also to allow change and transformation. The present study reveals the importance of collective memory in such sites as well as emphasizing the need to address these issues not only in a tangible manner but also in ways that preserve the continuity of the communities. Instead of preserving sites simply as museums/monuments, they must be preserved as bio-cultural habitats that ensure the sustainabilty of collective memory. For the future of cultural landscapes, collaboration is very important, including interdisciplinary studies aimed at their preservation and development. The cultural

landscape components and criteria as well as analyses methodology defined in terms of this research involve indicators and guidelines, which may serve as a roadmap for future studies.

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The article complies with national and international research and publication ethics.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-6

Conservation and Sustainability of the Wooden Mosque Heritage in the Karadeniz Rural

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1. Introduction

Rural architecture, in its most general definition, can be expressed as structures built by people. While the environmental characteristics and the sociocultural structure in which it is located have an effect on its formation, they are architectural products produced with local materials and construction techniques using simple tools and equipment according to tradition (Çorapçıoğlu et al., 2008; Aran, 2015). These architectural products were produced to meet the traditional needs of society before the industrial era through long-term trial and error (Aran, 2015). Rural architectural products are the representatives of this period with their identity specific to the place region and are information transmission systems.

The rural Black Sea region is characterized by rich architecture, using wood as the basic building material and developing unique construction techniques. Structures with different functions such as houses, seranders, bridges, and mosques are important representatives of this architecture. Wooden mosques are important artifacts in the region because they carry information about the construction technique, lifestyle, building culture, and tradition of the period. It is a necessity for the sustainability of rural culture to ensure that the buildings, whose number is decreasing by the day, continue to be used with their current function. The industrialization of the region, especially after the 1950s, and the accompanying urbanization and migration from rural to urban areas have caused a multifaceted change in rural areas. As a result of this situation, reinforced concrete has found a place in rural areas, the maintenance and repair process of the buildings has been interrupted by the dehumanization of the

region, and the number of local craftsmen has significantly decreased. If we add to this the inadequacy of laws and regulations for the protection of cultural heritage, no new wooden mosques are built in the region, and the existing ones have difficulties in ensuring their continuity. At this point, the precautions to be taken to ensure the sustainability of these existing buildings in the Black Sea region gain importance. This study provides general information about the characteristics of wooden mosques in the rural Black Sea region. Subsequently, 4 mosques selected to ensure the continuity of structures in the rural area were analyzed in terms of architectural features and conservation approach with a holistic perspective. The interventions and precautions taken for the protection and continuity of the buildings and the maintenance and repair techniques selected are discussed. The identification of the problems encountered in the region and the solutions developed will guide the conservation of the existing mosques. In this way, the knowledge of techniques specific to the region can be passed on to future generations with the least possible loss. The knowledge of the original use of wood, which is the basic building material in the traditional architecture of the region, will be kept alive.

1.1.Wooden Mosques in the Black Sea Rural Area

The mosques in the region today are generally 19th-century buildings. After the Ottoman period, mosque architecture emerged with the formation of a Muslim population in the region. The mosque's architecture is different from the central practice of the existing Ottoman period and has a unique character (Kazaz, 2016). The design approach of the mosques in the region is based on the serander structures that existed in the region and are dated to 400 BC (Gökler, 2022). The architecture of wooden

mosques continued until the 20th century, after which wooden mosques were replaced by mosques built with new materials.

Settlement in the region is dispersed and mosques are located to serve one or more neighborhoods. They were built to meet the worship needs of the village or neighborhood in rural areas. At the same time, there were sitting couches in the section called the last narthex (Küçük, 2017). This is an indication that mosques in rural areas serve as places where local people come together as well as worship.

The mosques are simple in plan, human-scale in scale, and similar to the surrounding building texture. The region's unique climate, topography, the use of local materials with techniques specific to the region, and the cultural accumulation of the people have been decisive in the formation of the region's architectural identity, especially the mosques (Açıcı et al., 2018). The main element that gives the characteristic features to the buildings is the external wall construction. In the wooden skeleton system, "göz dolma" and "muskalı dolma" and in the wooden masonry system, "kurt boğaz" and "çalma boğaz" can be seen (Özgüner, 1970) (Figure 1). Wooden ornaments (carving and decoration technique) made of floral and geometric patterns in the interior are another characteristic feature of the mosques.

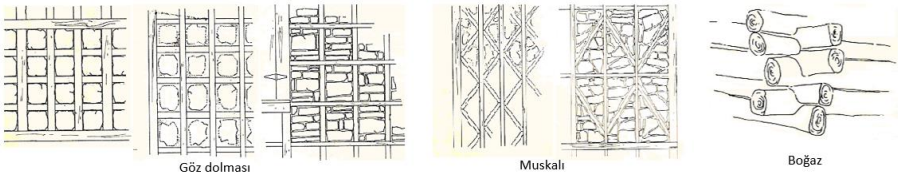
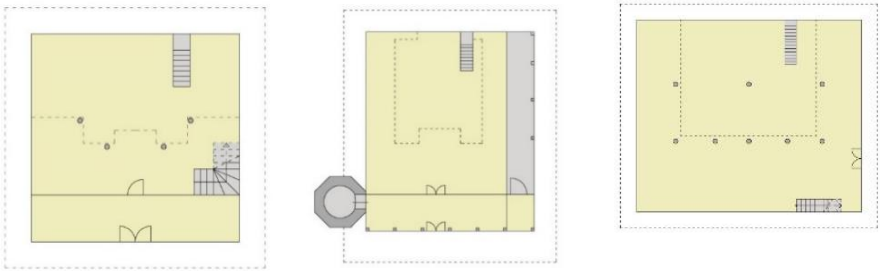


Figure 1. Local construction technique (eye stuffing, amulet stuffing and throat) (Özgüner, 1970)

Wooden mosques consist of the last narthex and the Sanctum sanctorum section in the plan. Some mosques do not have a last narthex. The interior of mosques consists of a gathering place and mihrab (Yalçınkaya & Sancar, 2010). One-storey or two-storey mosques are found in the region. The planning scheme of single-storey rural mosques generally includes a square or nearly square Sanctum sanctorum section and the last narthex located in the northern direction. There are also examples where the last narthex is located on the east or west façade. In two-story rural mosques, there is a women's gathering place in various forms north of the Sanctum Sanctorum. The gathering-place floor accessed from the Sanctum Sanctorum can be in I, L, U, or O forms (Zorlu, 2017) (Figure 2).



Kuşluca Mosque Filak Mosque Taşçılar Mosque

Figure 2. Wooden mosque plan type examples (Karadeniz Culture Inventory, 2023)

Minbar
Taşçılar Mosque

Mihrap
Güney Mosque

Kondu Mosque

Taşkıran Mosque

Rostrum
Kabataş Mosque

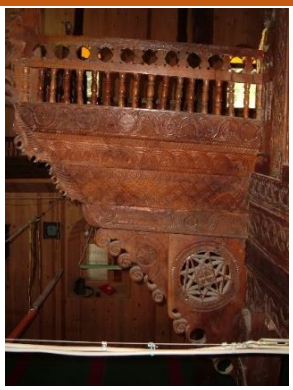
Figure 3. Wooden interior items in rural mosques (Çakır, 2010; İltar et al., 2013)

When looking at the interior of mosques, one of the most important elements is the mihrab. This is the recessed area on the qibla wall where the imam stands while leading the prayer. The pulpit is the place with a staircase where the Khutba is read. The pulpit is the place where the Imam

preaches, except for Friday and Eid prayers (Figure 3). In mosques, stone or wood can be used in these areas, and ornaments are used extensively. On the other hand, providing natural comfort conditions in the interior and using natural materials make mosques ecological (Yüksek & Esin, 2011). Wooden materials are widely used in mosques because they are easily accessible, easy to work with, and inexpensive in the region. Chestnut wood is preferred because it is the hardest and most durable type of wood (Sümerkan, 1990). Apart from this, trees such as ash, beech, spruce, and elm are used in different areas of the building. While stone is used in areas related to the ground, wood is used in every area from the point where the relationship with the ground is interrupted. Wood is used in the building as columns, beams, roof elements, partitions, flooring, doors and windows, carved and decorated elements, and interior elements such as the mihrab, minbar, and pulpit. Local solutions specific to wood materials have been produced in the region. The ability to dismantle, move and rebuild buildings is also an important feature.

From the outside, rural mosques have the same style as other rural architecture and have a modest appearance. The most decorated place on the façade is the door, and in some mosques, ornaments are found on wooden window railings, bonding timbers, or pillars (Zorlu, 2017). Inside, embossing, carving, and hand-drawn ornaments on wood are common, consisting of many different floral and geometric patterns (Figure 4).

Maçahel Mosque



Güney Mosque

Figure 4. Wood decoration examples (Zan Architecture, 2014; Çakır, 2010)

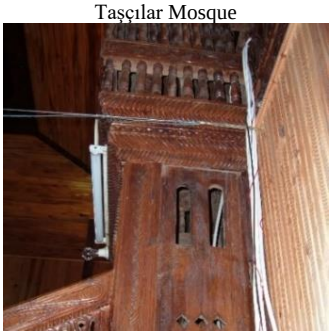
The originality of the wooden mosques in the region, where no new mosques are being built today, is being lost or threatened with extinction due to actions such as faulty repairs, improper interventions, demolition, and abandonment.

Although it is normal for these mosques, which make extensive use of wood materials, to deteriorate over time, the question of how to ensure their sustainability is becoming increasingly important. When evaluating the factors that cause the deterioration of mosques in the region, they can be considered into two groups: Environmental Factors and Human Factors (Figure 5).

Use of unqualified materials
Kondu Mosque

Color change
Taşçılar Mosque

Deformation/ Deterioration
Ordu Mosque



Plumbing system attachment
Taşkıran Mosque

Use of unqualified materials
Günebakan Mosque

Corrosion effect
Kondu Mosque

Figure 5. Examples of deformation in wooden materials (Zan Architecture, 2015a; Çakır, 2010)

The Black Sea region is a region with abundant rainfall and *high humidity*. This causes physical, biological, and chemical effects on wood materials. This can cause rotting, cracking, opening, and splitting of the wood (Perker

& Akıncıtürk, 2006). On the other hand, insects also cause damage such as flying holes, insect galleries, and dusting on wood (Peker, 2010; Tunca, 2019). Corrosion of metal materials in elements such as windows and doors damages the wood material.

The decrease of the population in the rural areas and the construction of new reinforced concrete mosques cause the mosques are not maintained and repaired periodically. Again, the interventions made in the original plan scheme due to the spatial requirements that have emerged over time and in order to meet the heating and lighting needs at the point of bringing the building to the comfort conditions suitable for today's conditions cause damage to the structure (Yalçınkaya, 2023). It is important to determine the deterioration of the wood in the mosques in the region and to propose a holistic solution for the region.

2. Material and Method

In the research, 4 wooden mosques of traditional building types located in the rural areas of Trabzon and Artvin provinces in the Eastern Black Sea Region were examined (Figure 6). In the research, the analysis of the wooden mosques, which bears traces of the traditional building culture in the rural area, is included. Determination was made by using the restitution, survey, and restoration project reports and photographs of the buildings.

In the study, answers to these questions were sought in buildings in order to ensure the sustainability of wooden structures in rural areas:

- In which parts and with what technique was the wooden material used in the building?
- What are the problems with the wooden material of the building?

- What kind of interventions has been made to the areas where wood materials are used in order to ensure the continuity of the building?

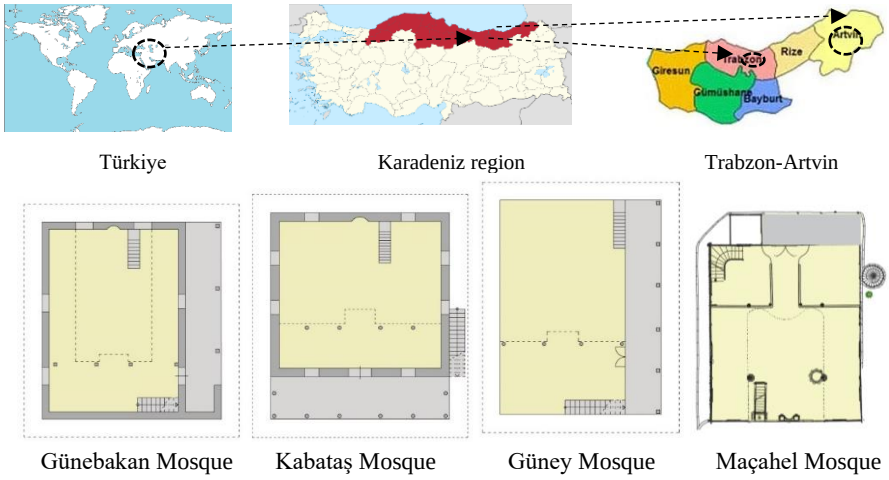


Figure 6. Location and general view of mosques (Karadeniz Culture Inventory, 2023); İltar et al., 2016)

3. Findings and Discussion

3.1. Problems Encountered in Wood Materials in Restoration Works and Solution Suggestions

This section provides information on the use of wood and then makes a general assessment of the problems and interventions seen in the examples.

Southern district mosque: The mosque has a planning scheme consisting of a rectangular sanctuary and a narthex. In the first period, the narthex has two floors and is open. In the second period, the narthex on the mahfil floor was combined with the mahfil, and a small room was created at the south end. The mosque has a smaller basement than the harim, which is caused by the slope. The wooden mahfil, carried by wooden columns, was designed as one-sided and with a balcony in the first period, and the mahfil

floor turned into an L-shaped plan scheme in the second period (Zan Architecture, 2016a).

In the interior of the mosque, there are wooden columns carrying the mahfil floor and the upper cover in the sanctuary. The ceiling of the sanctuary is stepped and wooden. There is a mihrab in the middle of the south wall of the sanctuary, a pulpit in the southeast corner, and a pulpit in the southwest corner. In the interior, the window, door, altar, pulpit, and preacher's pulpit are decorated with wooden carving-relief ornaments.

It has a plain appearance as a facade character. The construction system of the mosque (chipped-wooden masonry construction) is decisive in the character of the facade. In the second period, there is an intervention on the front. The upper narthex was closed and the wooden-frame construction with amulets was used. It is seen that the main walls formed on the basement floor were partially supported by brick walls in the following years, and the wall was plastered and painted (İltar et al., 2016).

Figure 7. Güney neighborhood mosque (Zan Architecture, 2016b**)**

Different construction techniques were used in different parts of the outer walls of the mosque. The mosque was built as masonry (masonry stone) up to the level of the mahfil floor. The main walls of the sanctuary floor are completely wooden and were built with the chipped-wooden masonry

construction. In the area of the narthex, which was closed for the second period and used as a room, the amulet type of the wooden framed wall system was used. (İltar et al., 2016) (Figure 7).

Gunebakan mosque: In the first period, the mosque consisted of only a square planned sanctuary and had an O-type mahfil floor. In the second period, the narthex was built on the west of the mosque, with a rectangular plan and two floors, the same length as the facade, and the lower floor is open and the upper floor is closed. The wooden mahfil carried by wooden columns has conserved its originality. In the first period, the mahfil is accessed from inside the sanctuary, while in the second period, it is accessed from the narthex on the upper floor **(**İltar et al., 2014**)**.

In the interior of the mosque, there are wooden columns carrying the mahfil floor and the upper cover. The ceiling of the harim is stepped and wooden. On the south wall of the sanctuary, there is an altar niche and a pulpit lectern. A significant part of the existing interior is covered with paneling. Wooden carved-relief ornaments are found in the interior.

Figure 8. Gunebakan mosque (facade, door, and ceiling) (Zan Architecture, 2014)

It was built with a wooden frame system with masonry and wood coating in the character of the first-period facade. Massive wood and stone on the

facade have been decisive on the plain and modest effect. In the second period, there is an intervention on the front. A two-storey narthex has been added to the mosque. The upper floor of the narthex was built with “the eye-filling system”.[10] Different construction techniques were used in different parts of the outer walls of the mosque. The main walls of the building were built in a masonry system (masonry stone) up to the mahfil level. If the main walls are above the level of the mahfil, the upper floor west wall of the narthex is built with a wooden frame and wood-covered wooden frame system with the "eye-filling" pattern. Wooden material is commonly used in the building (Figure 8).

Kabatas mosque: The building, which has a longitudinal rectangular plan in the north-south direction, consists of a two-storey narthex and a harim. The western lower part of the last narthex was later closed with a wall, and the upper chamber is glazed. It has I type mahfil floor. The wooden mahfil carried by wooden columns has preserved its originality (İltar et al., 2013)

Figure 9. Kabataş mosque **(**Zan Architecture, 2013**)**

In the interior, the walls of the sanctuary were plastered with a thin layer of plaster, and hand-drawn ornaments were made on the plaster. In the sanctuary, the women's mahfil, the pulpit, the altar, and the ceilings preserve their originality. The mahfil is supported by a total of six wooden columns, two of which are adjacent to the walls. The balustrades of the

mahfil, which has a balcony opening in the middle, are wooden and original. The ceiling of the sanctuary, which is covered with plain wood, is covered with hand-drawn ornaments. The pulpit and pulpit in the room are made of wood, and the mihrab is made of smooth-cut stone (İltar et al., 2013).

The wall surfaces of the facades are plastered with Khorasan mortar (a type of vernacular plaster) and there are hand-drawn ornaments on the south, east and west facades. The northern facade, where the two-storey narthex is located, is supported by eight wooden pillars. The upper part of the narthex is covered with wooden joinery. All of the walls of the mosque, which were built in a masonry system with andesite stone, were plastered and painted afterward. The columns, floor, and ceiling covering of the narthex are wooden. The room to the east of the narthex was built in a masonry system. The narthex is built on two floors and is supported by six wooden columns. In the interior, the floor and ceiling coverings, door, and window wings are wooden. The pulpit, lectern, and balustrade are wooden. (Figure 9).

Macahel mosque: In its first period, the mosque consisted of only a square planned sanctuary. In the second period, the single-storey narthex in the form of an open porch and a warehouse in the west were added. The I-shaped mahfil was enlarged in the second period and transformed into a U-type. The mosque has a wooden domed ceiling and a hipped roof with four shoulders (İltar et al., 2015).

Figure 10. Macahel mosque **(**Zan Architecture, 2015**)**

When entering the square planned sanctuary, the section under the mahfil is slightly elevated from the ground on both sides. The pavilion part of the mahfil is in a half-round shape. The interior wall surfaces are massive wood. The interior contains intense ornamental elements. The ceiling of the sanctuary consists of nine parts and there is a dome above the harim.

The facade has a plain and modest appearance. Up to the basement level is made of stone, and the next is made entirely of wood. The wooden masonry wall on the eastern facade was later completely covered with sheet metal. The main walls of the building were built with a wooden masonry system. The basement walls of the building were built with rough-cut basalt stone. Apart from that, almost all of the mosque is made of wood. Again, the worn surfaces of the facades were later covered with sheet metal (Figure 10).

3.2. Approach to the Sustainability of Wood Material in Mosques

Although the wood material is durable, it causes some problems over time. Moisture and precipitation cause chemical and biological (bacteria, fungi, and insects) deterioration. Deterioration/aging is also observed due to use. The problems observed in the mosques are changing size, splitting,

cracking, discoloration, rotting, breaking, and weakening. In some cases, the original texture is hidden as the wood is covered with different materials or paintings. In these situations, the façade is cleaned, cracks are filled with putty, damaged areas are replaced with hardwood, non-original finishing materials are dismantled, or the façade is scraped. Based on the art history research reports, the places and forms of interventions related to the four mosques were identified and included in Tables 1. (İltar et al., 2016; İltar et al., 2015; İltar et al., 2014; İltar et al., 2013).

Table 1. Wooden elements and forms of intervention

Elements	Place	Intervention
Column	In the mosque, the sanctuary, the mahfil and the narthex	-Surface cleaning, filling cracks and crevices with wood putty -Renovation of damaged parts from hardwood in line with the original -Removal of coating materials that spoil the original condition (Painting - Pvc- Sheet metal coating) -The ornaments (pencil work, ornamental cornices, wooden benches) should be scraped in a way that will not be damaged, and they should be renewed in line with the original. -Renovation of the damaged parts of the networked wooden belustrade in line with the original. -Scraping -Reconstruction of the entire item from hardwood, faithfully -removal of non-original plugins
Beam	Interior and Wall surface	
Floor	Sanctuary, mahfil and narthex floor in the mosque	
Wall Surface	Wooden wall surfaces in the sanctuary and mahfil area	
Belustrade	In mosques, the narthex is in the entrance area of the place, in the upper narthex, in the lower part of the mahfil, on the stairs, in the mahfil.	
Door	At the main entrance, on the upper floor, from the narthex to the gathering place.	
Window	Wall surface	
Ceiling	In the mosque, the sanctuary, the mahfil and the narthex	
Stair	Wooden ladder that connects the sanctuary and the mahfil,	
Pulpit; Lectern; Mihrab	Located in the sanctuary	
Wall Surface, Window Door Belustrade, Column	Facade	

4. Conclusion and Suggestions

These four examples and other mosque examples that we see in the rural areas of the Eastern Black Sea Region bear traces of vernacular architecture. They are works that show traces of folk architecture, in which the local construction technique is used in general. It is important to conserve the vernacular architecture of the region and the country to keep this architecture alive, which reflects the point where the use of wood in the region has reached.

The weak resistance of wood material in mosques against time and climatic conditions requires constant maintenance and repair. In these repair works, it was determined as the primary purpose to make repairs in accordance with the original. In general, an approach toward the conservation of the structural system, the original facade-plan character, and the original architectural elements has been exhibited in the maintenance and repair works of the mosques. In the conservation approach applied in mosques, the problems that arise as a result of the wear of the wooden material over time and the removal of the later additions were made. The rotten or damaged parts were partially or completely replaced in accordance with the original and the mosques were made usable. The sustainability of these mosques, which have their own unique architecture, is ensured due to their plan schemes, ornaments, construction techniques, and reflection of the local lifestyle.

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An Evaluation on Architectural Conservation Practices in Archaeological Cities

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1. Introduction

Cultural materials and artifacts of the past, with their historical traces, are an integral part of the living environment. This is clearly visible in architectural heritage sites and archaeological sites. As a heritage of a past civilization; archaeological sites as collections of artifacts and orders that have natural narrative power; has its own unique potential in providing historical information, among other physical factors. Physical products from our past to the present remind us where we came from, who we are and who we want to be. It enables us to better understand our identity, cultural continuity, people and social structure, our place in the world and our place in time. In this context, tangible heritage that bridges the past and present has the potential to bring us together as communities, increase tolerance between communities and ultimately develop us as better citizens. The preservation of tangible heritage is an observable practice in all cultures, reinforcing the idea that the preservation of places and places of the past is a vital function of society and contributes to people and social development (Kuban, 2000; Orbaşlı, 2008).

The idea of conservation shapes the society in which it lives. It is also shaped by the needs and dynamics of that society. Conservation is a complex process that includes decisions about what heritage is to be protected. Decisions about what to protect and how to protect are largely determined by cultural changes, social trends, and constantly changing political and economic forces. Social attitudes and beliefs can change over time. For this reason, it is expected that this is normal for the meanings and values attributed to cultural heritage to change over time. (Ahunbay, 1999; Kuban, 2000).

Cities, which are the products of different historical periods and certain social, cultural, anthropological, geographical and economic relations, are constantly developing and changing as a result of settlement and human actions. In this context, in order to understand the city, first of all, it is necessary to understand the social, cultural, geographical and economic values of the periods related to the city. Each period reflects its own lifestyle to the space and forms a link in the cultural chain. The formation, change, transformation and continuity of cities form a common memory from past to present (Demás, 2000; Feilden & Jokilehto, 1993; Madran, 1997; Rossi, 2006). In the changing and developing process, social communities want to hold on to certain places and times. In this context, social communities use material heritage to interpret their past and future. In this sense, conservation is not just about preserving the physical remains of the past. It's about saying something about ourselves, about the present generation, and about future generations. This situation necessitates that the cultural heritage should be considered in its entirety in the context of its environment, time and place. The integration of the cultural heritage from the past with the present context, the correct understanding of the data it presents, the comprehensive and systematic collection, analysis and reinterpretation of the obtained information reveal an important conservation problem. The past, present and future should be evaluated together in this context as different layers of the conservation approach. It should be considered that each layer has its own values, problems and potentials. In this context, many different periods that have come together or side by side until today are very important in terms of the historical

continuity of multi-layered cities and the continuation of their identity (Altınöz, 2002; Ahunbay, 2019; Jokilehto, 1999; Council of Europe, 2000). Value is expressed as the attributes that enable an object or place to be defined as heritage. Physical products from the past (tangible heritage) are valuable because of the links they provide between the past, the present and the future. In this context, the value-based approach; it refers to the properties and qualities of tangible heritage or objects. These features range from economics to aesthetics or symbolic. A heritage building or site can have several different types of value at the same time. These values are; historical and artistic values, social and civil values, spiritual and religious values, symbolic and identity values, research values, natural values and economic values. Historical and artistic values provide a physical connection with the past and represent the value arising from historical qualities and sensory qualities. Social and civic values; it symbolizes the methods of living together, working together and establishing relations of different parts of a community, and in this context, it is evaluated as the reflection of appropriate conditions and action needs on the space. Spiritual or religious values are concerned with the adaptation of tangible heritage to the beliefs and practices of a group. Symbolic or identity values refer to developing the capacity to associate or maintain group identity and social relationships with a heritage site. Research values consider heritage sites and especially archaeological sites as records of the past. Information detected in these areas; it has real and potential value for research, education and knowledge production. Archaeological sites, among other heritage values, enable us to evaluate the distant past, which has enhanced our understanding of humanity,

cultural, social, urbanization and technological development. Natural values derive from the role they can play in the ecology of a particular natural community. In this context, a heritage site also functions as a natural resource within this ecology. Economic values, on the other hand, form a distinct and powerful perspective on heritage values. The evaluation of heritage areas as an economic asset highlights the necessity of investment in order to regain these areas and ensure their sustainability (Mason & Avrami, 2000; Demás, 2000; Teutónico & Palumbo, 2000; Ahunbay, 1999; Stanley-Price, 2009; Kuban, 2000).

The rationale for discussing values under the concept of conservation is not a technical problem to be resolved. On the contrary, it stems from the effort to make sense of conservation planning as a social process. Values form a common language for understanding and talking about the different (often unmeasurable) achievements and stakeholders attached to a particular field. This common language creates a realistic picture of stakeholder interests. It also provides a basis for comparing and balancing them. Such a value framework allows us to understand the meanings that different cultures attach to protection. In this context, for a planning process based on values, a sustainable conservation planning model and sustainable participation; it can be considered as a model with broad participation, future-oriented, realistic and flexible, meaningful for many stakeholders (Mason & Avrami, 2000).

1.1. Archeology, Archaeological Cities and Their Conservation

Archeology, which is expressed as the branch of science that studies all kinds of fossils, tools, materials, structures, writings and fictional material remains belonging to cultures, civilizations and living things that lived in

the past or whose roots extend from the past to the present, social norms and spiritual cultural assets; it examines the unearthed cultures, works from prehistoric and ancient times by making use of many branches of science such as history, history of art, history of architecture, sociology, ethnology, geography, etc. Archaeological heritage; the basic data is expressed as the tangible heritage obtained by archaeological methods. It encompasses all traces of human existence and includes all forms of relics, including sites of human activity, abandoned structures, and all movable cultural material associated with them, including land and underwater sites. Archaeological sites are defined as settlements and areas where all kinds of cultural assets reflecting the underground, aboveground and underwater products of ancient civilizations that have survived from the existence of humanity to the present, and the social, economic and cultural characteristics of the times they lived. Researching and protecting archaeological sites strongly reshapes heritage values in the context of all these relationships (Bucher, 1996; ICOMOS, 1990; Jokilehto, 1999; Ahunbay, 2019).

It is clear that threats to the survival of archaeological heritage come from a wide variety of sources, but most of them are linked to the way modern societies have developed. Development is undoubtedly one of the main reasons for the destruction of our archaeological heritage. Demographic growth and expansion of settlements, especially loss of human existance in rural areas due to abandonment of rural areas following the urbanization processes in developing countries, agricultural purposes and mechanization of agriculture, land need for infrastructure growth, informal construction, mass tourism, looting problem, property ownership problem,

public works activities, lack of administrative and legal framework etc. are some of the most important reasons (Teutónico & Palumbo, 2000; Demás, 2000; Palumbo, 2000; Ahunbay, 2010).

There are many challenges in making the preservation of the archaeological heritage possible, meaningful and sustainable. From a technical point of view, how these areas can be protected, how much intervention can be made, what objectives should be considered, diversity, complexity, physical conditions, use and exposure to natural conditions of archaeological materials and structures, etc. makes conservation a difficult task. This difficulty is further exacerbated by social factors such as material deterioration, technical problems, looting, uncontrolled urban development and its damages, tourism growth, war and civil unrest, vandalism, rampant excavation, lack of financial and human resources, political debate and etc. Conservation practices carried out in archaeological sites within the framework of all these inputs; as a still developing professional field, it is in a period of development with new ideas and methods. In this context, ICOMOS (International Council on Monuments and Sites), ICCROM (The International Center for the Study of the Preservation and Restoration of Cultural Property), ICCM (International Committee for the Conservation of Mosaics), GCI (Getty Conservation Institute), ICOM (The International Council of Museums) etc. many institutions and organizations encourage the evaluation of conservation practices in archaeological sites within a professional field discipline by highlighting, teaching and following developments in value-oriented planning approaches and values-based conservation policies. For example, the conference on "Conservation of Archaeological Sites in the

Mediterranean Region" organized by GCI in 1995, brought together the archaeologists, conservationists, tourism experts and politicians to explore the administrative needs and problems of the region; in this framework, it aimed to develop values for conservation and value-oriented planning processes (Palumbo, 2000; Demás, 2000; Stanley-Price, 2009; Ahunbay, 1999; Ahunbay, 2010; Ahunbay, 2019; Kuban, 2000).

In Carta Del Restauro, published in 1931; whether it is carried out with the excavation or not; such emphasis is placed on objectives like; reinforcing damaged parts of each restoration; to examine all documents of art and history carved into stone, no less valuable than those preserved in museums and archives; to enable rigorous research, the results of which may yield new, unexpected findings to the history of art and production, etc. The expectation and necessity of not destroying any of the different periods that make up the monument, not making additions to mislead scientists, not distributing the material that came to light during analytical research, and associating the architectural monument with an artistic function, if possible, are expressed. Restoration problems arising from artistic reasons or architectural integrity concerns are closely bound up with historical principles and criteria; it is emphasized that the integration of a monument should not be hypothetical, but based on precise data and original elements, and the need for sound documentation. The necessity of avoiding any kind of integration in the works of antiquity; for integrating only anastylosis can be in question; that is, the process of combining the dispersed parts with the least possible additional and neutral material in order to reveal the general lines of the residue and ensure its preservation, is expressed. It is indicated that the demolition of the surrounding structures

of the monument and their inappropriate isolation; or the necessity of preventing the environment from being surrounded by disturbing structures with its quality, mass, color, style. In the excavations and researches where ancient artifacts were brought to light; it is emphasized that the works of arranging the remains from the soil and the continuous preservation of the works of art that will be left in-situ should be carried out in a systematic way (ICOMOS, 1931; Ahunbay, 1999; Ahunbay, 2019).

In the European Cultural Convention signed in Paris in 1954; under the main titles such as definitions of archaeological heritage, identification of the heritage and protection measures, financing of archaeological research and protection, collection and dissemination of scientific information, raising public awareness, prevention of illegal circulation of archaeological heritage items, mutual technical and scientific assistance, supervision of the implementation of the convention; the matters such as making an inventory of the archaeological heritage, classifying monuments or protected areas, establishing a systematic consultation mechanism between archaeologists, urbanists and builders, changing the structuring plans that are likely to destroy the archaeological heritage, taking measures to protect the archaeological heritage items in situ, etc. are included (European Cultural Convention, 1954; URL 1; URL 2; URL 3).

In UNESCO's Recommendation on International Principles to be Applied in Archaeological Excavations in 1956; the necessity of using tried-and-tested methods for the protection of the archaeological heritage; emphasis is placed on the necessity of continuous maintenance, conservation and restoration of the area (Ahunbay, 2019).

In the Venice Charter published in 1964; it is stated that the concept of historical monument does not only include an architectural work, but also includes an urban or rural settlement that is the witness of a certain civilization, an important development, a historical event. Article 9 states that the main purpose for the restoration of monuments is to preserve and reveal the aesthetic and historical value of the monument. It is also stated that an archaeological and historical survey of the monument should be made before and after any repair work is started. Again for archaeological excavations in the Venice Charter; it is stated that the excavations should be carried out in accordance with the scientific standards and the decisions defined by the international principles required to be applied in the archaeological excavations accepted by UNESCO in 1956, the necessity of protecting the ruins, the necessity of taking the necessary measures for the continuous protection of the architectural elements and finds. In this context, the necessity of abandoning all rebuilding techniques; emphasis is placed on only anastylosis, that is the reassembly of existing but separated parts (ICOMOS, 1964; Ahunbay, 1999).

In 1990, ICOMOS's Regulation on the Protection and Management of the Archaeological Heritage emphasizes the necessity of preserving monuments and sites in-situ, if protection cannot be provided, the archaeological heritage should not be excavated and should not be left open to all kinds of factors after it has been removed. The responsibilities of public administrators and legislators include taking inventory, documentation, excavation, research, ongoing maintenance, conservation, reconstruction, information, presentation, public access and use of cultural heritage, etc. matters are mentioned. Archaeological heritage is a non-

renewable cultural property, therefore the necessity of continuous protection and controlled land use decisions in order to prevent its extinction; emphasizes the importance of preserving monuments and sites in-situ by providing long-term protection and care. Regarding the reconstructions in the relevant statute; it is stated that it is necessary to rely on information and documents, and possible applications should be evaluated without damaging the existing archaeological data and original qualities. It is emphasized that no application should be made directly on the archaeological remains (ICOMOS, 1990).

In order to understand cultural values, it is very important to create a comprehensive and accurate infrastructure of the information obtained. In order to protect and ensure the continuity of protection, information should be evaluated systematically and rationally within the scope of conservation decisions and projects to be created. Cultural heritage and archaeological research naturally focuses on sites and associated features, architectural remains and artifacts as primary subject material. Excavation is seen as a way to obtain as much accurate information as possible from these materials; on the other hand, in addition to the many analytical techniques applied, the importance of various types of information that can only be obtained after excavation, such as verification of production techniques and artifact function, is also considered. In this context, the standard procedures followed in a conservation site protection; formal use by governing bodies after initial identification of a dissemination or competence; the regional surgical excavation and the subsequent excavation of the past exactly what they see as relevant; transforming raw data into usable data obtained by structuring, structuring, analyzing and

evaluating raw data; historical contexts of artifacts, artifacts and excavated areas; arrangement of the resulting groups according to their typological categories; documentation and cataloging; if necessary, protective preservation and storage methods can be provided. It is very important that these components of the data obtained from the archaeological heritage are comprehensive, usable and updatable (Council of Europe, 1992).

2. Material and Method

This study aims to make an evaluation on architectural conservation practices in archaeological cities. This evaluation is handled through the conservation problems and the conservation approaches adopted of archaeological cities and the architectural structures that make up these cities. In addition to archaeological cities and their formations, the building types and inventory in these cities are examined in the context of conservation applications through selected examples, urban conservation criteria accepted in the literature, the protection of archaeological sites and restoration techniques applied for protection. In this concept, 62 Archaeological Cities are examined in the study. This study is a compilation of conceptual definitions and legal framework in the context of archeological urban conservation and architectural preservation. In addition, it also includes a classification based on building types, specific to the archaeological cities in the Anatolian geography.

3. Findings and Discussion

3.1. Archaeological Cities and Architectural Conservation in Anatolia

In Anatolia, which has hosted different civilizations throughout the ages, it is possible to see the traces of many societies from Lydians to Phrygians,

from Hittites to Persians. Ancient cities that have survived from these civilizations carry a cultural richness from the past to the present, as well as physical richness spread over different time layers. These cities, which have hosted civilizations, can still be seen in almost every region of Anatolia with their well-preserved architectural structures, urban formations and ruins (Figure 1). However, in our country, where a large number of excavations are carried out every year, it is seen that the subject of conservation in archaeological areas is not planned as much as it should. Positive / negative results obtained from conservation practices reveal the necessity of planning conservation and correct management issues together.

Figure 1. Ancient Cities in Anatolian Geography (URL 4)

Civilizations revealing archaeological periods; they have been in interaction with other civilizations in many areas from establishing a city to art, belief and social life. It is seen that the influence of Sumerian, Etruscan, Greek and Roman civilizations is quite high, especially in urban planning and architecture. Each civilization has reshaped cities, architecture and art with their unique technical innovations. They reflected the political, social, economic, social and religious functions of the city on

public structures and their positions in the city. The buildings in the city center and the rest of the city are connected by street ties. Civilizations have produced very successful architectural structures with different qualities both in terms of aesthetics and usage. Especially in the Mediterranean geography, urban-public structures that come to the fore in this sense draw attention. In the positioning, shaping, and development of these structures; structuring of cities, as well as representing the architectural features of their periods; the creation of monumental architectures and urban spaces that will demonstrate the power of the civilization in which they were founded; development of new construction techniques and materials; Increasing the state's influence and religious influence, quality and power, in this context, the restoration of religious structures that have become more valuable than the past, or the construction of new ones; the effect of the military order on the city plan, etc. objectives have also been effective.

The prominent structures and their conservation status in different archaeological cities in different political regions in the Anatolian geography have been classified and evaluated within the scope of this study. In this context, Aiolis (Pitane, Elaia, Gryneion, Myrina, Kyme, Aigai, Larissa, Neonteikhos, Temnos), Bithynia (Nicomedia, Nikaia), Ionia (Phokaia, Smyrna, Klazomenai, Ephesos, Priene, Miletos, Didyma, Magnesia ad Meandrum), Caria (Stratonikeia, Tralleis, Alinda, Aphrodisias, Halicarnassus, Knidos), Kilikia (Antiokheia, Tarsos, Anemurium), Lydia (Thyateira, Magnesia ad Sipylum, Sardis), Lykia (Telmessos, Pinara, Xanthos, Patara, Antiph) , Mysia (Pergamon, Kyzikos), Pamphylia (Attaleia, Perge, Aspendos, Side), Phrygia

(Laodikeia, Amorium, Gordion), Psidia (Sagalassos, Termessos), Thrakia (Byzantion, Kalkhedon), Troas (Parion, Troia, Assos, Neandreia), Paphlagonia (Pompeiplois, Tieion), Galatia (Ankyra, Pessinus), Likaonia (Kilistra), Cappodacia (Tyana) and Pontos (Sinope, Trapezus) 62 archaeological cities, their urban-public building inventory and their conservation status evaluated in context. In this context; walls, castles and bastions, agoras, bouleuterions, temples, stadiums, gymnasiums, theaters, necropolises and heroa, libraries, odeons, latrinas, baths, basilicas, churches and chapels, palaces, obelisk and monuments, aqueducts and harbors in archaeological cities, were examined. Of the cities studied; 7 of them between 6000 BC – 3000 BC; 6 of them between 3000 BC – 1800 BC; 8 of them between the 19th century BC – the 10th century BC; 21 of them between 10th century BC – 6th century BC; 11 of them are from the 6th century BC and later; it is understood that it has been used actively over the years.

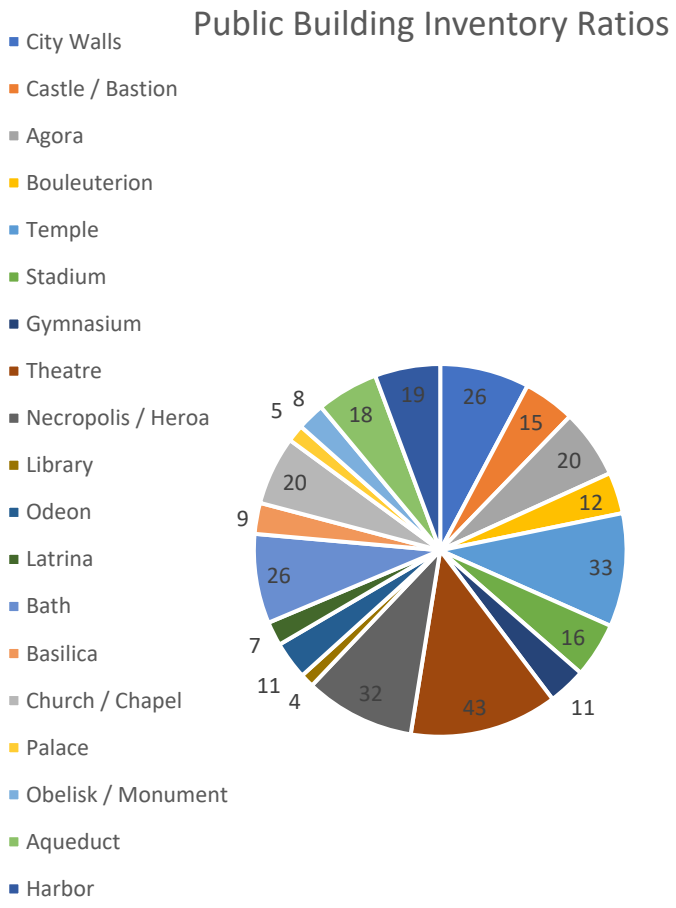

Figure 2. Ratios of Public Building Inventory in 62 Archaeological Cities Examined (Anabolu, 2001; Umar, 1995; Naumann, 1991; Gabriel, 1934; URL 5; URL 6; URL 7)

In 26 of these cities, there are Castle Walls or City Walls; it is seen that in 3 of them the building is present and restored, in 2 of them a part of the structure is present in place, and in 21 of them there are traces of

foundation or the existence of the structure is known from the sources. In 15 of the cities, there are Castles / Bastions; it is seen that 9 of them are in place and have been restored, and 6 of them have traces of foundation or the existence of the structure is known from the sources. Agora is located in 20 of the cities examined; it is seen that 1 of them is in place and has been restored, 9 of them exist in place, and 10 of them have traces of foundation or the existence of the structure is known from the sources. Bouleuterion is located in 12 of the cities; it is known that in 1 of them the building is present and restored, 6 of them exist in place, and 5 of them have traces of foundations. There are temples in 33 of the cities; it is seen that in 4 of them the building is present and restored, in 7 of them the building is present in place, and in 22 of them there are traces of foundation or the existence of the structure is known from the sources. Stadion is located in 16 of the cities; it is seen that 3 of them have the building or a part of it in place, and 13 of them have traces of foundation or the existence of the building is known from the sources. 11 of the cities have Gymnasiums; it is seen that in 2 of them the building is present and restored, in 3 of them the building or a part of it is present in place, and in 6 of them there are traces of foundation or the existence of the structure is known from the sources. There are theaters in 43 of the cities; it is seen that in 12 of them the building is present and has been restored, in 15 of them the building or a part of it is present in place, and in 16 of them there are traces of foundation or the existence of the structure is known from the sources. Necropolis / Heroa is located in 32 of the cities; it is seen that in 1 of them the building is present and restored, in 13 of them the structure or a part of it is present in place, and in 18 of them there are traces of

foundation or the existence of the structure is known from the sources. There are libraries in 4 of the cities; it is seen that in 1 of them, a part of the building is present and restored, and in 3 of them there are traces of foundation or the existence of the structure is known from the sources. Odeon is located in 11 of the cities; it is seen that in 1 of these the building is present and restored, in 6 of them the building or a part of it is present in place, and in 4 of them there are traces of foundation or the existence of the structure is known from the sources. 7 of the cities have Latrina; it is seen that 6 of them have the building or a part of it in place, and 1 of them has traces of foundation or the existence of the building is known from the sources. There are baths in 26 of the cities; it is seen that in 5 of them the building is present and restored, in 8 of them the building or a part of it is present in place, and in 13 of them there are traces of foundation or the existence of the structure is known from the sources. There are basilicas in 9 of the cities; it is seen that in 4 of them the building or a part of it exists in situ, and in 5 of them there are traces of foundations or the existence of the structure is known from the sources. 20 of the cities have Churches / Chapels; it is seen that in 4 of them the building is present and restored, in 2 of them the building or a part of it is present in place, and in 14 of them there are traces of foundation or the existence of the structure is known from the sources. it is known from the basic traces or sources that in 5 of the cities the Palace was located. In 8 of the cities, there are Obelisks / Monuments; it is seen that 7 of them have the building in place, and 1 of them has traces of foundation or the existence of the building is known from the sources. 18 of the cities have Aqueducts; it is seen that in 1 of them the building is present and restored, in 9 of them the building or a

part of it is present in place, and in 8 of them there are traces of foundation or the existence of the structure is known from the sources. It is known from the basic traces or sources that 19 of the cities have harbors (Anabolu, 2001; Umar, 1995; Naumann, 1991; Gabriel, 1934; URL 5; URL 6; URL 7) (Figure 2, Table 1).

When the 62 archaeological cities in the Anatolian geography examined within the scope of the study are evaluated in the context of the urban-public building inventory, it is seen that there are a total of 335 structures whose existence is known. While the existence of 190 of these 335 buildings in total can be understood from the basic traces of the buildings or the information in the sources; it is understood from the examinations and sources that 145 structures exist in whole or in part, and that only 45 of these 145 structures have undergone restoration at certain rates. In this study, in which architectural structures in archaeological areas are evaluated in the context of conservation practices; only 13% of the total 335 public architectural buildings; Among these structures, it is understood that 31% of 145 structures that are physically in place and fully or partially standing have been completely or partially restored and put into practice for conservation purposes (Table 1, Figure 3).

Table 1. Conservation status of public buildings in the 62 archaeological cities examined (Anabolu, 2001; Umar, 1995; Naumann, 1991; Gabriel, 1934; URL5; URL6; URL7)

	Total Number of Buildings	*Restored*	*In-situ Available, Not Restored*	*Found traces of the foundation / Known to Existence in Sources*
City Walls	26	3	2	21
Castle / Bastion	15	9	0	6
Agora	20	1	9	10
Bouleuterion	12	1	6	5
Temple	33	4	7	22
Stadion	16	0	3	13
Gymnasium	11	2	3	6
Theatre	43	12	15	16
Necropolis / Heroa	32	1	13	18
Library	4	1	0	3
Odeon	11	1	6	4
Latrina	7	0	6	1
Bath	26	5	8	13
Basilica	9	0	4	5
Church / Chapel	20	4	2	14
Palace	5	0	0	5
Obelisk / Monument	8	0	7	1
Aqueduct	18	1	9	8
Harbor	19	0	0	19
TOTAL	**335**	**45**	**100**	**190**

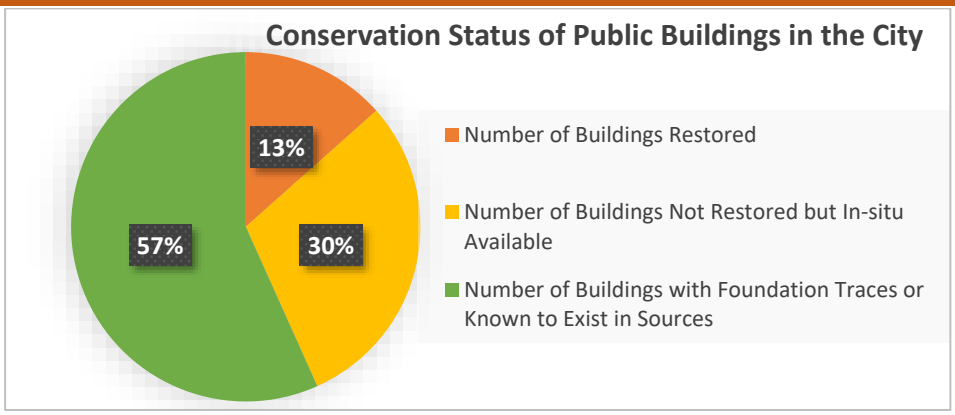

Figure 3. Conservation status of public buildings in the city (Anabolu, 2001; Umar, 1995; Naumann, 1991; Gabriel, 1934; URL 5; URL 6; URL 7)

4. Conclusion and Suggestions

Conservation practices can be successful if a systematic research is made on the artifacts and the environment they are in. It is clear that international norms and criteria in the context of conservation practices have a strong impact on archaeological sites and the practices carried out in these areas. These criteria and norms encourage detailed interdisciplinary research on the fields. The Venice Charter, adopted in 1964, emphasizes cultural, historical and aesthetic values in relation to conservation; and in the Burra Charter, the idea that conservation is a value-oriented process that focuses on the concept of cultural importance, and the effort to create a systematic approach in conservation planning, constitutes the basic ground for conservation practices.

Discussion of values is a very important issue in the first stage for the protection of archaeological sites. Knowing its values constitutes the determinant of protection decisions. The main reason for the preservation of the heritage should be considered based on the values given to it, rather

than its physical existence. However, when determining these values, the fact that they can change over time should be taken into account. In this context, although there are chronological researches and examinations based on the past on archaeological sites, these researches should be supported with the researches on settlement layout, architectural research, cultural and social research to reveal the values of the area better. The information obtained in this framework should be evaluated together with the environmental conditions.

Interventions such as conservation, cleaning, consolidation and anastylosis are predominant among other restoration techniques in conservation practices carried out in archaeological sites. In accepted international criterias; the low rate of integration applications and careful implementations; preservation of traces as part of a whole; the presence of wall traces and additions made to strengthen the remains; the newly constructed parts must be separated by joints or the material texture must be different; avoidance of techniques such as renewal and redevelopment, etc. are emphasized. In terms of usage possibilities; although the main purpose is due to the desire for the monument to participate in contemporary life; it is risky to organize concerts, theater, dance performances etc. attended by large masses; and that the pressure of intense use for tourism purposes is harmful, especially in the ancient theaters during the summer periods; also structural safety problems may occur due to spectator entrance above the monument's capacity; and that the electricity and the sound systems can cause deformations and deteriorations in monuments, is emphasized.

While evaluating the architectural preservation practices in the archaeological cities in the Anatolian geography; it is seen that the number of buildings subjected to restoration applications for protection purposes is quite low compared to the total number of buildings and the number of existing buildings in the examinations made on the building stock in these cities. Although international norms and criteria have been accepted in our country, the scarcity of architectural preservation practices in archaeological sites constitutes a contradiction. On the other hand, the intensive use for tourism purposes and the functional inputs in the context of cultural and social activities reveal that the desired level of success has not yet been achieved in the protection of architectural elements in archaeological sites.

While the archaeological sites are presented to the visitor as a socio-cultural element, it is important in this context that it is not overloaded, not subjected to pressures that will cause it to lose its value, and that the resulting deformations and deteriorations are eliminated with minimal interventions.

Acknowledgments and Information Note

The article complies with national and international research and publication ethics.

Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

All authors contributed equally to the article and there is no conflict of interest.

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A Model Proposal for the Use of Digital Museum Techniques in the Exhibition of Cultural Heritage

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1. Introduction

The study focuses on how digital museum techniques can be used in the exhibition of cultural heritage items. In this context, digital museum techniques that can be used to exhibit cultural heritage items include touch screens, digital audio and video systems, sensors, hologram technology, QR codes, simulations, virtual reality (VR), augmented reality (AR), projection mapping and mixed reality (MR). In the study, how the use of different digital museum techniques for the characteristic features of cultural heritage items mediates the comprehension of cultural heritage items by large masses is expressed with examples and a model is created with the data obtained from here. As a result, through this model, an exhibition scenario will be designed by considering the differing features of cultural heritage items and the methods which allow visitors' experience of cultural heritage items to be diversified. Chatel (2019) lists the pioneering digital museums using the hybrid techniques including Whitney Museum of American Art (New York, US), ZKM Center for Art and Media (Karlsruhe, Germany), New Museum (New York, US), Walker Art Center (Minneapolis, US), Museum of Modern Art and MoMA PS1 (New York, US), Institute of Contemporary Art (London, UK), Ars Electronica Center (Linz, Austria), San Francisco Museum of Modern Art (San Francisco, US), Serpentine Galleries (London, UK), Beall Center for Art + Technology (Irvine, CA), Victoria & Albert Museum (London, UK), HeK, InterCommunication Center (Tokyo, Japan), FACT (Liverpool, UK), Hartware MedienKunstVerein (Dortmund, Germany), LABoral Center for Art and Industrial Creation (Gijon), The Frankfurter

Kunstverein (Frankfort, Germany), Bildmuseet (Umea, Sweden) and Haus der elektronischen Künste (Basel, Switzerland). The common features of these museums mostly circulate around changing the facets of digital art, exhibition and presentation techniques via contemporary installations. The study focus on common techniques and future applications which ease to create a model for the exhibition of cultural heritage items.

1.1. Museology for Heritage, Architecture and Technology

Tzortzi (2015) also has some basic inferences that there should be a relationship between the individuality of museums and the spaces they represent. There are great differences between museums that create a sense of personal discovery and museums that are too didactically concentrated, both in terms of furnishing and museum work. The differences are based not only on the layout, but also on the use of technology and the theoretically well-founded relationship between technology and visitors. Museums are a unique field of experience in terms of being a place where specialties related to many fields such as architecture, curation, and exhibition design can exhibit their own productions and directly connect with the visitor. In this context, it is essential for the exhibited products to benefit from technology in order to establish a correct connection with the visitor (Tzortzi, 2015). According to Žunić, Šćitaroci and Barišić (2023), the role of museums in the development and support of urban areas should be encouraged by different initiatives, and museums should be categorized according to their fields of study and specialization areas should be created in the context of museology in order to improve the relationship between museums and technology. Conceptual frameworks that evaluate the

interaction between museums and the city are weak in conveying the reflections of modern globalization and migration in museums and architecture (Žunić et al., 2023). Similarly, Wasielewski (2022) mentions that the efforts of the closed art museums to find a new virtual interaction space due to the effect of the pandemic have led to sensitivities about the development of an interface where direct interaction with visitors can be provided, not only as a virtual reality solution. The use of technology has come to mediate the users' assimilation of the items exhibited in the museum and their establishment among these items, regardless of the place. Thanks to many pioneering efforts, such as Google's increased efforts to mass digitize and accumulate data, it has become an acceptable reality for museum administrations that there is a direct link between technology and contemporary museum studies (Wasielewski, 2022).

Lyu (2019), on the other hand, emphasizes that since the 1960s, since architecture has been interpreted as a system of signs by structuralism, it cannot be positioned as a discipline that is directly related to the public, neither in museums nor in practical application areas. In order for architecture and museology to find a response in terms of spatial configuration and semantic integrity, it has become a necessity, not an option, to use technology directly and to benefit from technological presentation opportunities in a coordinated manner (Lyu, 2019). According to Olinsson (2023), just as open-air museums have a special ability to develop pedagogical tools and care for intangible heritage resources, all museums need to develop a strategy on which features the circulation areas are beneficial for exhibiting the product. In detailed

researches on open-air museums, it is seen that open-air museums have great contributions to support sustainable economic development in terms of cultural heritage. This situation shows that museology is a strategic position in terms of special works that are aimed to be protected (Olinsson, 2023).

2. Material and Method

The method of the study consists of the steps of examining the differences in the contemporary exhibition forms of cultural heritage items through literature review and the digital exhibition methods that can be used in this context and creating a model. Cultural heritage includes places, items and practices that a society considers ancient, important and worthy of protection; architecture, rituals, traditions, local knowledge, social interactions, arts and crafts, music, political and ideological beliefs, history, practices related to the natural environment, language, sports, habits and traditional clothing contains components. Exhibiting cultural heritage items with digital museology techniques not only helps visitors grasp the exhibited items through different interaction methods, but also conveys cultural heritage items to the future in a contemporary language.

3. Digital Museum Techniques in the Exhibition of Cultural Heritage

Digital museum techniques that can be used to exhibit cultural heritage items include touch screens, digital audio and video systems, sensors, hologram technology, QR codes, simulations, virtual reality (VR), augmented reality (AR), projection mapping and mixed reality (MR). In this context, "touch screens" is one of the most important technological developments that should be evaluated. Sato and Guo (2016) point out the

importance of installing a demo and operating system using multimedia technologies such as a multimedia touch screen desk system, and mention some innovations that can improve presentation and make it easier to use. It also offers an attractive business area for educating the public on specific topics. The basis for advancing a series of technological developments that will produce high-resolution 3D digital models of cultural heritage and improve its presentation is to develop complex and incremental setups that will bring touch screens to visitors (Sato and Guo, 2016). Similarly, White (2022) points out that while technology companies connect people through touch screens, there are no strong studies on how these connections can be deepened through technology. At the same time, considering that the social equivalents of cultural heritage can express different levels of sensitivity, information should be given about the anatomical and mental harmony and experiential values between cultural heritage items and visitors. All these suggestions and concerns about the future can mediate the physical and emotional establishment of social networks in order to establish a relationship between the way users feel and their areas of feeling. This means positioning touch screens as a powerful physical and emotional transmission tool that serves to connect cultural heritage and visitors, while experimenting with innovative technological solutions in the presentation of cultural heritage in contemporary museology practices. With the Touch Screen Theory, meaningful measures can be taken to eliminate the possible crises experienced in this process and the bond between the exhibited and the viewer can be gradually strengthened (White, 2022).

Contributions to be made to the process of displaying cultural heritage with "Digital audio and video systems" cover a much wider area than touch screens. Jovaišaitė-Blaževičienė (2022) deals with this issue through the discourse of play and argues that the object of culture that needs to be exhibited can be successfully transferred to the visitor by examining the concept of play in museology. It is a realistic outcome in this sense that the game finds a more digital response in contemporary museology. The games, which are shaped in spatial, temporal or a certain rule axis, help the cultural heritage object to be gradually assimilated by the visitor. The immanent action in the play and each of the basic elements that make up the game describe a separate spatiality, and the visitor, who will take a tour between these spatialities, is expected to complete the exhibition pattern realized in the museum by establishing these semi-concrete bonds itself. In line with contemporary technological developments, "digital audio and video systems" will always remain up-to-date, even if the intelligence and material used change. For this, the most valid way is to position the visitor as a player (Jovaišaitė-Blaževičienė, 2022). Related to this issue, Volkova et al. (2021) mentions that the development of media technologies in the field of communication in the context of the evolution of museology is not only a problem of interdisciplinary approach, but also a field of study that needs to be furthered through a detailed analysis of modern media technologies and the use of museology. The fact that the so-called electronic distance revolution creates completely different expansions in the use of museums, schools and hospitals, far from past experiences based on close contact, stands out as steps that should be considered in this

context. With the transition to distance education and telemedicine, the authors point out that the demand and importance for universities, hospitals and museums that have switched to active use of modern media technologies over time, point out that visitor experience can be used as a completely different educational tool with the help of digital audio and video systems. In approaches where the use of media is insufficient and haptic solutions come to the fore, sensors are primarily included in the theory. In this regard, Maliushkin and Berezkov (2017) mention that sensors using iBeacon and Eddystone technology provide personalized information packages to help users interact with museum visitors by enabling cross-platform switching. In this context, not only the interests of the user, but also many criteria such as his speed preferences and age are added to the data provided by the current location, and it associates the movements of the users with an algorithm and provides an algorithmic breakdown of the preferences of the users' movements in the space. In this system, which aims to create a pattern similar to the physical world among museum objects thanks to Bluetooth Low Energy technology, an ecosystem is created in which all data about the environment is updated in coordination with the museum in relation to the Internet of Things theme. While visitors experience music and works in this ecosystem, they feel themselves in a dynamic ecosystem, in a setup that can easily adapt to the contemporary changes of the museum (Maliushkin & Berezkov, 2017). A strong example that the remote access methods provided via iBeacon and Eddystone are not the only uses for sensors are from Frasca et al. (2022). The role of sensors in the microclimate areas created within the space is

very important in terms of customizing the microclimate close to the artworks. When the analyzes of both adjacent rooms and separate areas are made, a gradual configuration is required in order to evaluate them rationally with different air conditioning solutions for their functions. In this regard, sensors are able to offer physical solutions beyond media and haptic fields by providing the necessary climate solutions for the exhibition of works of art and the correct positioning of cultural heritage by mediating the assimilation of contemporary museum techniques by the visitors in the most efficient way (Frasca et al, 2022). As a result of the theoretical research, the use of these elements together is seen as the most easily relatable interactive technological partners in museum techniques, and the related problems and needs contain data that cultural heritage items can be grouped in this way in the easiest and most relevant way with contemporary museum techniques (Figure 1).

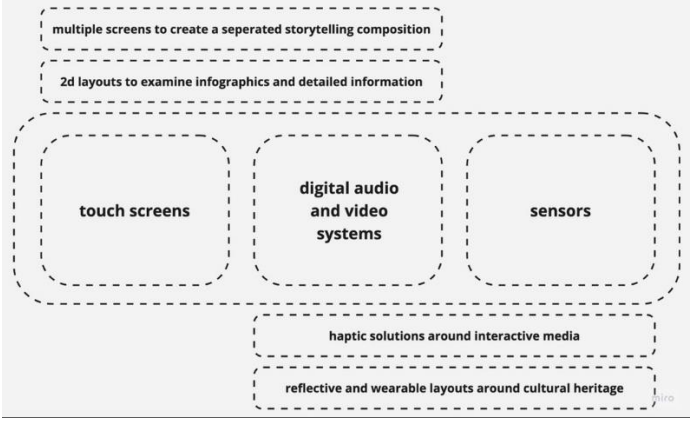

Figure 1. Touch screens, digital audio-video systems and sensors grouped for the initial part of a technology based and cultural heritage architecture related museology scenario.

Similar to the fact that sensors can be evaluated in flexible images related to the promotion and display of cultural heritage items, holograms also have important potentials in terms of displaying the cultural heritage deceased. Mentioning the importance of using holograms in architectural education, El-Gammal (2020) mentions that basic cost problems can be overcome by using the 'Cheoptics 360' hologram technique. If basic cost issues arise, between architectural education and interactive experiences aimed at increasing the user experience of Holographic solutions, health-related education courses, especially computer-aided design and architectural courses, educational workshops that prioritize interactive versions, and a series of special workshops aiming to use holograms not only for entertainment but also in education. says that work can be produced. The criterion of developing interactively with technology in holograms basically relates the level of interacting with people to a more complex level. From this point of view, by presenting a conceptual scheme in the entertainment industry, discussing how holograms can enhance people's experience and how they can be applied in different media regardless of cost-oriented concerns is a sub-title that can be directly related to contemporary architecture in terms of museology. Law-based holograms based on laser technology will be successful and widely disseminated to the extent that they can be used to convey complex functions such as anatomy courses to the audience. This provides a workspace that allows the exhibition units to interact directly with the visitor and allows visitors to have a deep experience through the hologram effects of cultural heritage entities (El-Gammal, 2020). Alshereif (2022),

on the other hand, emphasizes that creating a hologram image of three-dimensional objects in space will be valuable in terms of exhibiting cultural heritage. In this context, it is very important to offer a solution that will create an illusion with the help of three-dimensional models, shake the visitors' perception of space and completely change the perception of space formed by the visitors with the new pattern it presents. It is very important for hologram techniques to assign a completely new meaning and context to a space, to represent cultural heritage items and to be able to be applied between contexts with a correct language and approach. A hologram technology that mediates the instantaneous change of the outputs of the design and the designer provides a much more effective visitor experience and adds the feeling of continuity and renewal to the creativity, extending the follow-up and influence time of the visitors (Alshereif, 2022). The developer experience offered by the programs offers QR codes in another way. Since QR codes work as quick response codes, they mediate to provide very fast and effective solutions in survey processes and in delivering standardized instruction sets to users. QR codes mediate the easy fluidization of detailed instruction sequences between interfaces by providing efficiency, productivity and satisfaction and a fast solution partnership with smartphones and websites, and helps the exhibited products to be easily assimilated and accessed by all user profiles (Rivas and Schulzetenberg, 2023). This feature creates very productive results especially in terms of products and services that should be reached by different age groups, and offers an equitable solution to eliminate the age gap, the difference in intellectual capacity, and the possible differences in

sensitivities between the masses. From this point of view, the use of QR codes can be defined as an accelerator that facilitates the easy assimilation of products as cultural heritage items by individuals from very different profiles.

Scenarios on how simulations can be used in museums in terms of displaying cultural heritage items can yield fruitful results if the simulations are handled through their use in architecture. Airflow simulations, which are a stage of efforts to increase efficiency and improve naming, aim to present a solution proposal that aims at maximum efficiency by passing many sequential design steps in the design processes. This efficiency-based approach mediates the creation of a narrative between the visitor and the exhibited product in the display of cultural heritage items and enables possible scenarios to be seen by the visitors simultaneously (Jo and Jones, 2023). At this point, we can talk about a visit experience that simulations create a sense of virtual reality. With the help of ActoViz, it is seen that computer support is positioned to play a role in determining people's movements and their next trip preference. The features of virtual reality technology, such as making the experience of the users personal and mediating the creation of the unique characteristics of the places by listing the atypical features in the space, force it to establish a connection between the exhibited product and the person watching the exhibited product. At Nike, virtual reality proposes a series of alternative actions that help users who experience the island position themselves by examining the movements and behavior of other users as well. This means that agents and avatars define the space with the formation of multiple

options in the space (Lee et al, 2023). As a result of the theoretical research, it has been reached that the use of these elements together can be grouped in this way in the easiest and most relevant way with contemporary museology techniques (Figure 2).

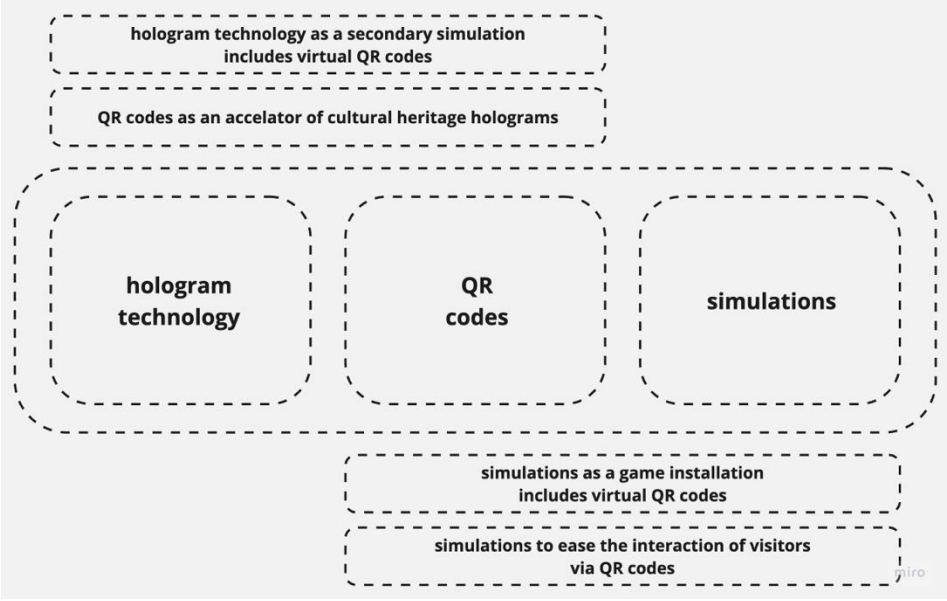

Figure 2. Hologram technology, QR codes and simulations grouped for the initial part of a technology based and cultural heritage architecture related museology scenario.

In CAD-based software and contemporary computer-aided drawing solutions, it is seen that the options that are decisive in building architecture and that directly affect the design are chosen by both customers and employers from different renderings offered by different visualization tools. These renders aim to present the architectural output in the shortest and most efficient way, not only as a three-dimensional modeling output, but also by paying for plans, sections, views or perspective sketches. Since the strategies here support the use of

architectural technology in the direction aimed at the exhibition of architectural products, there is an elastic binding between the displayed cultural heritage element and the VR solutions offered by technology (Ashgan et al, 2023). Related to this issue, it appears that the current methodology in building information modeling systems needs to be updated to present an analysis of the prevailing trends in architectural engineering and civil engineering. Building information modeling technologies are focused on delivering risk prevention and right-hand operations during the construction phase and transferring them to the field through a workflow patch aimed at action efficiency. In this context, the coordinated response of artificial intelligence and virtual reality applications in the field can only be possible if the exhibited product can be transferred to the field in three dimensions and updated simultaneously in the field. The quality of applicability in this regard minimizes the risk and prevents possible accidents at the construction site (Schiavi et al, 2022).

The robotics industry, which is positioned as one of the most successful uses of augmented reality, focuses on how possible problems in digital manufacturing areas can be opened in terms of human computer interaction. In this context, it is aimed to list two-dimensional and three-dimensional drawings in a way that will be included in the product portfolio with the help of increased augmented reality so that digital manufacturing products can find a place in the industry. Data sharing, implementation of holographic instructions, listing and comparison of statistical analyzes between products can be counted among the

advantages of augmented reality (Song et al, 2021). Although architecture students' access to and application of augmented reality and artificial intelligence applications differs between institutions, statistics show that students tend to perceive artificial intelligence and augmented reality-based simulations and training models more easily. The positioning of architectural schools as actors directly contributing to the innovation process, benefiting from the technological opportunities offered by the industry in this field, has important consequences for both the cultural heritage items to be exhibited and the visitors who experience those items (Kusumo & Poh, 2022).

Another contemporary presentation and display technique, which can be listed as the last of the above technological display possibilities, is known as projection mapping and mixed reality (MR). As one of the main achievements of the projection mapping, mixed reality (MR) and MR technologies, which represent procedural measurement information, material characterization and decay state, in solutions realized with topographic, laser scanning and photogrammetric methods, the observer can constantly communicate with physical reality. The dynamic realization of data transmission to develop sensory perception can be directly used in the exhibition of cultural heritage items, where the intersection of art and architecture can be presented and exhibited in an organized way, and it is a special experience that can make visitors question their knowledge and their reactions to exhibited item. (Martino et al, 2022). MR technologies, which represent procedural measurement information, material characterization and decay state in solutions realized by topographical,

laser scanning and photogrammetric methods, also contain many potentials where the observer can constantly communicate with physical reality. The dynamic realization of data transmission and the provision of a richness to develop sensory perception can be directly used in the exhibition of cultural heritage items, an area where the intersection of art and architecture can be presented and exhibited in the easiest way, and it is a special experience that can make visitors question their physics knowledge and their reactions to physics. can survive (Martino et al, 2022). It is known that another main area in which MR technology is used is space technologies. Solutions based on the combination of MR and AR span a comprehensive field of study, from designing and installing virtual environments for astronaut training to detailed and incremental modeling of the experience of those going to space. The limited perception forms offered by the physical world are thus deformed and the space exhibited and the space used are intertwined. This means that the concepts of visitor, audience and user are intertwined. This shows that solutions based on the combination of AR and MR bring together the product, space and user on the basis of action and create a dynamic whole from this unity (Basu et al, 2021) As the output of the related theoretical research, it has been reached that the use of VR, AR and MR elements can be grouped in this way in the easiest and most relevant way with contemporary museology techniques (Figure 3).

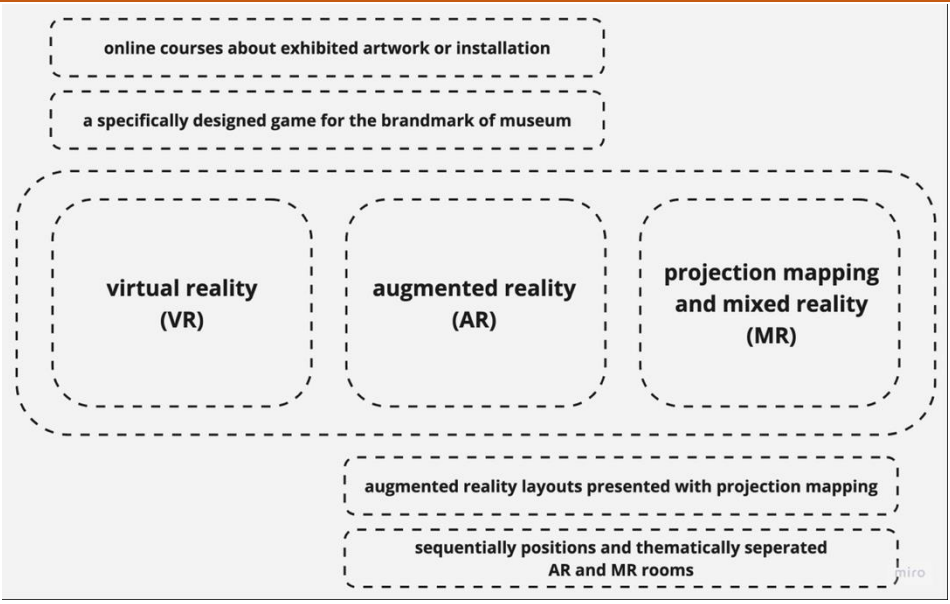

Figure 3. Virtual reality, augmented reality, projection mapping and mixed reality grouped for the initial part of a technology based and cultural heritage architecture related museology scenario.

4. Conclusion and Suggestions

When a theoretical evaluation is made on how cultural heritage items can increase the interaction of the exhibited product with the visitor, it has been seen that making some functional basic groupings in this regard may be beneficial in terms of developing flexible solution scenarios. Theoretically, the use of different techniques sequentially and within different groupings mediates the positioning of museum techniques according to specific solutions in the exhibition process of cultural heritage items. In this context, touch screens, digital audio-video systems and sensors are considered as a group. The second group is hologram technology, QR codes and simulations. Finally, the third group is listed as virtual reality, augmented reality, projection mapping and mixed reality.

Through Output 1, it is aimed to use sensors, hologram technology and virtual reality together. Output 2 is enhanced by the next step up of the integrated system combined with the use of touch screens, digital audio and video systems, sensors, respectively. At this stage, a secondary holistic system is created by using hologram technology, QR codes and simulations together. In the last step, an integrated system is created from the steps of virtual reality, augmented reality and projection mapping and mixed reality (MR). Output 3, on the other hand, appears as another abbreviated solution proposal. Here, sensors, QR codes and augmented reality are used together. Output 4, on the other hand, is positioned primarily to use digital audio and video systems in collaboration with simulations, and ultimately to give the final interactive identity to the product to be exhibited with the help of projection mapping and mixed reality (MR). According to the sequential usage of the elements emphasized in theoretical research, the use of all scenarios can be grouped in 4 pathes with the most relevant way solutions for the exhibition of cultural heritage focused contemporary museology techniques (Figure 4).

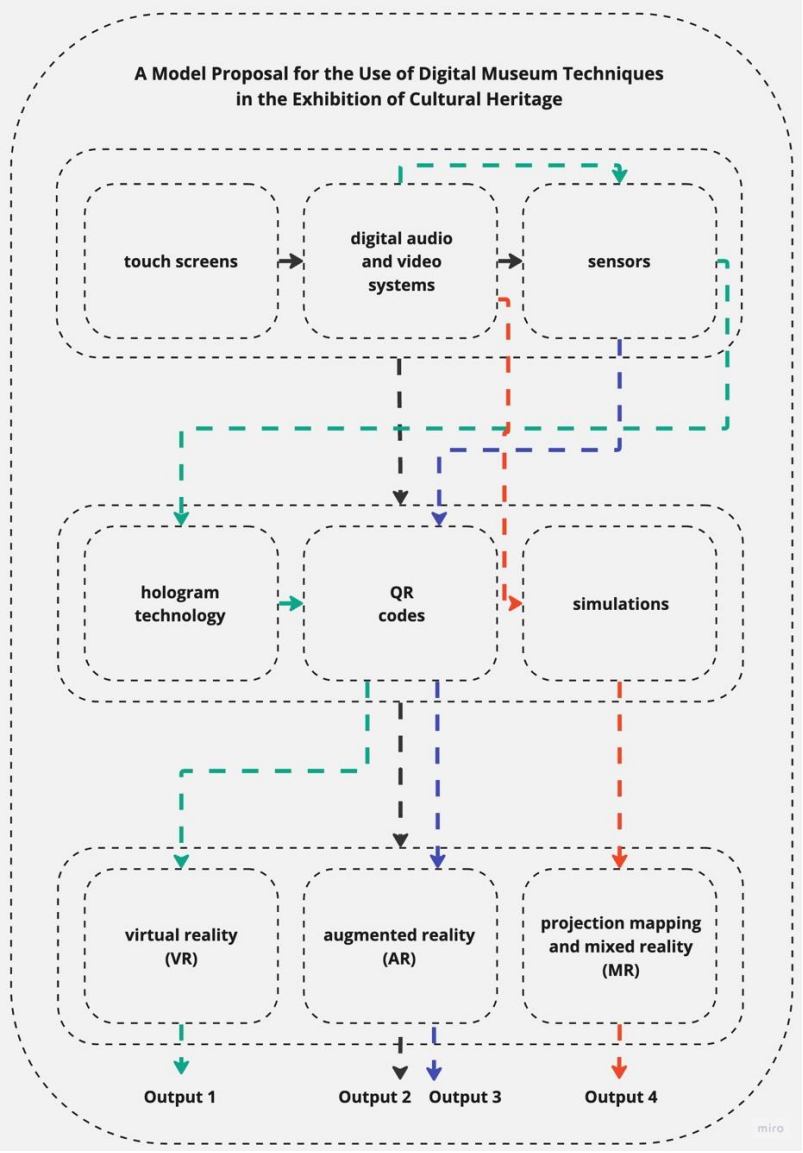

Figure 4. A Model Proposal for the Use of Digital Museum Techniques in the Exhibition of Cultural Heritage.

Seen in this order, the four scenarios have their own unique solution propositions as follows:

- Output 1 first deals with wearable and spatially diversified interfaces where digital audio and video systems are used with sensors. These interfaces enrich the display of cultural heritage items by using hologram technology and accelerate visitors in the area where cultural heritage items are exhibited with the help of QR codes. By combining virtual reality elements with hologram technology, sensors can enable users to have a haptic experience and establish relationships between spaces, for example, while experiencing the interior design of a historical excavation site or a renovated space base.
- Output 2 focuses on designing interfaces that use touch screens, digital audio and video systems, and sensors, respectively. This combination helps to provide rich dramatic experiences in the space and to handle simulations where hologram and QR codes are used together with all reality applications. At this point, including the use of projection mapping in the area allows scenarios where cultural heritage items are mapped on the plan plane or can be visited on the section plane.
- Output 3, on the other hand, provides a pattern in which sensors, QR codes and augmented reality applications are used together, mostly VR glasses and specially produced for these scenarios, supporting games of solving questions, reaching prizes or earning badges by gaining experience. In this way, visitors find a space where they can absorb the cultural heritage items exhibited in the museum.

- Finally, Output 4 can excel in the presentation of historical infographics that promise continuous leaps between the real and the virtual by supporting digital audio and video systems with simulations and offer visitors the opportunity to compare. Historical infographics and special retrospectives offer a homage and reminder to the transformation process of items that have a special place in cultural memory, such as historical leaps, fossils, wars, disasters, transformed or destroyed structures, with the help of MR technologies.

With the coexistence of all these scenarios and the help of stretching areas, a fluidity can be achieved between contemporary museum techniques. New technologies to be used in contemporary museums will ensure that both architectural products and cultural heritage items are conveyed to visitors with a creative, three-dimensional and intertemporal presentation language that goes beyond traditional presentation techniques.

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The article complies with national and international research and publication ethics.

Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Disclosure Information

All authors contributed equally to the article and there is no conflict of interest.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-9

The Resilience of Cultural Heritage: Zal Mahmud Pasha Kulliye as an Example of a Building Ensemble that Resist Time

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1. Introduction

Building structures that have been standing strong for centuries come to constitute as a proof document and possess information about resilience in the face of disasters (earthquakes, floods, landslides, etc.) triggered by many natural hazards during their life spans.

In recent years, the term 'resilience' has been highlighted in disaster studies and its relationship with the concepts such as risk, resilient cities, climate change and cultural heritage has been evaluated in the field of cultural heritage conservation.

Cultural heritage studies aim to archive, preserve and experience the histories of civilizations as represented in the architecture, cultural traditions, monuments, landscapes etc.

Heritage conservation efforts have an important role to play in sustainable practices, as heritage itself makes a connection with the environment (Eyüboğlu & Büyükçam, 2023). In settlements that have developed over hundreds of years, the mutual harmony of people and the environment of values reflect and represent traditional knowledge and convey the landscape characteristics and craftsmanship of the relevant period (Bronner, 2006). These heritage values and cultural landscapes, whose contribution to sustainable development and psychological well-being cannot be denied (Fidan & Önür, 2021), are under threat due to natural and man-made risks.

The principle risks that cultural heritage may face are categorized as environmental and anthropogenic risks: The environmental risks contain

sudden environmental impacts that affect the assets and are expressed by events such as fires, floods, earthquakes, etc., the occurrence of which cannot be predicted in advance. The social risks, on the hand, include economic activities, vandalism, wars and unintentional risks (Rajcic & Zarnic, 2016).

The perpetual recreation of heritage is characterized through the perspective of sustainability and resilience. The fear of losing the past translates into the fear of losing identity. The essential issue is the change in the preservation of identity. How does the community as a whole govern the change? How does it keep up with the change? Managing the change offers risk mitigation as well as assurance strategies for social and economic development (REACH, 2020).

1.1. From Risk to Resilience

To this day, little attention has been paid to the cultural activities related to the resilient communities and how cultural heritage can act as a catalyst for building more resilient communities. It is crucially significant to emphasize how the cultural heritage activities build collective resilience (Beel, 2015).

'Resilience' is defined in the Intergovernmental Panel on Climate Change Special Report as follows: "The ability of a system and its component parts to anticipate, absorb, accommodate or ameliorate the effects of a hazardous event in a timely and effective manner, including ensuring the protection, restoration or enhancement of its basic structure and functions". The concept of resilience includes the preservation of basic structures and becomes an intertwined phenomenon when the historical environments are

considered (IPCC, 2012). In the regions with a multi-layered historical past with tangible and intangible values, the impacts of hazardous events, even if they are managed correctly, make resilience capacity more sensitive, complex, and very effective (Kishalı, Karakoyunlu, & Songur, 2019). Resilience is crucial simply because it illustrates the capacity of the system to regenerate and reorganize itself after disruption- providing risk mitigation and assurance strategies for the management of change and social and economic development (REACH, 2020).

While the concept of resilience is often defined in terms of how communities respond to the external impacts (Pike et al. 2010), Skerratt (2013) sought to address 'how human agency was at the center of resilience' about the ongoing production of community heritage resources (Skerratt, 2013).

According to David E. Beel (2015), in the context of community heritage, the concept of resilience as human agency is useful in the following ways: “It provides an appropriate understanding of how different cultural repertoires are preserved and passed on to the subsequent generations. It also neatly describes the range of relationships and connections that continue to sustain these cultural repertoires today, as the current studies move towards digital forms”. The concept of resilience is to understand the 'topologies of relationships between people' (Adams & Ghose, 2003) and consider how this comes to exist in both physical and virtual forms. In order to understand this form of resilience, it is essential to consider the importance of cultural activities as a key driving force for these actions (Callaghan & Colton, 2007).

The United Nations Office for Disaster Risk Reduction (UNISDRP, 2012) informed about the Venice Declaration, which affirmed the principles and key guidelines for raising community residents' awareness of the potential of cultural heritage for resilience and integrating all heritage actors into disaster reduction plans.

"Resilience has become a central concept in the cultural heritage discourses since the early 2000s. The concept of resilience has been expanded from a disaster-based approach to the tangible cultural heritage. This was reflected in the 2012 Venice Declaration (2012), which emphasized the role of cultural heritage in community resilience. In this context, cultural heritage emerges not only as a value that needs to be preserved but also as a tool that provides resilience to the communities and allows them to create a reserve that increases their ability to regenerate themselves (REACH, 2020). In the context of the above-mentioned cases and examples, according to Boccardi and Scott (201), “past experiences have shown that the degradation of natural resources, urban sprawl, and poorly designed new constructions have the potential to increase the vulnerability of communities. Nevertheless, a well-preserved and sustainable historic environment, which is based on the transmission of traditional knowledge and skills, reduces the vulnerability of areas and strengthens the resilience of communities” (Boccardi & Scott, 2014).

REACH (2020) described what can be acquire from the resilience of heritage values as follows: “The intertwining of traditional and modern construction practices provides an environment for contemporary architectural productions in the existing traditional urban fabric. In this

way, not only ownership of architectural heritage, but also partnerships between disaster managers, local communities, and heritage or other specialists in institutions such as universities and non-governmental organizations are strengthened". UNESCO (2013) stated that "education and research, including traditional knowledge, are the most effective means of being prepared for anticipated and potential hazards".

The disasters triggered by increasing the natural hazards and climate change have been causing serious damage to the built environment, modern architectural heritage and cultural heritage. In addition to the damage done to the heritage values, sustainable development prospects have also come to be weakened based on the damage to the resilience of communities, local resources and capacities (URL 1).

In order to minimize the impacts of ever-increasing disasters and the climate change on heritage, a series of declarations were signed in 2015 and the following period for the preservation of cultural and natural heritage. Following the meeting organized by the United Nations in 2015, the "2015-2030 Sendai Framework for Disaster Risk Reduction" was approved. "2030 Sustainable Development Goals" were established by the UN. The SDG 11 calls for making the cities and human settlements inclusive, safe, resilient and sustainable. Its sub-target, the SDG 11.4, focuses on strengthening the efforts to protect and conserve the world's cultural and natural heritage. Furthermore, the SDG 4 calls for better training and education that can facilitate bringing the cultural values under the umbrella of sustainability (UNISDR, 2015; UNDP, 2015).

In 2019, the ICOMOS Climate Change and Cultural Heritage Working

Group published "The Future of Our Pasts: Engaging Cultural Heritage in Climate Action" (ICOMOS-CCHWG, 2019). One of the most important inferences to be made here is that the information to be obtain/learn from the past disasters will guide how to take precautions against the hazards that may be encountered in the future and how implement the risk reduction-preparation studies should be implemented/ carried out. Both structural resilience and social resiliencecan be learnt from the historical buildings.

At the Budapest conference (2018) and the conferences and meetings on resilience organized by REACH in Prague (2020), one outcome of the debates was that "trying not to fossilize the objects, ideas or practices is key to making heritage resilient" (URL 2). This initial recognition of the need to adapt to the change to build resilience was further developed through the workshop sessions in Prague (REACH, 2020).

Resilience has the ability to 'leap forward' through processes of adaptation and transformation and requires permanent changes (EC, 2020). Similarly, architectural heritage, as an important component of cultural heritage and the built environment, is a 'leap forward' point to ensure the resilience of cities, given its place in individual and urban memory.

The key issue in these agreements is that the sustainable design methods, climate change adaptations, the role of the public and NGOs in the process, and the implementation of state policies are the steps that support each other in the heritage conservation efforts (Gündoğdu & Acar Bilgin, 2023). Documentation of the traditional/local building production knowledge, traditional materials/resources, and knowledge of traditional/local

livelihoods, learning about the durability/resilience of the structures that have survived for hundreds of years from this knowledge will minimize the vulnerability of communities (Gündoğdu & Ünal, 2020).

The traditional environment enables the transfer of learned knowledge to its users in the context of sustainability and resilience (Kishalı et al., 2019). The risk assessments are implemented as a preparatory/preventive measure in an attempt to mitigate/prevent the adverse effects of a crisis (without losing the efforts to increase prevention and preparedness), recommending a greater focus on the recovery capabilities (EC, 2018).

The embodied knowledge such as structural features and material details to be obtained from historical buildings will enable the construction of more sustainable and more resistant structures in new designs. For this reason, more comprehensive documentation studies and the integration of methods, systems and materials to be obtained from these studies are required for the preservation continuity of traditional heritage/ cultural heritage in disaster-prone areas where disaster histories have been investigated, hazards have clearly been identified.

In this study, the Zal Mahmud Pasha Complex, a work of Mimar Sinan (Sinan the Architect), in which it can be witnessed the concepts of resilience and sustainability in the Ottoman Architecture in detail with its construction techniques, is illustrated. Presentation of the study analyzing the construction techniques of the kulliye (complex), which is a monumental building ensemble, has been made available within the text.

The construction techniques in Ottoman Architecture can be analyzed under the following main headings: Pre-construction preparatory work

(use of labor, organization, drawing, etc.): materials, tools, measurements; foundation construction, vertical carriers; arches; systems supporting the structure; vaults and domes; finishing elements plaster and coatings (URL 3).

2. Material and Method

In this article, the relationship between resilience and sustainable development was addressed/defined together and illustrated within the context of Zal Mahmud Pasha Complex (Figure 1) construction techniques. The concept of resilience was addressed through the perspective of cultural heritage as a means of building more resilient cities and communities. Firstly, the relational network of resilience, risk, sustainable development, and cultural heritage values was established on a conceptual level. Afterwards, the centuries-old külliye, which was explicated in detail in the findings section, was described as a case study.

The literature and archival research procedure for this study is as follows. A monumental building or a group of buildings pertaining to the Ottoman period were selected in Istanbul, one of the cities that served as the capital of the Ottoman Empire; the Zal Mahmud Pasha Complex. In an attempt implement the detailed analyzes on the building, official written permission was obtained from the Eyüp Mufti's Office for the collection of buildings located in the Eyüp district. A source research was carried out in the libraries where Mimar Sinan's works and books written on the building were available. In addition to this, the regions where the Ottoman Empire supplied building materials during the period when the building was built and the registers of the period were all examined. Material

samples and detailed photographs were obtained with permission from the Directorate of Conservation Implementation and Inspection (KUDEB) prior to the most recent repair and restoration work.

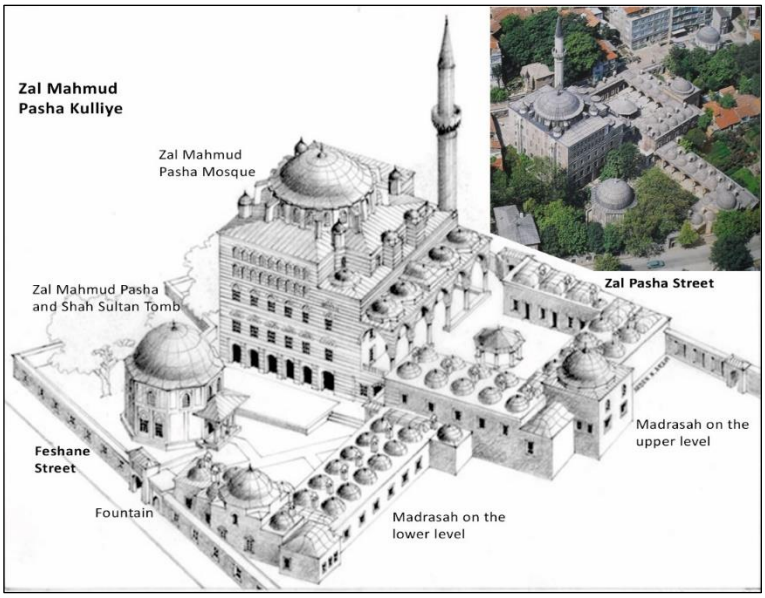

Figure 1. Axonometric perspective drawing of Zal Mahmud Pasha Kulliye (Necipoğlu, 2005) and photograph of the Complex

The on-site survey of the complex is as follows:

The on-site research procedure at the site of the complex (*külliye*) is as follows: During the periodic visits to the Zal Mahmud Pasha Complex, on-site observation, examination, photography and measurement were carried out. In the documentation studies, each section, each unit, and building elements were elaborated in detail. Equivalents of the dimensions for the building elements in the Ottoman system were established. The place of use of the materials, processing techniques, and dimensions (measurable units) was identified. The thickness of the walls, courtyard-harim floor

relationship, leveling levels, cornices and many other elements were measured, photographed, and documented. The lining techniques of the walls; piers, bases of the columns, capitals and connections; forms of the arches, their flemish cross bond (*almaşık düzen örgü*); tie rods/ tensile elements (*gergi çubuğu*), beams; bonding timber (*ahşap hatıl*); pendentives, trompe (*tromp*); dome, vault, cladding and bindings; doors, door jambs; windows, interior-exterior relationship, jambs, revzen; plaster, tile decorations. Furthermore, this study was evaluated within the context of the knowledge and information taught in the postgraduate course on the construction techniques in the Ottoman Architecture.

3. Findings and Discussion

3.1. Location, History and Plan Diagram of the Complex

The Zal Mahmud Pasha Kulliye Complex is located between the Feshane Street and Zal Paşa Street in the Eyüp district of Istanbul (Figure 2). This complex was built by Zal Mahmud Pasha, one of the viziers of Süleyman I (Kanuni) (Suleiman the Magnificent) (hd. 1520-1566) and his wife Şah Sultan, the daughter of Selim II (hd. 1566-1574) (Kuban, 1994). The Complex consists of a mosque, a madrasah, the tomb of the founders and a fountain. This madrasah is described as two madrasas because it has two classrooms on two different levels, and it is described as a single madrasah in the records related to madrasas. One of the madrasahs on the mosque level forms the fountain courtyard of the mosque. Its entrance is from the Zal Pasha Street. The second madrasah, connected to it by a staircase, forms a courtyard around the tomb at a lower level. There is a fountain at the gate of this courtyard leading to the Defterdar Street (Figure 2, 3).

Figure 2. Location of the Eyüp Zal Mahmud Pasha Complex is on the German Blues map and today

Since there are no inscriptions on the mosque, madrasah, and tombs in the complex and the sources give different dates for the death of Zal Mahmud Pasha and his wife, the exact construction date of the building is not certainly known. The mosque and tomb were also recorded in the Tezkiretü'l-Bünyan and Tezkiretü'l-Ebni. However, the madrasah was only mentioned in the Tuhfetü'l Mimarin. The most important record in the dating of the complex is the record that a muderris named Kethüda Mustafa Efendi was appointed to the Zal Mahmud Pasha Madrasah in 987/1579 with a daily wage of 50 kuruş (penny). This proves that the mosque was completed on or slightly before these dates. Shah Sultan allocated the revenues of 12 villages belonging to him to this mosque (Kuban, 1994). Kuban (1994) made the following statements about the construction date of the complex in his book: "One fact that we know for sure is that Sinan spent most of his time in Edirne between 1569 and 1575 for the construction of the Selimiye Mosque. A second fact is that in the Zal Mahmud Pasha Mosque, the concept of space, which Sinan developed during his mastery period, has completely disappeared".

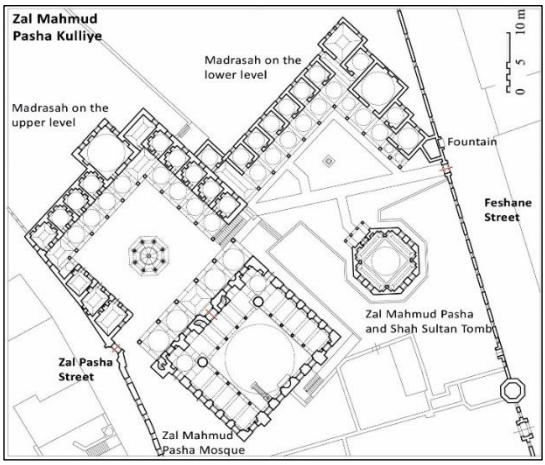

Figure 3. The Zal Mahmud Pasha complex plan (Necipoğlu, 2005)

Reha Günay (2010), while classifying the Mimar Sinan's mosques, stated that the section titled "Examples in which there are rooms on three sides of a courtyard with porticoes on four sides and the mosque on the other side (Madrasahs with a common courtyard with a mosque)" was a scheme that Sinan applied to the most. In the Eyüp Zal Mahmud Pasha Üst Madrasah (1577-90), the mosque and madrasa porticoes do not join with each other (Figure 4). There is no portico on one wing of the courtyard. The classroom is not on the axis of the Mihrab (Günay, 2010).

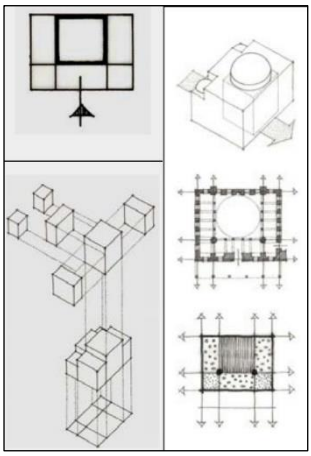

Figure 4. 1. column- plan scheme and mass relationship, 2. column- The Zal Mahmud Pasha Mosque space setup (Tuluk, 2006)

Tuluk (2006), for the scheme in this complex, matched the planning scheme here with the typology of the buildings with the construction in which the central space was expanded in three directions towards east, west, and north and the corner spaces between the side spaces were added to the main space. In the Zal Mahmud Pasha Mosque, the 12.40 m. main dome is supported by boat vaults in three directions and small domes at the corners (Tuluk, 2006).

When Mimar Sinan designed the detection of the middle dome on entering through the qibla door in almost all of his mosques, he produced an extraordinary work with a gallery construction in front of the entrance (Kuban, 1994). The tribunes (in a mosque) (*mahfil*) on three sides extend up to the main arches carrying the dome. In all of Sinan's mosques, the main arches end with either a wall with a window or a dome, whereas here, except for the qibla wall, the arches are hollow and open towards the

tribunes (*mahfil*) (Günay, 2006). Despite the wide suspension arches in the Zal Mahmud Pasha Mosque, these side spaces create the effect of an interior space that is not integrated with the central space due to the columned upper floor gallery extending up to the foot levels (Tuluk, 2006). The main arches of the mosque remain within the buttressed wall on the qibla side. On the entrance side, they rest on two round large pillars. The side piers are covered by the tribunes (*mahfil*).

When viewed from the outside, the mosque rises as a prismatic high mass with a basement floor. Numerous windows open onto each facade.

3.2. Repairs

It is probable that the mosque experienced many disasters since the beginning of the 17th century. Kuban (1994) summarized the repair process as follows: "There are details in the plan that are difficult to understand. It is possible to say that the complex was damaged in the earthquake of 1766. However, there is no document indicating the extent of this damage. It is clear that the mosque and the complex were in a dilapidated state during the reign of Mahmud II (1808-1839) and after the Ramadan of 1825, the mosque and the mausoleum, by order of the sultan, were repaired with the revenues of the mosque foundation and a latrine was built in the *mahfil-i hümayuna*. After the 1894 earthquake, the minaret of the building, which was very dilapidated, was eventually destroyed. Even though this minaret was rebuilt, the complex was in a neglected state in the 1930s (Figure 5). Restoration works were carried out between 1955-1963" (Kuban, 1994).

Figure 5. Photographs before the repairs

According to the board report dated 20.09.1960, the failure occurred as a result of the breakage of one of the iron tie rods that took the defiant forces of the arches. The force that caused the breakage could not remove the anchorage of the tie rods on the large pillar. Therefore, it was not deemed necessary to install a tie rod in the form of a circle between the large pillar and the qibla wall. Instead, the incisor (fracture) section of the tie rod was reorganized and installed (Prof. Feridun Arısan).

In 1996, high strength reinforced concrete and imitation coatings were used in the repairs of the mosque. Approximately 70 cm of reinforced concrete was removed from the portico (of a mosque) for late comers (*son cemaat yeri*) domes during the restoration works that started in December 2011. During the last restoration works, it was revealed that layers of paint were applied on the wooden elements and rotting had occurred, and repair works continued.

3.3. Foundations- Basement Floor, Mosque Front Entrance Door-Levelling Levels

Due to the slope, a vaulted basement was formed under the mosque. There are 5 vaulted spaces on the basement floor and there are empatements (*anpatman/ pabuç*) in the spaces. The interior wall consists of rough masonry stone material and bricks are visible in places on the wall. The floor covering is covered with sheshane (17*34*30cm) bricks and the ceiling is covered with a brick vault. The outer wall of the basement floor of the mosque, which is entered from the courtyard level where the lower madrasah is located, continues as 2 rows of cut stones followed by 2 rows of bricks and 1 row of stones. The brick thickness is approximately 4 cm (Figure 6).

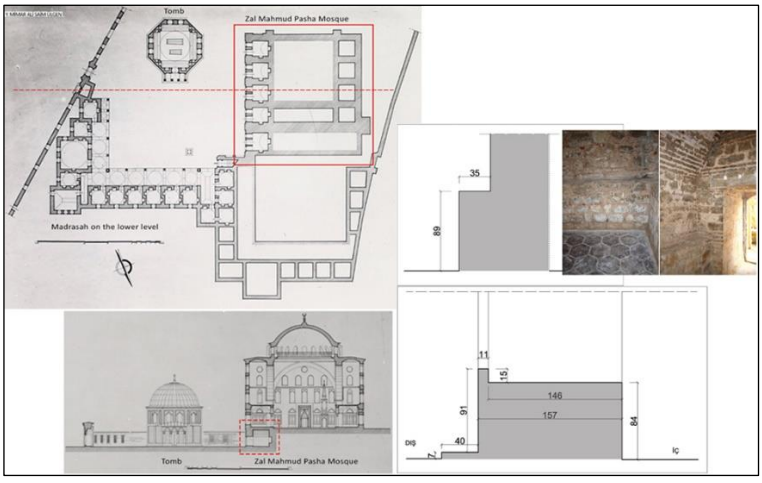

Figure 6. Plan and section diagrams from the lower madrasah and mosque basement; the empatements, wall thickness and window size in the basement interior

When measured from the basement floor window, the wall thickness is 157cm. The wall thickness was measured as 108 cm from the left side façade (same façade as the basement floor) window from the 1st-row window level from inside the mosque, and the wall thickness was measured as 79 cm from the 2nd-row window level. It is evident that the wall thickness gradually decreases on the same façade. Furthermore, the photograph taken on 18 May 2013 shows that the 7 cm high and 40 cm wide empatements at the outermost part of the building was exposed by cleaning the floor.

On the basement floor façade wall surface, the façade of each space was attempted to be lightened with 13 cm deep niches and there are 148 cm facade walls between the 2 spaces.

A staircase from the north of the basement floor provides access to the rear façade. The staggering on the buttress is also visible from here. There is also a staircase from the lower madrasah to the upper madrasah (Figure 7).

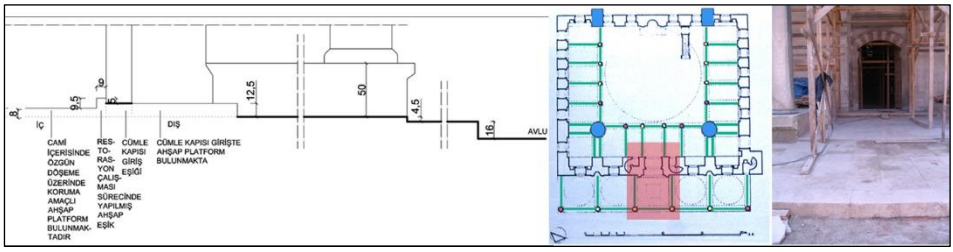

Figure 7. Levelling Levels (leveling levels from the courtyard level to the floor level inside the mosque) and front entrance door of the Mosque

Figure 8. Stairs to the rear façade and photographs of the buttress; staircase from the lower madrasah to the upper madrasah

The portico (of a mosque) (*son cemaat yeri*) is also visible from here. There is a 391cm-difference in elevation between the courtyard of the lower madrasah and the upper madrasah (Figure 8).

3.4. Walls

On the interior walls of the mosque, the first row of limestone continues up to the stirrup level of the arches. Other interior surfaces are not visible because they are plastered. The dome is made of brick.

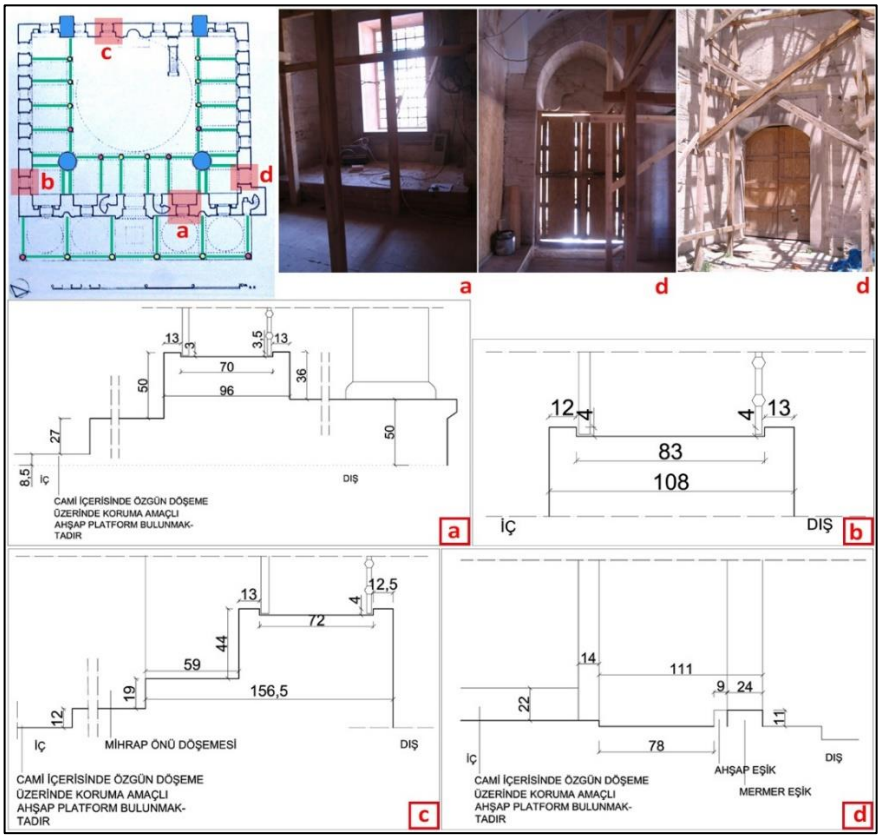

Figure 9. a-The thickness of the wall where the 1st-row windows of the mosque façade are located b-The wall thickness of the left side façade 1st-row row windows c-Mihrab facade (rear facade) wall thickness where the 1st-row windows are located d-The thickness of the wall on the right-side façade where the 2nd mosque door is located

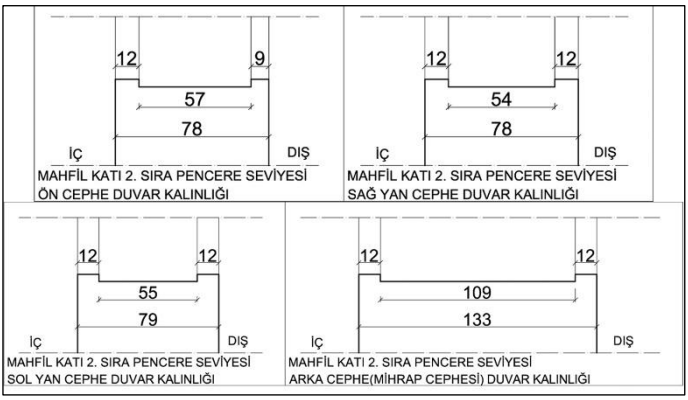

Figure 10. Wall thicknesses of the Zal Mahmud Pasha Mosque from the 2nd-row window level

When the wall thicknesses of Zal Mahmud Pasha Mosque are measured from the 1st-row window level, it is clear that the left and right-side facades are approximately 110cm, the rear facade (mihrab facade) is approximately 156cm and the front facade (qibla gate wall) is approximately 202cm (Figure 9).

When the wall thicknesses of Zal Mahmud Pasha Mosque are measured from the 2nd-row window level, it is evident that the rear facade (mihrab facade) is approximately 133 cm and the other 3 facades are approximately 78 cm. As a result of the measurements, it is apparent that the wall thicknesses become thinner when going up to the cellar floor (Figure 10).

The exterior walls of the mosque are of alternating masonry with one row of cut limestone and 2 rows of alternative bricks. On the wall of the front entrance door, cut stone masonry is visible up to the upper level of the 2nd-row window level. The circular and rectangular single pillars inside the mosque are made of cut stone as 4 onion-headed domes at the dome level

(Figure 12). The stone dimensions of the façade vary between 40-35,5-39 cm.

Figure 11. a-Cut stone material up to the level of the interior arch stirrup of the Zal Mahmud Pasha Mosque b-Qibla gate wall adjacent to the wall, jointed cut stone wall masonry c-Window profile detail and brick dimensions, stone dimensions

The exterior wall masonry of the mosque continues as stone-brick dimensions 2 rows of bricks and 1 row of stones. The brick dimensions in the masonry system in the mosque are approximately 4,5*33 cm. Stone dimensions are approximately 23-24*cm in height and other dimensions are approximately 5*40 cm (Figure 11).

The masonry of the mosque continues with 2 rows of brick and 1 row of stone, while the masonry of the surrounding walls of the complex continues with 3 rows of brick and 1 row of stone.

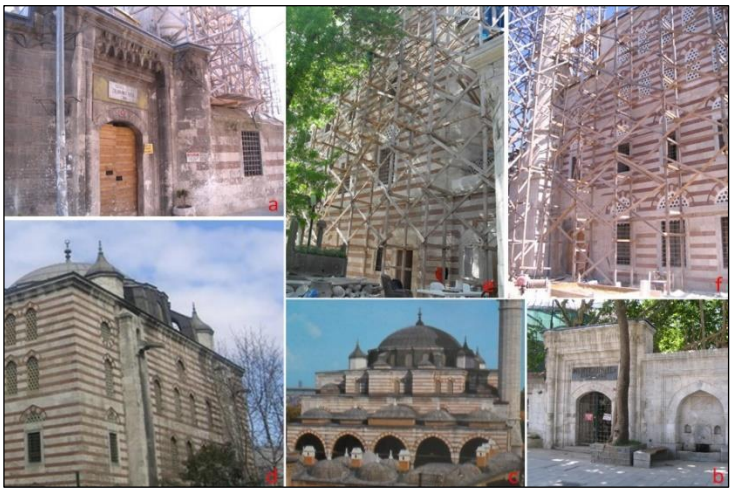

Figure 12. a-b-Entrance gate of the Kulliye from Zal Pasha Street and Feshane Street, garden walls c-d- front and rear façade walls of the mosque e-f- right side and left side façadewaalls of the mosque

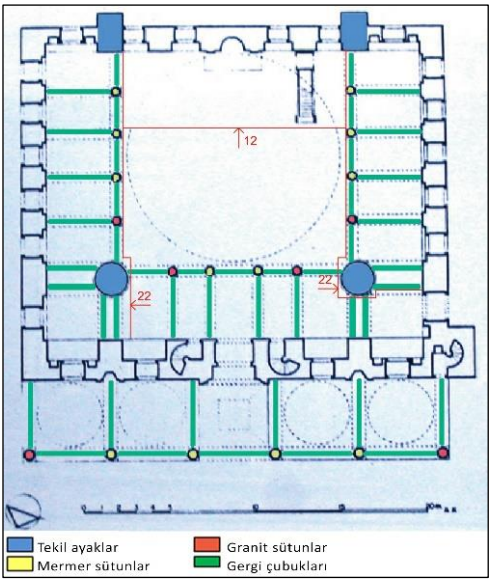

Figure 13. Zal Mahmud Pasha Mosque Plan Scheme; singular pillars (blue ones), marble columns (yellow ones), granite columns (red ones), tie rods (green ones)

At the ground level of the mosque, the floor rises 12 cm in front of the mihrab and 22 cm in the right and left tribunes (*mahfil*). It was illustrated with red lines in the plan above (Figure 13).

3.5. Pillars- Buttresses, Portico (of a mosque) and Harim Place Columns

Inside the mosque, there are 2 singular pillars with circular cross-sections and limestone ashlar masonry. There are muqarnas in the capitals.

Figure 14. Circular sectioned limestone ashlar pillars with muqarnas capitals**;** buttress with rectangular cross-sections and limestone ashlar masonry

The other two singular pillars visible from the rear façade of the mosque are the pillars on the mihrab façade, with rectangular cross-sections and buttresses (Figure 14).

The courtyard columns are located on a base raised from the ground (about 50 cm). The capitals of the portico columns have muqarnas, and there is a brass or bronze bracelet at the junction of the cap and the ground. The columns have a circular cross-section and are single-piece. The four in the center are made of marble and the ones in the corners are made of granite.

Figure 15. Columns of the portico (of a mosque) and harim columns

Four of the twelve columns inside the mosque are granite and the other eight are marble; they are monolithic. The capitals of the columns are lozenge-shaped, with brass or bronze bracelets at the junction of the capitals (Figure 15).

3.6. Arches, Domes and Vaults

The arches facing the mosque are pointed, while the arches connecting the columns to the body wall are flattened.

The arches in the portico (of a mosque) are the pointed arches with brick-stone alternating configuration (Figure 16).

Figure 16. Arches inside the mosque and portico (of a mosque) arches

The dome of the mosque; the dome with pendentives sits on a square plan (Günay, 2006). The mosque is a two-storey mosque (fevkani) with a rectangular plan with deep tribunes (*mahfil*) on three sides of the central space. The dome rests on the arches carried by the two piers near the front entrance door and the pillars near the mihrab (Alemdaroğlu, 1964). Dome diameter is 12.40 m and the height of the dome center is 21.80 m.

Figure 17. Dome of the mosque, dome pulley

There are 20 windows in the dome pulley and the pulley that surrounds the dome from the outside is supported by 8 2-piece struts (Figure 17).

Figure 18. a-Cross vault (red ones) b-flat ceiling (blue ones) c-mirrored vault (upper levels, blue ones) d-ceilings of the portico (of a mosque) (*son cemaat yeri*) (green ones)

Of the five porticoes of the last congregation place, the middle one is covered with a mirror vault, and the ones on the sides are covered with domes (Figure 18).

3.7. Tie Rods

Between the columns and pillars in the mosque, there are also tie rods at the stirrup level connecting the columns and piers to the body walls. Both of the feet with circular cross-sections are connected to the body wall with double tie rods. Moreover, these double tie rods continue on the tribune (*mahfil*) floor. In the plan diagram Figure 13, the places outlined in green illustrate the tie rods (Figure 19).

Figure 19. a-b-Harim floor single and double tie rods c-double tie rods of the women's cloister floor d-tie rods of the portico (of a mosque)

Figure 20. Tir rod inside the mosque (There are pounding marks on the tie rod and the width of the tie rod is 10 cm)

Height of the tie rods from the last congregation floor is 390 cm. There are 17 steps up to the level of the sword on the tribune (*mahfil*) staircase. 391 cm is the approximate height from the ground, 4 cm is the height before the staircase to the tribune (*mahfil*), and 394 cm in total is the height from the harim floor of the mosque. The columns in the portico (of a mosque) are located on the slab at a height of 50 cm from the ground. After this level, the distance to the lower level of the tie rod is approximately 390 cm, and the total height is 440 cm. Looking at the levelling level scheme, the difference between the outer and inner levels is approximately 8 cm, it is clear that the inner level is 8 cm higher than the outer level. 402 cm is the height of the lowest level of the sword to the ground (Figure 21).

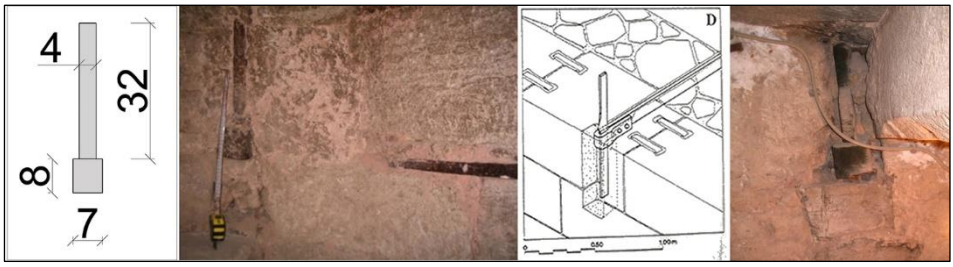

Figure 21. Semi-hidden sword bracing, third picture from Tanyeli (1990) and Semi-hidden sword bracing

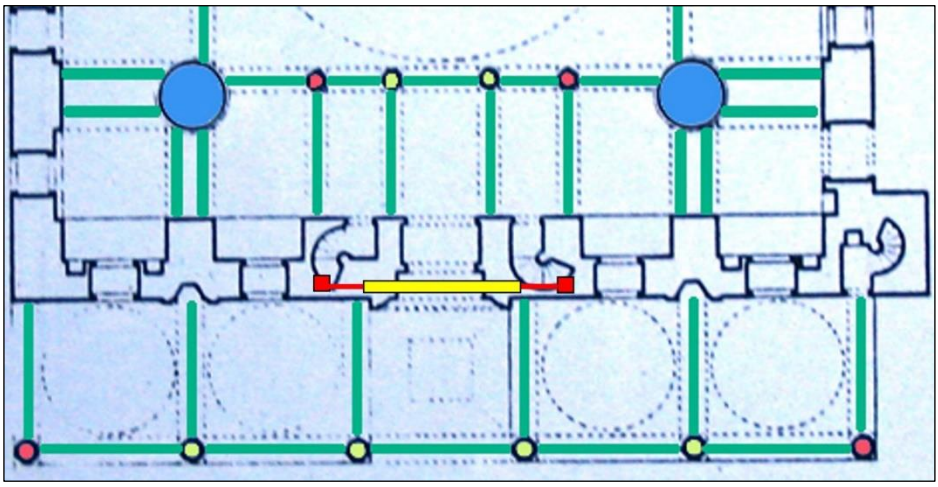

Figure 22. Location of semi-concealed sword bracing and bracing bars on the plan (red ones), position of the bonding timber (yellow ones)

Figure 23. Step clamp on the left tribune (*mahfil*) staircase step leading to the tribune (*mahfil*) floor and tie rods on the staircase leading to the women's tribune (in a mosque) (*mahfil*)

The yellow line, whose position was designated in the figure above, is thought to be the bonding timber (*ahşap hatıl*) passing through the front entrance door section as a result of the measurements made in the study. The swords illustrated in red color should be connecting the tie rods coming from the portico (of a mosque) (Figure 22, 23).

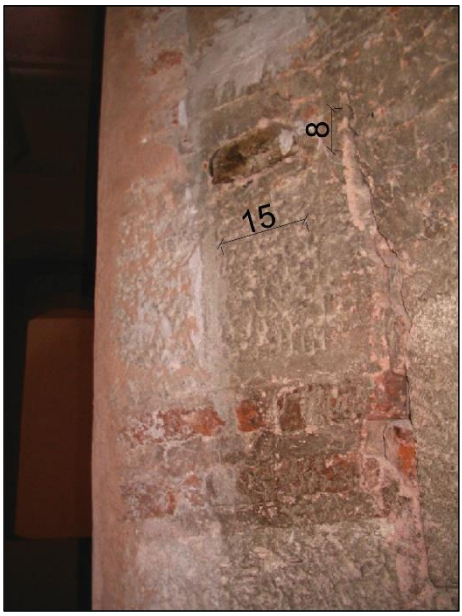

Figure 24. Bonding timber

At a height of approximately 1-1.5 m from the floor level of the women's cloister on the right side of the front entrance door, a bonding timber of 15*8 cm section is visible on the wall of the staircase. However, since the other staircase could not be checked, its consistency failed to be understood (Figure 24).

The 1st and 4th rows of tie rods are visible inside and outside of the mosque, but the numbers 2 and 3 (blue lines) are considered to be the places where the tie rods are supposed to be situated. The masonry pattern starts to change here (Figure 25).

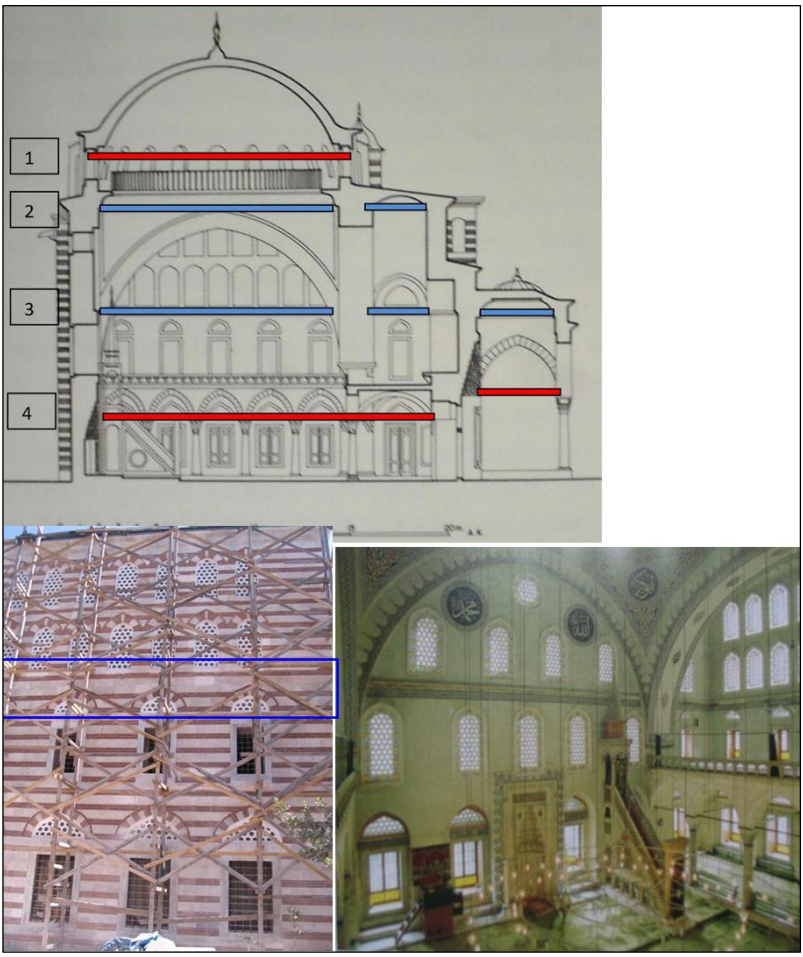

Figure 25. Tie rods observed inside and outside of the mosque and changing wall pattern (blue lines)

3.8. Windows and Doors

On the front façade of the mosque, there are four windows one above the other in the portico and there are six windows in three pairs on the roof of the portico. On the side facades, four rows of windows were carve-opened instead of three. There are six windows in the lower row in the east, five

in the west (the sixth one has a door in its place), six windows on both sides at the level of the cloister, and two rows of nine windows higher up. The windows were more sparsely arranged on the rear façade. There are six windows in the lower row of three to the right and left of the mihrab, seven above it, six above it, and three round windows at the top.

There are 4 rows of windows on the facades of the mosque. There are 3 round windows at the top of the Mihrab wall. The eyebrow arches of the first row of windows were left open and gypsum networks were inserted. The lower windows have marble jambs. The second row of windows is the same, although a little bit narrow. The upper two rows of windows have pointed arches and gypsum moldings.

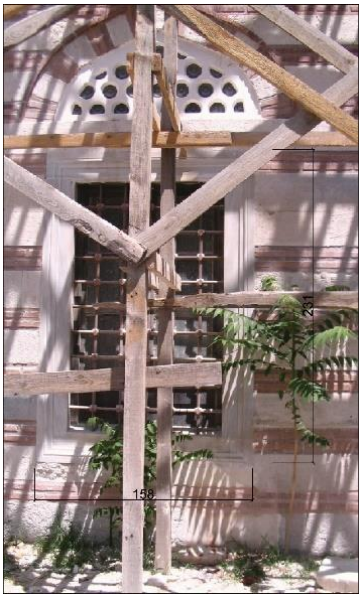

Figure 26. The 1st and 2nd-row windows of the mosque have a cover on the inside and knotted grille (*lokmalı parmaklık*) on the outside

The dimensions of the 1st-row windows from inside the front facade of the mosque: 156*230 cm. The dimensions of the 2nd-row windows on this facade are 114 * 145 cm from inside (Figure 26). The exterior dimension of right-side facade of the 1st-row window is 158*231 cm. The dimensions of the 2nd-row windows on this facade are 114*182 cm from inside. Figure 11 shows the exterior window aligments on the facade.

Figure 27. 1st and 2nd-row windows with inside cover and outside knotted grille iron railings

Figure 28. Doors of the mosque

4. Conclusion and Suggestions

In resilience studies, the heritage values act as a living laboratory for both the region where the heritage is located and the correct use of resources to evaluate the strength, quality and capacity of the resources that cultural heritage has to be prepared for and take measures against the existing risks and threats.

Gradual loss of the natural assets, historical textures, important monuments, archaeological sites and cultural landscapes, and intangible cultural values as a result of disasters that may be experienced in the face of human and natural hazards shows that some measures should be taken in order to prevent memory loss of places and be prepared for risks.

Traditional knowledge codes of cultural heritage play an important role in disaster prevention, risk management, and mitigation activities. The durability of the historical environment can be improved by the continuity of the architectural heritage built with the traditional techniques as well as its interpretation of the new structures.

In this study, the requirement of documenting cultural heritage and architectural heritage in particular is discussed in relation to the concept of conservation and resilience. This discussion is exemplified through the Zal Mahmut Pasha Külliye.

The Zal Mahmud Pasha Complex was built in the last quarter of the 16th century, at a very early period, and the construction techniques, material selection, spatial design principles (open, semi-open, closed space balance) used in the group of buildings have provided a lot of information

to be transferred to the present day as an example of resilience against disasters for centuries.

Although some situations cannot be addressed in detail in this text, the principles of structural load transfer in Mimar Sinan's designs are among the most important reasons why he is referred to as a genius. It is explained in the sources that he devoted a long time to the preparation of the ground for land selection and foundation construction. Again, in the construction of the foundation, the structures contain statically important information.

The empatements (*anpatman/ pabuç*) seen in the basement of the mosque also provide information about the foundation. At this level, niches (*niş*) were used to lighten the building load. The use of staggered pendentives on the rear façade was made to ensure the stability of the building.

In the Zal Mahmud Pasha Mosque, which is the case study area, it is seen that the single/double iron tie rods and their locations, which were used quite early in the Ottoman Empire, are among the features that increase earthquake-resistant features. In addition, the analysis (Figure 21, 22, 23, 25) shows that the semi-hidden swords on the stairs of the tribunes (*mahfil*) of the mosque were connected to the tie rods coming from the portico (of a mosque) for late comers (*son cemaat yeri*).

Apart from monumental buildings, timber-framed buildings, which are one of the traditional production methods, also have features that increase their earthquake resistance. For example: selection of the land and the use of the lath and plaster technique, timber lintels, braces and nails, etc.

Using these methods and concepts, the role of built heritage in ensuring the resilience of historic cities can be defined in more detail by examining other structures built in similar periods/similar construction techniques.

The concept of cultural resilience is required to embrace the role of human agency as well as being related to social relations and development.

It is clear that the production of historical narratives is all about developing the present and envisioning the future as much as investigating the past.

The studies on coping with the effects of climate change can be produced more realistic solutions with the knowledge that can be learned and applied from the traditional architecture and cultural heritage values. It is simply because the traditional architecture has features that comply with the climate change.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-10

The Importance of Material Selection in the Preservation and Repair of Historical Buildings

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1. Introduction

In thousands of years in civilization history, these values, which were created by directly human beings or with nature, are named today as "Cultural and Natural Heritage". Conservation of these values is a very important subject that has to be studied. These studies about conservation and restoration of historical buildings that are very important cultural heritage must be aimed at scientific principles, aesthetics, and conservation of their historic values. Before the conservation, restoration and strengthening of a historical building, study stages have to be define in collecting and evaluating data towards observation and determination studies (Ekşi Akbulut & Aköz, 2004).

Since early 20th century, some legal obligations such as Carta Del Restauro and Venice Charter are constituted for the studies about conservation and restoration of historical buildings which are very important cultural heritage. In the past when the building has its own function its permanent maintenance has also provided its conservation. According to the famous Italian expert Piero Gazzolo; "If an architectural monument doesn't serve to its own function, conservation becomes more than a practical necessity, turns into a cultural responsibility. The attention to this subject is depends on the next generations cultural knowledge and the sensitivity to the conservation of cultural heritage".

Although many of them have been destroyed for various reasons over the centuries, there are many historical monuments and structures still remaining today. These structures show very important differences in

terms of unique material properties, material preparation methods and original construction techniques according to the geographical region characteristics and construction periods.

2. Material and Method

In addition to serving as documentation of cultural existence, historical structures are important part of the living environment. Thus, it is important to transfer them to future generations. Historical buildings that have been damaged over time due to various reasons are in need of conservation and restoration. However, methods applied with lack of scientific research can have harmful effects on the structure and create new damages (Ekşi Akbulut et al., 2018).

Restoration and conservation methods continuously come into being discussions between the different disciplines. To cope with this problem, it has to determine the method and the conservation level in a point of historical and aesthetic appearance of historical buildings and it has to determine the procedures putting into practise relating the structural damages and their repairs. In these studies, specialists from different disciplines like architecture, archaeology, history of art and engineering have to collaborate (Ekşi Akbulut, 2006).

2.1 Studies On Conservation

Even if the history of studies on conservation last out to past, the modern technique for conservation begins in 19.century. The congress in Athens in 1931 was the first congress about conservation of historical monuments. The congress expresses that each country constitute official records which shall contain all documents relating to its historical monuments and to

deposit copies of its publications with the International Office. After the congress in Athens the principles are approved by Italy and called "Carta Del Restauro" becomes a legal obligation. And it recommends that the specialists from different disciplines have to collaborate and the experts have to agree that before any consolidation or restoration is undertaken. And also it is pointed that contributions of all periods of the building must not be destroyed, the additions which misleads the experts must not be built and the original materials that are come up with the analytic researches must be conserved.

In 1957 "I. International Conference of Architects and Technicians of Historic Monuments" is organized in Paris. In this conference it is explained that cultural heritage is common responsibility and some organizations like ICOMOS, ICCROM was proposed to establish.

And "II. International Conference of Architects and Technicians of Historic Monuments" is organized in Venice in 1964. The Venice Charter which is constituted in the conference is examined the problems of architectural conservation in nearly hundred years of European history which become more complex and varied. This charter becomes a solution but not an ending, on the contrary it is affected the discussions in international perspective. Also in our days many associations and organizations are studying about this subject, many national and international conferences, symposiums are organized.

2.2 Venice Charter (1964)

The Venice Charter has an important role about theoretical progress of methods in conservation of historical buildings and monuments, and

foundation of associations. It has 16 articles under the definition, aim, conservation, restoration, historic sites, excavations, publication headings. In this study as the importance of material selection for conservation, restoration and strengthening of a historical building approach is discussed, the 9-13 articles are given;

Artıcle 9. The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents. It must stop at the point where conjecture begins, and in this case moreover any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp. The restoration in any case must be preceded and followed by an archaeological and historical study of the monument.

Artıcle 10. Where traditional techniques prove inadequate, the consolidation of a monument can be achieved by the use of any modem technique for conservation and construction, the efficacy of which has been shown by scientific data and proved by experience.

Artıcle 11. The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of a restoration. When a building includes the superimposed work of different periods, the revealing of the underlying state can only be justified in exceptional circumstances and when what is removed is of little interest and the material which is brought to light is of great historical, archaeological or aesthetic value, and its state of preservation good enough to justify the action. Evaluation of the importance of the elements involved

and the decision as to what may be destroyed cannot rest solely on the individual in charge of the work.

Artıcle 12. Replacements of missing parts must in-tegrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence.

Artıcle 13. Additions cannot be allowed except in so far as they do not detract from the interesting parts of the building, its traditional setting, the balance of its composition and its relation with its surroundings (URL 1).

2.3 ICOMOS (International Council on Monuments and Sites)

ICOMOS works for the conservation and protection of cultural heritage places. It is the only global non-government organisation of this kind, which is dedicated to promoting the application of theory, methodology, and scientific techniques to the conservation of the architectural and archaeological heritage (URL 2).

ICOMOS is a network of experts that benefits from the interdisciplinary exchange of its members, among which are architects, historians, archaeologists, art historians, geographers, anthropologists, engineers and town planners.

ICOMOS International Training Committee agreed on responsibilities, documentations, examinations and applications in the meeting in Suomenlinna, Finland in 1995 which is named as “Code Ethique”. According to the articles about conservation, restoration and strengthening;

a) As the conservation concept has a large extends and the attention of many different social groups need to be taken, conservation should be studied by trained and experienced person, carried out with the experts

who have to collaborate with different disciplines with a scientific point of view and work with mass media associations.

b) Before the conservation, restoration and strengthening applications are constructed; the general conditions, the physical properties, damage reasons and other problems of the historical monument should be examined.

c) According to these examinations, a basic approach for each application must be improved and a conservation method which can be short term or long term must be programmed.

d) There should always be a precise documentation of a technical report of the applications with drawings and photographs and should be copied for public institution archives. And also for the public use a summary report should be written.

e) For the future existence of the monument there should be a limited applications with the examination of each effect through the monument and must be respected to its cultural heritage, environmental integrity, aesthetic, historical, physical originality.

f) There shouldn't be any damage or changes to the original monument which are documentation of its history during the conservation, restoration and strengthening application.

g) The modern techniques or new materials shouldn't be used without required experiments, scientific researches and discussions with an expert.

h) The conservation, restoration and strengthening application shouldn't mislead the future studies, if it is necessary, the application can be

removed, renewal as possible as can be and congenial with its surroundings (Binan,1999).

ICOMOS has international scientific committees working on various fields and issues of cultural heritage. Founded in 1996, ISCARSAH (International Scientific Committee for Analysis and Restoration of Structures of Architectural Heritage) is a scientific committee of ICOMOS operating on the analysis and repair of bearing systems of historical buildings. The report, which includes the views of the committee on the preservation of historical buildings, was discussed in Paris in 2001, adopted at the ICOMOS Ordinary General Assembly held in Zimbabwe in 2003, and immediately afterwards, a proposal was made under the title of "Recommendations for the Repair, Conservation and Analysis of the Structures of Historic Buildings". It has been adopted as the ICOMOS charter (ICOMOS Charter, Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage) (Ahunbay, 2019). According to Icomos Charter (2003); structures of architectural heritage, by their very nature and history (material and assembly), present a number of challenges in diagnosis and restoration that limit the application of modern legal codes and building standards. Recommendations are desirable and necessary to both ensure rational methods of analysis and repair methods appropriate to the cultural context. These Recommendations are intended to be useful to all those involved in conservation and restoration problems, but cannot in anyway replace specific knowledge acquired from cultural and scientific texts.

The Recommendations presented in the complete document are in two sections: Principles, where the basic concepts of conservation are presented; Guidelines, where the rules and methodology that a designer should follow are discussed.

2.4 Conservation Studies in Türkiye

Turkiye where there are many historic values and historical varieties, some associations and foundations related to conservation are also constituted. In recent years it is pointed that the symposiums organized by Cultural Ministry or the meetings Historical Cities Associations organized by municipalities are improved the point of view about the conservation of historical monuments and the public remaining interest to the subject. For healthy and permanent conservation not only the legal obligations but also active studies in micro and macro scale based on scientific data must be improved. From the world heritage point of view our counrty is takes place on such a geographic place that many civilizations passed through and leave many work of arts which are now called cultural and historical heritage. Istanbul, in the end of southeast of Europe is the only city, which takes place both in two continents, Europe and Asia. Bosporus flows between two continents, separate the city in two parts. Over 2600 years with a very interesting historical past, Istanbul is a unique city in the world. As a very special city of Türkiye and World Istanbul, takes place in the list of historical heritage of UNESCO. Istanbul is an uncovered laboratory with its historical monuments and buildings. Although many of them could not resist to the natural disasters and wars and not exist today but many precious historical buildings have being lasted. Because of this reason

these studies in Istanbul is very important by means of universal cultural heritage conservations (Ekşi Akbulut, 2006).

2.5 Legal Obligations of Conservation in Türkiye

The historical progress of the legal obligations of cultural heritage conservation in Turkey is mentioned below;

- The First Asar-ı Atika Nizamnamesi (Asar-ı Atika Regulation) was prepared in 1869. With this regulation the Historical Monuments Obligations is constituted. The second one was in 1874 which consisted of 36 articles arranged in the form of an introduction, four chapters and a conclusion. İt was undoubtedly represented a step forward in that it introduced some principles for archaeological excavations. However, it also had many shortcomings. The third Asar-ı Atika Regulation of 1884, which was prepared and put into effect by Osman Hamdi Bey, states that the old works are the property of the state and that they are exported abroad. Some minor changes were made in 1906 in some of the articles of this regulation, which was able to meet the needs of the years well ahead of the years it was put into force, and the statute was used for half a century even in the Republican period until 1973 and formed the basis for the Law No. 2863 on the Protection of Cultural and Natural Assets, which is in effect today.

-After 1930, Atatürk constituted “Committee for Conservation of Old Monuments and Preservation Delegation” for conservation the historical monuments.

- Property of Antiques and Superior Committee of Monuments is constituted in 1951 under the National Education Ministery related to

control and observe the principles and applications of restorations, conservations, preservation of historical monuments and architectural buildings.

- Antiques Law is presented in1973. The elements need to be conserved, including the residential buildings is attained a required level by this law. Between 1973-1982 years 100 urban sites, and 3442 monu-mental, 6815 residential architecture samples in 417 site area are offically registrated by Property of Antiques and Superior Committee of Monuments (Ahunbay,1999).

- ICOMOS National Committee of Turkey is consti-tuted in 1974 according to obligations of "International Council of Monumentals of Sites" in Turkey

- In 1982 Republic of Turkey is approved to participiate to UNESCO in accordance with "Conservation of World Cultural and Natural Heritage Charter". In 1983 Antiques Law is beared and Conservation of Cultural and Natural Heritage Law is consitituted. By this law instead of antiques term cultural heritage term is consumed.

The cultural values which are under protection of government and named as Cultural and Natural Heritage are under the responsibility of Cultural Ministery. Conservation of Cultural and Natural Heritage Superior Committee under the Cultural Ministery carried out the cultural and natural heritage services according to the scientific basis.

These are the responsibilities and competences of Conservation of Cultural and Natural Heritage Superior Committee;

a) To define the principles of the services about conservation and restoration of immovable cultural and natural heritage

b) To provide the required coordination conservation committees

c) To determinate the general problems caused by the applications and to assistant the ministery by consensus.

3. Studies on Materials of Historical Buildings

Each form is exist in a level of possibilities provided by technology and materials. In order to investigate the concept of aesthetics as much as perception of the building, material properties, applications and technological possibilities must be recognized. In historical buildings in comparison with today there are less materials and technical possibilities but variety of forms reaches to a high level. Historical buildings construction typology is masonry. Materials used in masonry buildings, forming its structural system are also influenced its architectural features and its identity. The determination of material properties, which are used for masonry buildings, is very important subject as also for all types of structures. Architect, can design independently for a new structure but for the conservation and restoration of a historical building he has to work by respect to the history of building and its architectural features. In these studies to determine the present situation of building; researches about regional settlements and effects of these settlements, structural system of building and material properties, restora-tions that had been done before, strengthening and/or extension of building and their effects to the

structural system and the examinations of the soil properties in micro and macro scale of building region have to be studied.

In the restoration studies, the properties of original materials must be investigate by experimental methods and the new materials, which will be used have to have approximately same properties, must be taken into consideration. Otherwise fatal damages can be occurred and cannot be restored in the means of their aesthetics and historic values. For example; in the 1950's the materials like cement additive mortar and plaster which is very harmful for the historical buildings is applied by a volunteer firm who restored with a good intention in Konya. Because of this application there is significant physical damages on the structural materials like stone and bricks on the many Anatolian Seljuk Period buildings (Tunçoku, 2004). The conservation, restoration and strengthening of a historical building is concerned measured drawing which is a documentation of architectural survey and detailed drawings of building, restitution drawings which defines the original with the lost partitions or additions and restoration drawings for the determination of renewals must be prepared. However a healthy and permanent conservation must be carried out by experts with investigation of materials, scientific researches, laboratory analyses, preliminary studies, there is just a technical report which defines original material properties and defining the restoration materials.

There must be preliminary studies like determination of original construction techniques, damages occured in time and the determination of physical, chemical, mechanical properties of original materials like

stone, brick, mortar, plaster, adobe, wood, metal, glass which are used in historical buildings. For the experimental studies on materials the tests are generally performed on specimens taken from the stuctures. These specimens must be as small as possible for not damaging the building (Akman, 2000). Investigation of material properties of a historical building by using non-destructive methods usually includes rebound test, sonic test, radiographic tests, surface hardness test, permiability test and bonding test (Aköz, 2001). In any case sampling a masonry specimen is not a simple operation also in the case of a regular and solid masonry. Being a highly destructive operation, only one or two specimens can be sampled and the test may be statistically unreliable in the case of a very poor masonry. Therefore, the only way to reach the goal seems to be an in-situ testing on the masonry as a composite (Binda, 1999).

The informations to determine the stages of building, construction dates, unexplained additions to the building can be obtained from a detailed material study of the historical building. So as to obtain detailed and straight historical documents and information, conservation and restoration of each building must be studied with material and technological perspective as well as its architectural and artistry perspectives. Otherwise conserving the historical buildings from the conservation studies or recovering the restorated historical buildings must be taken into consideration. The historical value, aesthetics and identity of the building should be preserved in the maintenance, repair and strengthening processes for the protection of historical buildings, and the works should be carried out with minimal intervention to the system and

original materials of the building. In the selection of materials for the repair and strengthing applications must be developed by using the standards and the original material used in the building should be examined. The difficultyof the conservation studies is to accurately determine the content of the restoration decision and to decide on the nature of the design in buildings whose functions have changed a lot, the more precise and clear the research methods and stages leading to these decisions (Kuban, 2000). The basic approach to the preservation of historical buildings is to provide continuous maintenance. In many countries, historical buildings are examined within the framework of annual and five-year programs and necessary maintenance-repair is done according to the determined damages. In this way, great damage and destruction of historical buildings are prevented, and they are protected without the need for costly works. Protection applications are carried out by interventions such as cleaning, bonding, surface repairs, consolidation and protective application to the surface (Ahunbay, 1999). All of these mentioned interventions may not be required in every application or applied in the order listed. In such applications and interventions at the restoration level, it is necessary to preserve the original material.

Today, when conservation-repair and strengthening is required in a historical building, a survey documenting the architectural measurements and details of the building and a restoration project, which is the determination of the original state of the building and the new usage style, is prepared by evaluating the current situation and determining the existing

lost parts or possible additions. The determination of original material properties and repair materials does not go beyond an ordinary report.

3.1 A Study Program to Determine Material Properties for Conservation, Restoration and Strengthening of a Historical Building

It is known that immovable cultural existences in Turkey are usually restored through bidding procedures in order that they be preserved and conveyed to following generations by the related institutions, which however, hardly any or no experts to implement or inspect restoration projects according to concerned criteria and regulations. In addition, when it comes to a restoration process, inspections prove insufficient or inadequate (of designed projects and applications) because there is no experienced and skilled personnel supposed to conduct such processes for instance, art historians, civil engineers as well as restorator architects, since restoration work is a team business, that is a collaboration. First of all, a given project is necessary in a restoration work. Among the problems in restoration are material to be used and the team to conduct the process of work. Because high or sufficient workmanship is not available in Turkey, restorative implementation is usually inadequate and careless. Making restored works functional, in other words, functionality of restored buildings is of great importance for them to sustain their unique presence for years (Gültekin, 2007). Before the conservation, restoration and strengthening of a historical building, study stages have to be define in collecting and evaluating data towards observation and determination studies (Table 1), (Ekşi Akbulut & Aköz, 2004).

Table 1. General Study Program for Conservation and Restoration of Historical Buildings

Study Groups	Study Stages	Explanations	Check List		
			Yes	No	Explanations
I.GROUP	Determination Of The Building Identity Period : (day/month)	Name / Original Name			
		Address			
		Original Function / Current Function			
		Architect/ Constructer or Institution			
		Constrion Date / Period			
		Current Condition			
		Past of Building (restoration, renewal, additions)			
II.GROUP	Information About The Building Period: (day/month)	a) Literature and visional documentation			
		b) Plans, sections, elevations and photographies			
		c) Permisions from related intitutions for the investigations and determinations			
		d)Contacts with the responsible persons sor studies			
		e) Drawing detailed and measured projects			
		f) Drawing restitution project			
III.GROUP	Examine Studies on Building Period : (day/month)	a) Coding of the elements on plans, sections, elevations with the informations from stage II			
		b) Confrontation of the documents with the current buildings in the site area			
		c) Determination of the elements, defining the damages by photography			
		d) Observation of the damage improvement by scaling and visual studies			
		e) Determination of the damage causes			
		f) Confrontation the current condition with the documents			
		g) Organization of study program by using the codings of elements for observation, measurements and tests			
		h) Determination of materials of each elements , measuremet of the elements, defining the craks and damages, detail photographs from required elements			
		ı) Non-destructive tests and defining the test results on the program			
		j) Taking specimens from required and permitted elements			
IV.GROUP	Laboratory Stdies Period : (day/month)	a) Preparing the samples and specimens for the laboratory tests			
		b) Physical, Mechanical, Chemical tests			
		c) Investigation of İç yapı incelemesi			
		d) A statistical relation with the results from the laboratory tests and the non-destructive test for correlation			
		e) The determination of the material properties from the elements that no specimens are taken but non-destructive tests are studied by using the statistic correlation			
V.GROUP	Selection Of Materials Period : (day/month)	a) The selection of materials for conservation, restoration and strenghtening After the tests, determination of original material and defining the material properties,			
		b) Determination of some specimens in the application and investigate the quality, convenience to the original material.			
VI.GROUP	Conservation, Restoration And Strengthening of The Building Period : (day/month)	a) Project preparations , restoration project			
		b) Auctioning procedure			
		c) Conservation, restoration and strenghtening applications.			
		d) A control system for quality and convenience to the original building and the projects			

3.1.1 Determination of the Building Identity

The original name and current name of the building, its address, original function and current function should be defined. Before all else architect of the building, the institution or the constructer who organized the construction and constructed date or period must be defined from the documents about the historical building than the information about past restorations, additions, renewals must be taken and current conditions of the building must be examined.

3.1.2 Information About The Building

After determination of the building identity, a literature study of the building, plan, section and elevation drawings of the building and the photographic of the building must be researched. So as to begin to investigate on the building area the permissions must be get from related institutions or organizations and contact with the responsible person. At the first stage, there must be visual determination by taking photographs and if there isn't any architectural drawing of the building, the measured, detailed drawing of the building must be studied on the building area.

3.1.3 Examine Studies on Building

Before the examine studies the groups must constitute a study program and define every single job as clear as possible.

- Coding

The structural or any kind of element in the building must be coded on the projects and the photographs of the building. These elements must be check with the building so as to define current conditions and the damages

of the building. This study must be done for also each decoration element on the building as well as the structural elements.

- Determination of Damages

The study stages and study schedule must be formed from the prepared, coded project. There should be determination of materials and measurement of dimensions from each element, detailed photography from required areas, and determination of damages and examination of the damage causes and investigation of damage improvements by using the visual and measurement methods.

3.1.3 Non-Destructive Tests

The non-destructive tests such as rebound test, sonic test, temperature test, humidity test and flat-jack test must be applied to determine the physical and mechanical properties of the materials in winter and summer conditions. Material samples are taken from suitable parts of the building so that material analysis can be carried out in historical buildings. Than the samples must be taken from only required and permitted areas so as to study in laboratory. The aim in taking samples from a structural element is to investigate the quality of materials as stone, brick, mortar to determine their strengths.

3.1.4 Laboratory Studies

After preparing the specimens and samples taken from the building, physical and mechanical tests must be applied. A statistical relation with the results from the laboratory tests and the non-destructive test must be researched to find a correlation. The determination of the material

properties from the elements that no specimens are taken but non-destructive tests are studied must be defined by using the statistic correlation.

3.1.5 Selection of Materials

After the tests, determination of original material and defining the material properties, the selection of materials for conservation, restoration and strengthening studies must be improved. The required tests must be applied to the selected materials. In the application period again some specimens must be taken so as to make tests and investigate the quality, convenience to the original material.

3.1.6 Conservation, Restoration and Strengthening of the Building

For the conservation, restoration and strengthening studies a restoration project must be prepared after the required tests and selection of materials. So as to define the application firm auctioning method can be used after all the studies, projects and documentations are obtained. There should be a control system for quality and convenience to the original building and the projects after the conservation, restoration and strengthening applications. An educated group of workers should for the proper, conscious and convenient to the original project study in the conservation, restoration and strengthening applications.

There should be expert groups, clarified job descriptions, detailed and defined study programs for each study stages in the study program defined in 6 stages which is mentioned above.

4. Findings and Discussion

However, a correct repair is possible with scientific research and material examination by experts, from preliminary research to laboratory analysis. It seems a national responsibility for us to preserve the essence of the works and convey their original appearances and structures to the next generation without distorting or modifying any parts in restorative processes of the buildings.

Although this study program seems detailed and long time work for the the conservation, restoration and strenghtening studies that has many criterias it obtains determined system for application.

The unconscious applications causes unreturn damages to the historical monuments. In this paper, the study program that has proper stages, defined experts and study descriptions and investigate the unconscious application is proposed. As a case study Hırami Ahmet Paşa Masjid which is restored between 1966-1968 by Directorate General of Foundations the fresks are removed and exterior facade stone work restored without a respect to the original building with an unconscious study (Kuban, 2000).

The building in Fatih district, which was converted to a the mosque by Hirâmi Ahmet Pahsa approximately a hundred and fifty years later after the conquest of İstanbul is an anonymous Byzantine church that can be dated to the XIIth century in accordance with her plan and other architectural characteristics (Sunay, 2011).

Figure 1. Hırami Ahmet Paşa Masjid (Sunay, 2011).

The basic problems of restorations are not giving any importance to research studied before applications, lack of material investigations, to remain true to original materials and lack of scientific documentation.

In this paper, the suggested study program obtains also detailed documentation, recorded knowledge about the buildings.

5. Conclusion and Suggestions

After examining the original material used in the building, performing the experiments and determining the material properties with the methods to be developed by using the standards, materials should be selected for the planned reinforcement and repairs, and necessary tests should be carried out on these materials.

After that, a restoration project should be prepared for the protection, repair and strengthening work, and after the projects and documents related to the work to be done are prepared, tender processes should be made in order to determine the person or organization that will carry out the application.

Samples should be taken from the materials produced during the repair phase, experiments should be carried out, and the suitability and quality of the original material should be inspected.

After the protection, repair and strengthening application is made, the conformity of the structure to the original and the project must be checked and quality control must be carried out.

As it seen in the study program which is given;

-It may be improved by the experts from different disciplines according to their needs and study subjects,

-These programs which improved by the experts may be gathered by director and transfer to the other experts and it may provide different disciplines collaborated study and may be viewed by the director of study program,

-Such a study program like this, it may be scientific, aesthetic, conservative to the historical values and a scheduled study by the experts from different disciplines for conservation, restoration and strengthening as it is mentioned in Venice Charter and other documentations of ICOMOS.

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The article complies with national and international research and publication ethics.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-11

Assessment of the Re-use of Kayseri's Monumental Buildings as Museums

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1. Introduction

A city is striving to preserve and utilize its existing cultural assets in order to maintain its position and take a significant share of the culture industry. In the 21st century, the use of tangible and intangible cultural, historical, social, economic, political, artistic, etc. values continue at full speed as a result of the visibility wars that began with globalization at the end of the 19th century (Scott, 2014). One of the most effective tools of this war and widely used since the 19th century, museology has the potential to bring cities' values. Museum functions, which have served their authentic functions, are regarded and used by many city managers as pioneers in the re-use of cultural heritage buildings that need to be preserved. In recent years, the tendency of "museumization", which has been frequently applied to the protection of cultural heritage buildings, has revealed that, while some buildings retain their authentic values, others have lost these values and the new function takes precedence over these authentic values (Sandell, 1998). This study aims to explain how buildings whose authentic functions are to be reanimated as museums can be preserved, what their authentic values are, which ones have been preserved and which ones have been lost, and with the stories of the transformation of five monumental buildings in Kayseri from different authentic functions into museums.

Located in the center of Kayseri, which has a long history, from the Roman Period, Kayseri Citadel / Kayseri Archeology Museum, from the Seljuk Period, Gevher Nesibe Madrasa and Hospital / Seljuk Museum, from the 15th-century, Güpgüpoğlu Mansion / Kayseri Ethnography Museum, from the Late Ottoman Period, Kayseri High School / The National Struggle

Museum and from the Early Republic Period, Kayseri Sümerbank Cloth Factory, Electric Power Central / Abdullah Gül Presidency Museum will be examined within the scope of the study and it will also be discussed whether the authenticity of the structures is preserved with the new function by using the comparative analysis method.

1.1. Aim

Buildings and their current uses determine the focus of the text; how these structures, which were used for centuries with different functions, are perceived by city officials and the public is another factor for determining the topic. The identification of the earliest existing structures in Kayseri (Kayseri Citadel, Roman Period) and the most recent structures in Kayseri (Sümerbank Electric Power Central, Early Republican Period), as well as the selection of structures varying in size and function (from castle to residence). The purpose of the study is to demonstrate how the definition of Cultural Heritage undergoes multiple levels of interpretation. In these selected structures, the museum is a common theme. Through these buildings, we will examine whether a new function will be suitable and how the museum's function will adapt to such diversity. As one of the main questions of the study, the conservation-use balance will be examined in this chosen function to determine if conservation or use is a priority for buildings.

In summary, the study seeks to understand how heritage buildings that must be preserved are utilized in the culture industry. This study attempts to preserve and use structures from five different periods and five different authentic functions with the same function.

2. Material and Method

The main material of the study is the city of Kayseri, which has a 6000-year history, and the cultural heritage structures of the city. In this direction, previous literature data about the city were used as material. Historical photographs, maps, and plans of the city center were evaluated as visual material within the research scope. The comparative analysis method was used in the study. Based on the conservation-use balance, the spatial organization and exhibition scenarios of the cultural heritage buildings were also examined and compared. This study compared five monumental structures in the center of Kayseri from different periods and with different original functions. In addition, the current conditions of the buildings were examined in terms of existing protection values. Their protection status was determined by comparison method.

3. Findings and Discussion

A discussion of how buildings belonging to five different periods and having five different original functions are used with the same function today is intended at the conclusion of the study. Utilizing the comparison method over the sample buildings, the use-conservation balance of the buildings will be determined, and in light of these results, the appropriateness of the function will be discussed once again. We will investigate how Kayseri, which occupies a central position on a national scale, takes part in the cultural industry and what these studies entail.

4. Museum /Re-use in Conservation

Objects, spaces, and experiences are valued according to their consumability by the culture industry, which re-functionalizes idle structures and

incorporates them back into the market economy (Adorno, 2003). The economy survives when everything is transformed into consumption spaces, ready-made image objects, and packaged experiences (Adorno, 2003). Since 1980, tourism-oriented investments have emerged as the most effective and profitable sectors of consumption-based industry.

Museums, which are regarded as the most important attraction points of tourism, are used as tools of development since the 1960s as a means of capturing a larger share of the global economic return generated by the culture industry. The museums, whose history dates back to Ancient Greek culture, have developed beyond being institutions for art and education to become today's most important cultural capitals (Atagök, 2010). Observing the historical development of the museum idea, we find that it has its origins in Ancient Greek culture. In these buildings, which were once schools where philosophical thought was produced, the city's best examples of art from the Roman period are now exhibited for the public to observe (Atagök, 2010).

Museum structures, which are considered to be the origin of contemporary museum understanding, were first developed in the 15th century (Sade, 2005). As the act of collecting and creating collections gained momentum in the 18th century, especially among the royal families (Louvre Museum in France, British Museum in England), existing structures were used to archive and exhibit the collections created, or new structures were required. (Altunbaş & Özdemir, 2012).

As a result, many new public museums were established in Europe and North America with different exhibition objects from the 18th century to the 19th century. These museums were established in the "museum age".

Towards the end of the 19th century, private and public museums were opened to the public (Artun, 2008). Museums, according to the Regulation of the International Council of Museums (ICOM) Turkish National Committee, adopted in 1946, are defined as follows: "The museum, which safeguards cultural artifacts and exhibits these artifacts collectively for the purpose of increasing study, education, and beauty, works in the public interest, works in the fields of art, science, health, and also as institutions with technological collections" as defined by Günhan (2011).

Over time, new classification systems have emerged for museums, and museums have been divided into different categories according to their subjects and themes: Archaeological Museum, History Museum, Ethnographic Museum, Military Museum, Open Air Museum, Science Museum, Art Museum, and Special Museums... etc. (Keles, 2003).

Museums are the promotional face of cities, which has continued exponentially in recent years with renewed content and forms of representation. Today's museums are not just the places where works are exhibited, they are the places that contact visitors. Museums have begun to transform into creative, modern, open spaces focused on learning and sharing. This allows the visitor to interpret and relate beyond seeing the object (Schubert, 2004). Museums with different concepts, which can be seen in many cities of the world, are turning into interdisciplinary and social learning spaces where not only art lovers but everyone wants to see, and knowledge transfer is done with different methods (Macdonald, 2003).

At the end of the 20th century, industrialization's effect on cities decreased and an all-important race for existence began. During this race, especially

industrial cities began to discover new areas of production, finding the existing values insufficient, and turning from the production industry to the culture industry (Adorno, 2003). Buildings and areas that are cultural heritage, which is one of the most significant capitals of the culture industry, have begun to be seen as valuable. The transformation of these values into capital has become the focus of local governments. The culture industry, which was not developed by society itself, but created by someone, turned cultural heritage structures into profit-oriented objects (Adorno, 2003).

Local governments are committed to making cultural heritage visible, restoring, displaying it through re-functioning, making it marketable, and including them in the culture industry. However, these studies have begun to transform the buildings, which are a defining part of urban identities and which should be protected with all their authentic values, into consumption objects used for the culture industry. The most used and appropriate function for cultural buildings equipped with many different functions is undoubtedly the "Museum" function. The transformation of existing buildings that cannot continue their authentic function into museums as exhibition objects, and the reintegration of idle structures into the capitalist capital circulation process as an economic value are frequently encountered on a national and international scale (Urry, 1999).

There is a danger of demolition for many historical buildings that have completed their authentic functional process (Ahunbay, 1996). It is intended to prevent this destruction and reuse the buildings by developing new function proposals that preserve their authentic characteristics. As defined in the Meriam-Webster (2023) dictionary, processes related to the renewal

of pre-existing structures or their reuse by acquiring new functions are called re-functioning. Re-functioning dates to the 19th century. Viollet-le-Duc said, “The most appropriate way to preserve a building is to find a function for it and meet the requirements of that function in such a way that there is no need for further changes to the structure”.

Buildings brought into use by re-functioning are more well-maintained than non-functional ones. In this context, re-functioning ensures the maintenance of heritage structures that rot and even collapse over time when they become dysfunctional. Re-functioning a building from the past as part of its current use is one of the most important indicators of urban memory preservation and establishing a connection with the past (Madanipour, 2006).

The built environment is a product of collective experience, from monuments to historical objects and their tangible existence and images of events related to them. This is in terms of maintaining memory and not breaking down bridges with the past.

According to that, social memory loss means the loss of consciousness of a group or society. This results in the disintegration of a group's parts and the alienation of the group from itself. Accordingly, the heritage structure's destruction can be considered a step toward the destruction of social memory. It can be said that re-functioning is a valid strategy/approach to prevent these destructions and social memory (Plevoets & Van Cleempoel, 2011).

In order to preserve cultural heritage structures and transfer them to future generations, museums have become a very popular method. Several of the cultural heritage buildings which need to be preserved on the scale of

Türkiye continue to function as museums (Tarihi Kentler Birliği, 2017) One of these cities is Kayseri, which has an important cultural heritage stock. Kayseri local government aims to make the city visible again by focusing on tourism and conserving historical buildings. Among these studies, transforming buildings into museums has been one of the most effective methods.

5. History of Kayseri

When the historical buildings of Kayseri are considered, which have a deep-rooted history of 6000 years, it is evident that major changes have taken place over time in the city's major settlements. While the first urbanization was at higher points on the outskirts of Erciyes, the settlement area gradually declined to the plain (Erkiletlioğlu, 2022) The city was established on the skirts of Erciyes Mountain, one of the most fertile regions located on Central Anatolia trade routes throughout history. It took its current form as a settlement over time. There are many monumental structures in the city center that have survived to the present day. One of the oldest is the İçkale, which dates back to the Roman Period. In addition to İçkale, structures belonging to the Seljuk Period, which constitute a numerically significant part of the cultural heritage to be preserved in Kayseri today, are also located in the city center Inns and bazaars were added to the center of the city during the Ottoman period (Çetinkaya & Kencer Çetinkaya, 2019). Although the zoning movements in the city intensified at the beginning of the 20th century, the work could not be continued due to the political and economic problems that arose with the start of the First World War and the War of Independence. After the proclamation of the Republic in 1923, Kayseri also

began to undergo modernization movements similar to those experienced in other cities (Eray & Kutlu, 2021). Although the city was not occupied during the War of Independence in the early 1930s, it is in a very dilapidated state as a result of neglect, and the first planning movements were initiated during this period (Çabuk, 2012).

Kayseri was affected by migration movements experienced in every region of Turkey after 1950, and urbanization accelerated as a result. In line with the 1944 plan, a significant part of the traditional urban fabric was destroyed. New residences and business centers were built between 1950-1960 (Tekinsoy, 2011). With the master zoning plan prepared in 1975, today's Kayseri with high blocks and wide streets formed. As a result of the new law that was passed in 2005, the authority of local governments has been significantly expanded. Due to these expanded legal regulations, the authority of the administration to make decisions regarding cultural heritage structures has increased, and the right to intervene has emerged with specific reasons given. (Erençin, 2006).

A local government, which has decided to develop the city as a cultural as well as an industrial and commercial city, has begun initiatives to market the city in the future as a brand and to highlight its cultural heritage (Karatepe, Ş., 2005). As a result of incorrect planning decisions taken in the past, there was no opportunity for a holistic preservation and use of monumental structures in the city. There is now a policy in place to preserve and use monumental structures in the city

5.1. Cultural Heritage in Kayseri

Due to the fact that urban development must be more than merely economic, the municipality of Kayseri began to produce works that reflected the history, values, and lifestyles of the city from a cultural perspective. Taking into account the notion that cities should have new identities through branding, the municipality began conserving cultural heritage. Additionally, it carried out restoration work on the remaining historical textures and structures (Eldek Güner, 2017) In order to facilitate the visit, a cultural route has been determined for the historical buildings in the center, as well as a route for visitors (Çekül, 2016). Throughout the route, there are cultural heritage structures dating back to five different civilizations, ranging from Rome to the Republic. There are 40 stops along the route, starting at the Gevher Nesibe Madrasa and Hospital (Seljuk Civilization Museum), which provide visitors with an overview of Kayseri's historical and cultural significance. As part of the restoration process of many of the historical monuments along the route, the Metropolitan Municipality assigned various functions to the buildings that did not continue to serve their authentic functions. The route was made recognizable by the floor coverings laid on the pavement. Information elements and directions were used to facilitate route tracking. As a result of this determined route, Kayseri's cultural values were related to one another and made visible through the environmental arrangements (Kayseri Kültür Yolu, 2014). Along with 40 historical buildings, including authentic residential and monumental structures, the cultural route includes attractions such as the Inner Castle, the Huand Hatun Complex, the Sahabiye Madrasa, the Ulu Mosque, inns, Bedesten, and the

Grand Bazaar. The functionalization of cultural heritage buildings has resulted in their transformation into museums. The study will focus on the conservation status and re-functioning of four of these re-functioned structures.

Figure 1. Kayseri culture route (URL 1)

Figure 2. Kayseri culture route details (URL 2)

5.2. Monumental Buildings Re-use in Kayseri as a Museum

There are many buildings that have been re-used in the city center of Kayseri. For some of these structures, usage is prominent, while for others, cultural heritage values and protection status are prominent. A detailed assessment of five buildings that have been reopened with the same purpose will be conducted as part of this study.

5.2.1. Kayseri Inner-Castle-Archaeology Museum

Kayseri Castle is located in the city center. This castle consists of two parts, an inner castle, and an outer castle. In spite of the destruction of most of the outer castle walls, remnants of these walls can still be observed partially in the surviving bastions. On the other hand, the inner castle is still standing today and appears to be a completely defensive structure. The Inner Castle foundations were laid during the Roman Period (Eravşar, 1998). The biggest interventions to the building belong to the Seljuk Period (Tekinsoy, 2011). In this period, despite the Mongol invasion, the castle was fortified, transformed into a full defense structure, and became what it is today.

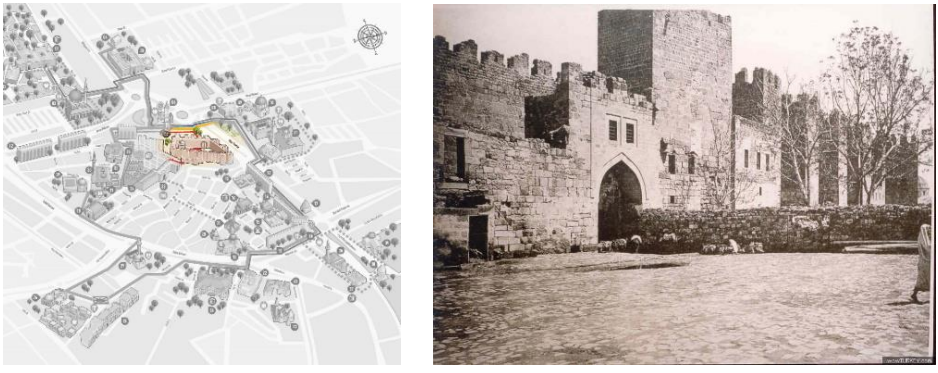

Figure 3. Inner Castle on Kayseri culture route map and old photo of inner castle (URL 3)

During the Ottoman Period, Anatolia did not have a defensive situation, so castle structures were used for different purposes than military purposes. (Çalisir Hovardaoğlu, 2009) Kayseri Citadel was transformed from a defensive structure into a residential area. In the last period of the Ottoman Empire, the castle was emptied and used as a prison for some time. In 1916, the Citadel was completely evacuated, and the rest of the residential area was destroyed, with the exception of the Fatih Mosque, whose construction date is unknown, but believed to date from the 15th century. City planning activities were initiated in Kayseri's city center following the proclamation of the Republic. There are a variety of activities undertaken by the Citadel, one of which is the use of the Citadel as a market place, where local producers and sellers from outside the city meet and products are sold. The Citadel has become an important social gathering place for the city. It was declared an urban protected area in 1979 when the Citadel and its surroundings were enclosed within it (Çalışır Hovardaoğlu, 2009). Nevertheless, the municipality made a decision to carry out landscape work in 1981. The Ministry of Culture and Tourism, as well as the High Council of Real Estate, Antiquities and Monuments, decided to convert the castle into a bazaar. Within the Inner Castle, a modern bazaar complex was designed and developed using reinforced concrete construction techniques and stone pavement, taking inspiration from the traditional residential texture of Kayseri. A two-stage national architecture competition was launched in 2008 for a new use of the Kale Bazaar, which has been used extensively by the public. Its title is "Kayseri Citadel was Conserved and Transformed into a Culture and Art Environment". In the context of the

competition, a specification was developed with the intention of developing new usage proposals for 11.000 square meters (Arkitera, 2019).

As a result of the competition held in two stages, it was revealed that the main subject of the jury selection decision was a cultural heritage that should be highlighted and preserved with all the values (historical, architectural, cultural, political, economic, etc.) (Serbest Mimar Dergisi, 2021)

Figure 4. Construction photo of Archaeology Museum (URL 4)

In response to the competition, it was decided to implement the project that was awarded the first prize. As part of the construction of the new building, the Kale Bazaar, built in 1987, was entirely demolished and the area was emptied. Implementation of the project, which won the first prize, began with some revisions (for example, the addition of an archaeological museum). It was expected that the construction would be completed and put into service by the end of 2016, however, the fortification walls had to be restored before the castle could be opened (Eldek Güner, 2021).

In 2019, the Inner Castle, whose restoration work was completed, was reopened to visitors as an Archaeology Museum and Culture Center.

The designers envisioned a street that connects the two Castle gates, which are located at different levels. Cultural and public functions are located on

this street. During the construction of the closed areas inside the castle walls, special care was taken so that the walls would not be damaged. Taking into account the space in the center of the castle, the Archaeology Museum, which is the main building, has been designed in an inward-looking manner. According to the designers, the purpose of the interventions inside the Castle is to make the area more accessible to society, while the priority is to reveal the Castle's history and values.

Figure 5. Plan scheme of Archaeology Museum and inner-castle (URL 5)

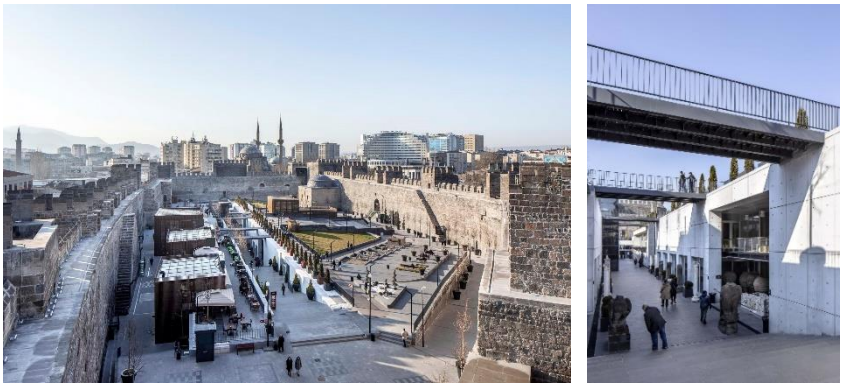

Figure 6. Details of Archaeology Museum and inner-castle (URL 6)

Despite the claim that the Castle values are brought forward and protected in the design intention, the work is only re-functioning the monumental structure as a background landscape. Accordingly, the former use of the space was for shopping, and similarly, the evaluation of the space in the middle of the castle without touching the fortification walls is very similar to the new museum design in terms of context. A very modern archeology museum has been built in the newly constructed building. A new building is being constructed which utilizes contemporary exhibition methods, emphasizes the value of the works, and has been designed with the purpose of providing educational, conference, service, and support spaces. Nevertheless, it is unknown whether it is located in the middle of a building that dates back to the Roman period.

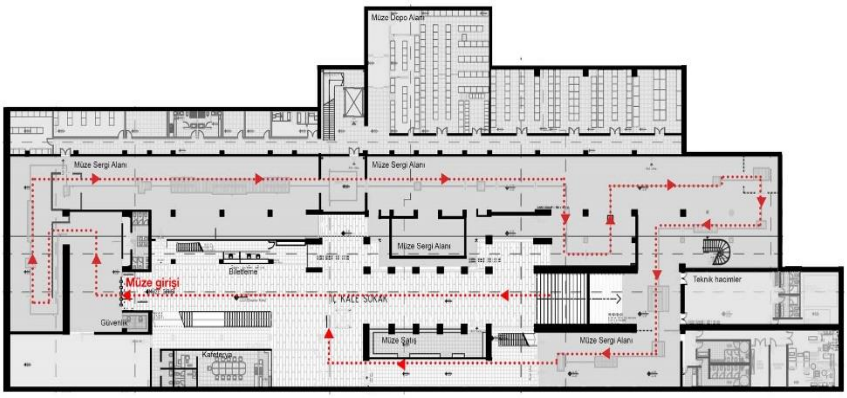

Figure 7. Plan of Archaeology Museum (URL 7)

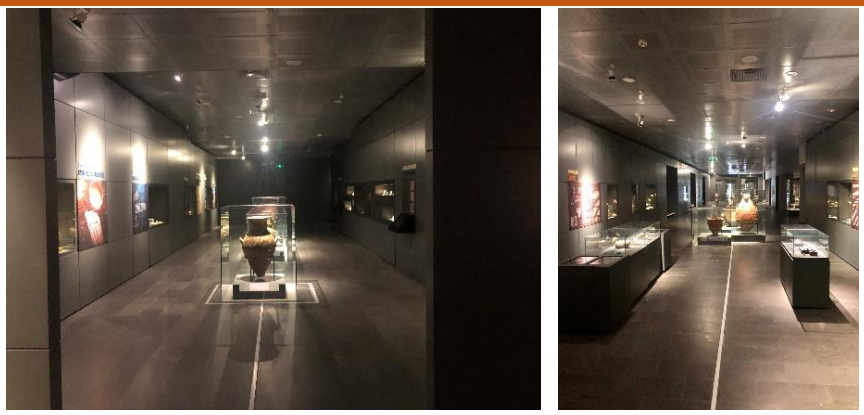

Figure 7. Details of exhibition in Archaeology Museum (Photo by Deniz Güner)

Re-functioning the Kayseri Citadel is an implementation open to discussion within the context of conservation. A defensive action, which had its authentic function, was deemed not appropriate for the castle for a long period of time, and at different times the building served different purposes (marketplace, prison, shopping mall). With such a large square meter (approximately 11.000 square meters), which is protected by fortification walls (without any security problems), and which has no access problems in the city center, many functions can be applied, however, the priority of these functions should be determined based on a focus on protecting the castle as a whole and making it visible.

5.2.2. Gevher Nesibe Hospital and Giyasiye Madrasah - Museum Of Seljuk Civilisation

The Gevher Nesibe Medical Madrasa and Hospital is located in Mimar Sinan Park in the center of Kayseri. As a result of the planning movements in the city in the 1980s, the building, which was a part of the traditional city fabric, has become isolated (Büyükmıhçı & Kozlu, 2008) in the immediate

vicinity, houses were demolished and the madrasa was removed from its context. This building was constructed by Seljuk Ruler G. Yaseddin Keyhüsrev II in memory of his sister Gevher Nesibe Sultan in 1206. It is considered one of the most significant buildings of the Seljuk era in terms of health and education. Gevher Nesibe Medical Madrasah and Hospital, which is a single-story building with a living area of approximately 2800 m2, consists of a hospital, where patients are examined and treated, a mental health department known as Bimarhane, and a medical school called the Madrasa. Corridors provide a connection between the various built functions (Köker, 1991). Even though the exact date of the first intervention in the building is unknown, it is known that it took place during the Ottoman period. It is known that the main gate was repaired during this period.

Figure 8. Gevher Nesibe Hospital and Giyasiye Madrasah on Kayseri culture route map and old photo of building (URL 8)

With the proclamation of the Republic, the city's planning decisions influenced the building's environment. The number of publications on this building increased in the 1950s, and various repairs and restorations were conducted at that time. This building was initially used as a branch of Hacettepe University and then transferred to Erciyes University in 1969

(Tekiner, 2006). Upon the addition of electricity, water, and heating installations in 1980, the building became the "Kayseri Gevher Nesibe History of Medicine Museum" in March 1982. In 1991, a partial restoration project repaired the roof and renovated the exhibition arrangement. Afterward, comprehensive restoration work started in 2006. (Çelik, 2017). In 2012, the building was transferred to Kayseri Metropolitan Municipality. The restoration projects of the building were prepared by Erciyes University faculty members in accordance with the protocol signed between Kayseri Metropolitan Municipality and Erciyes University (Büyükmıhçı & Kozlu, 2008). The museum was curated by Tetrazon Museum Exhibition Production following the completion of the restoration work (Tetrazon, 2023) and opened Museum of Seljuk Civilisation in 2014. The exhibition contains everyday life accessories, palaces, gardens, household utensils, art and craftsmanship, and symbols that depict aspects of the Seljuk era's social, architectural, and cultural development. Additionally, in order to maintain the building's historical context, there are exhibition objects that relate to the building's authentic function related to the history of medicine. In the museum, there are sections where visitors can interact with the exhibition in a structured manner, which has been designed with an understanding of contemporary museology. The museum also contains shops, cafes, and workshops for children. In 2014, the Museum of Seljuk Civilisation received the "Jury Special Award of the Union of Historical Cities Contest to Encourage Historical and Cultural Heritage Conservation Projects and Practices." (Tarihi Kentler Birliği, 2014).

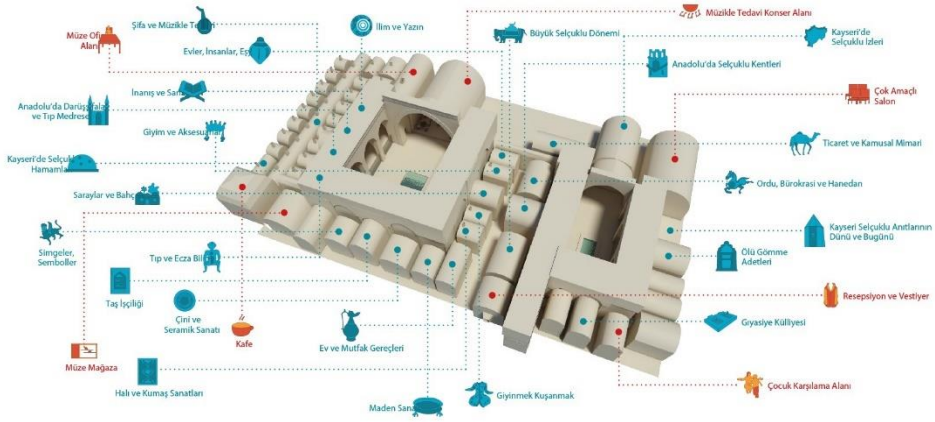

Figure 9. Plan schme of Museum of Seljuk Civilisation (URL 9)

Figure 10. Museum of Seljuk Civilisation (Göndüz, 2018)

It has been used as a museum since 1982 at the Gevher Nesibe Medical Madrasa and Hospital, which was originally designed to combine education and health care. Since the building was first re-functionalized, which dates back to the Seljuk Period, it has been a priority to preserve all of its aut values. From the authentic plan schema to the authentic architectural elements and construction technique, the final functionalization of the building, which is intended to preserve all its values, has met all the

requirements of contemporary museology. In addition to providing the protection of the building, the display arrangement also serves the purpose for which it is intended. It was possible to recognize the existence and value of the 800-year-old building through the selection of the appropriate function and its application to the building (Selçuklu Uygarlığı Müzesi, 2023)

Figure 11. Museum of Seljuk Civilisation (URL 10)

5.2.3. Güpgüpoğlu Mansion-Ethnography Museum

It is estimated that the Güpgüpoğlu Mansion was built between 1419-97, although the construction date is not known exactly. As a result of the additions to the building, the building reached its present spatial organization. In 1976, the Ministry of Culture expropriated the building and registered it as an Immovable Cultural Property (Hamdi, 2020). Since the Konak was equipped with a very large spatial organization, it was used not only for residences but also as a place of employment (Karademir, 2019).

Figure 12. Güpgüpoğlu Mansion on Kayseri culture route map and old photo of building (URL 11)

The first Ethnography Museum in Kayseri was opened in the Huant Hatun Madrasa in 1983. However, the museum was moved to the Güpgüpoğlu Mansion in 1997 as the building was insufficient (Cumhuriyetin 75. Yılında Kayseri, 1998).

Ethnographic artifacts were moved to the Selamlık section, which is located east of the mansion and was added to the building later. The Ethnography Museum was opened to visitors on May 18, 1998, after exhibition procedures were completed. The museum is on the second floor of the building and is accessed via a wooden staircase with stone steps. The rooms are arranged around the middle hall. However, the building was closed again in 2015 for the mansion to be overhauled and for innovations in terms of exhibition. Contemporary museum exhibition techniques were opened to visitors in 2020.

Figure 13. Model of Güpgüpoğlu Mansion and ground floor of Museum (URL 12)

The mansion is an example of one of the oldest neighborhoods in Kayseri and is also the oldest mansion still standing. There are two main sections, namely Selamlık and Haremlik. Today, the Harem section on the right at the entrance was arranged as a traditional Kayseri house, and the Selamlık section on the left as the Ethnography Museum, and Turkish-Islamic artifacts belonging to the Kayseri region are exhibited in the museum. The Selamlık section was built after the Harem. It leans against the outer castle walls in the east and has a dense two-story mass. The lower floor of the original is also devoted to animals and food storage. The upper floor is arranged around a middle hall, which is reached by a stone staircase with wooden railings from outside. Today, the lower floor of this section has been arranged as the city history room and reading hall. On the upper floor, there is a section where finds related to Kayseri's history are exhibited. In addition, animations were made for the city's commercial life (such as pastrami). In addition, objects describing the lifestyles of the past are exhibited in this section. The original floors, ceiling coverings, and

architectural elements of the building have survived to the present day, and they have also become exhibition objects.

Figure 14. Courtyard of Güpgüpoğlu Mansion (Photo by Deniz Güner)

The harem section of the mansion consists of three main spaces. There are three parts to the house: the sofa, the harem room, and the kitchen (tokana), which includes a hammam and a harem section.

Today, these sections are animated to depict the period lifestyle while preserving the original details. They are house-museum sections that reflect Kayseri's traditional lifestyle.


Figure 15. Interior of Güpgüpoğlu Mansion (Photo by Deniz Güner)

Güpgüpoğlu Mansion, whose construction date dates back to the 15th century, is used as an Ethnography Museum today. As a result, many of the original features of the mansion can be preserved. The Ethnographic Museum, which exhibits objects, lifestyles, and animations to describe the life cycle of cities, is situated in almost the oldest structure in the city. It is a good adaptive reuse application that does not see the building as just a building stock, but highlights and makes all its values visible, through its sensitive presentation method that maintains the authenticity of its architectural elements and details without disrupting the spatial arrangement of the mansion.

5.2.4. Kayseri High School -Museum of National Struggle

Kayseri High School is an important educational institution that was established during the Late Ottoman Period. School was founded by Sultan II in 1904 in the Seyfullah Efendi Mansion, which is located in the traditional housing texture of Kayseri. It was moved to a two-story structure made of cut stone in neoclassical style, which was built during the reign of

Abdülhamid and is currently being used as a museum (Arslan, 2014; Işık, 2010).

Figure 16. Kayserı High School on Kayseri culture route map and old photo of building (URL 13)

School education began as a single-story building in 1905, and the school's second floor was completed in 1916-1917 (Arslantaş, 2009). The building, which was built in a neo-classical style with stone material and a masonry system, has a symmetrical, rectangular plan scheme. There are rooms arranged opposite each other along the long side of the rectangle, to the right and left of the central entrance hall. The two ends of the long circulation line in the middle open to the garden. As well as adding a second floor to the building, a stairwell was added opposite the entrance, and the plan scheme from the lower floor was applied to the upper floor as well. Several architectural repertoires contributed to the building's monumental appearance, including arched windows, which were frequently used in late Ottoman eclectic architecture, especially in 19th-century buildings, the balcony above the entrance, the decorative elements on the balcony carriers, and the triangular pediment. (Uluengin, 2014). In an era when high school

education had become a means of attaining social status, the school, which had a very effective structural appearance, became one of the city's most important structures. (Özmerdivenli, 2000). In time, when the school's spatial organization was insufficient for the number of students and the service sections (dining hall, library), two buildings purchased from the nearby neighborhood were converted in 1927 into cafeterias, libraries, and performance venues. (Arslan, 2014). As the number of students increased, a new education facility was constructed in 1956-57, a hostel building was constructed between 1965-66, and a conference hall was constructed in 1976-77. Kayseri High School, which has over the years developed into an education campus, continues its educational activities in other buildings.

Figure 17. Plan scheme of the National Struggle Museum (URL 14)

In 2012, the educational activity in the main building, which is very significant for the city's memory, was finished. In 2013, restoration work began. After the annexes were demolished, they were repurposed as museums and reopened (Eldek Güner, 2017). According to the protocol signed by the Kayseri Metropolitan Municipality and the Ministry of National Education, the museum project was carried out by the Metropolitan Municipality.

Figure 18. Photo of the National Struggle Museum (Photo by Deniz Güner)

While the building is one of the educational institutions that have penetrated the city's memory the most, it was converted into a National Struggle Museum in 2016 as a consequence of the museumization trend. With its new function, the school cannot maintain its functional continuity considering its original use, place, and awareness in the urban memory. However, it can maintain its existence in terms of tangible values such as spatial organization, physical appearance, and structural details, and intangible values such as memory value.

The building, which has been converted into a museum from its original educational purpose, is a valuable cultural property that should be preserved for future generations. There are some tangible values among these, but most of them are intangible. In addition to being a late 19th-century structure, it has been preserved to this day, having its original plan scheme, facade layout, building details, and materials, which are preserved to this day, being located in the city center, and having economic value due to the building and the parcel on which it was constructed all of which can be listed

as values also. However, the most important value of Kayseri High School is its intangible value like as its place in the city's memory. The building's symbol and educational value in the history of Kayseri's education, its value as a memory in the city's memory, the educational value of students and teachers can be listed as intangible values. The number of people in the city who do not have any memories with high school and who do not have a graduate acquaintance is quite low. Many people have a subjective bond with the structure. It is the memories of the time period he studied, the relationships formed, the friendships, the times spent, and the teachers that will remain in the minds of both school students as well as their instructors and the city as a whole.

It served as the center of modern education for Kayseri from the beginning of the 20th century until the end of the quarter century. Besides the personal accomplishments of the graduates, their achievements and influence within the country borders have also contributed to the reputation and awareness of Kayseri High School. (Özmerdivenli, 1997). Today, one of the most critical factors in the transformation of the school into the National Struggle Museum is that the school, which started education at the end of the 19th century, was directly affected by the War of Independence. Although Kayseri is situated in an area without hot conflicts, the school's enrollment decreased significantly due to the effects of the war, and even no graduates were awarded in 1920-21. The reason for this is stated in the school records as follows: "Our school was unable to graduate in this academic year because the senior high school students went to the front for the Battle of Sakarya, where they were all martyred" (Tekinsoy, 2011). There is no doubt

that this is one of the most painful memories of the War of Independence that is associated with the city. Due to this intangible value, the school was transformed into the National Struggle Museum as a result of its memory value.

Kayseri High School is one of the rare examples of a school becoming a museum. Additionally, it is quite remarkable in that it represents a transition from an official education structure to a semi-public and civil one. In addition to being structurally restored to its original state, the building has been functionally redesigned.

It was necessary to re-arrange the school building, in which the building walls and the interior setting were preserved but were reconstructed to serve another purpose, in accordance with the exhibition narrative scenario. Within the scope of the National Struggle Museum, what happened during the War of Independence was visualized in the context of Türkiye and Kayseri. In addition, a separate section was dedicated to the role of Kayseri High School in this process, the history of the school, and its educational background. A very effective exhibition method was used in the museum. Visitors were triggered emotionally by stories about the War of Independence, the city's difficult situation during the war, and the tragic stories of the students who went to war and were not able to graduate. Different exhibition techniques were used at various levels to convey these emotions. The exhibition object has been removed from as many barriers and distances between itself and the exhibition object in addition to large-scale animations, enabling visitors to fully grasp the subject, facts and events, through miniature versions of war scenes, the presentation of archive

films, infographic visualizations, interactive information boards, as well as a variety of installations. The spatial setup of today's museology understanding (Atagök, 2002) has been reflected quite successfully in the National Struggle Museum.

A part of the museum is dedicated to the memories of the students studying at the school, as well as the venues for the National Struggle. Animations were made about the school period. In addition, the personal belongings of the students who studied at the school and became influential in the administration of the country were also included in the exhibition. In addition to displaying pictures of graduating students, video interviews are conducted, printed memories can be viewed, and the school's history, as well as its place within the city's memory, provide information concerning the school's educational heritage. In order to ensure the comfort of museum visitors, wet areas, cafe areas and souvenir shops, as well as children's workshops, are designed in line with the contemporary museum understanding of service spaces.

5.2.5. The Sümerbank Cloth Factory Electric Power Central-Presidential Abdullah Gül Museum

Kayseri Sümerbank Cloth Factory, which was built in the Early Republican Period in accordance with the modernization model and is today considered an industrial heritage. It was functioned as Abdullah Gül University and played a significant role in the cultural and economic development of the country in the Early Republican Period. This building complex, which is located in the middle of the city and contains aspects of the modernization process in terms of social, cultural, and physical aspects, has survived and

been incorporated into it during the modernization process of the country (Aslanoğlu, 1980).

Figure 19. Location of Sümerbank cloth factory (Prepared by the author based on Google-earth)

On May 20, 1934, Sümerbank Cloth Factory was founded, marking the beginning of the Republic's modernization process. Turkish-Soviet cooperation resulted in the design of the factory, which was put into operation in 1935 after a 16-month construction period. The main production structure of the building complex, industrial sections such as electric power central, warehouses, civil servant and worker lodgings, units for meeting the basic needs of employees such as local, infirmary and kindergarten, as well as social facilities such as cinema, football field, tennis court, and swimming pool, are all included in the complex (Asiliskender, 2002).

Figure 20. Old photo of Sümerbank cloth factory (SALT Araştırma Tarihi Kayseri)

This is the first industrial campus to be established in accordance with the goal of social modernization. Kayseri Sümerbank Cloth Factory, one of the leading structures of modern architecture, was unable to keep up with modern technological advances and closed its doors in 1999. The area was expropriated in 2002 and allocated to Erciyes University for educational purposes. Since the factory complex plays a significant role in the formation of national identity and is an important component of the city's memory, it was registered as a "monument" in 2003 and has been under protection since then (Eldek, 2007) The area was transferred to the newly established Abdullah Gül University in 2012 and underwent a significant restoration process. Today, the campus continues its mission of being an educator, having been the modernization center of the Early Republic. There is no doubt that the Electric central is one of the most defining architectural structures on the campus, which allows it to be categorized as constructivist in the architectural context.

Figure 21. Old photo of Electric Power Central (URL 15)

Electric central of *Kayseri Sümerbank Bez Fabrikası* reveals certainly the effects of modernism among all of the other parts of the factory. It was built in the same year with the other buildings in 1935. It was designed with a great care with its wide transparent surfaces, the corridors that are linked to each other in the second floor and structure. Central building also differs from the others with its façade. It takes attention with its bridge coupler on the columns in entrance façade. Main entrance is from eastern façade. Eastern façade is the place of offices and laboratories. There are wide windows beginning in basement. Behind this part there is the production unit. There are coal storages in the southern façade's basement. Perpendicular rectangular windows were used for lightening of the first floor. The most important façade of the building is the eastern one that contains main entrance gate.

Figure 22. Presidential Abdullah Gül Museum (Photo by Deniz Güner)

With the transfer of the area to the university, the Electric Power Central acquired a new purpose. Since it is Abdullah Gül University, the building was reopened as the President Abdullah Gül Museum in 2017. Several industrial buildings are undergoing re-functioning, and re-using them as museums would be an excellent option (Kaplan 2020).

The Electric Power Central which has undergone extensive restoration work and is one of the most qualified buildings on campus, has been reopened to visitors as the President Abdullah Gül Museum and Library. While the main building, which has a very large square meter, was used for exhibitions, references were made to its original purpose in the exhibition planning, and the reinforced concrete structure, patina of time, and original details were tried to be preserved. It is considered one of the leading examples of campus-scale conservation in Turkey due to its outstanding approach and

contemporary museum understanding for Kayseri as well as for Turkey, when considered in conjunction with other educational facilities on the campus as a whole.

The museum's interior arrangement and exhibit method are intended to convey the fact that the building is an industrial one. Original details have been preserved, and display elements have been used to illustrate and revive the function of the building.

Further, the cafe and wet areas within the building have been designed to meet the comfort requirements of today's campus users (Cumhurbaşkanlığı Abdullah Gül Müze ve Kütüphanesi, 2023).

In the context of re-functionalizing an industrial structure, the President Abdullah Gül Museum application represents a very successful example. The building, which will not be able to regain its original function, has been re-functionalized by preserving many of its original concrete details and visualizing many of its intangible characteristics.

6. Conclusion and Suggestions

The most important reasons for the conservation of cultural heritage are the tangible and intangible values of the buildings. Intangible values (identity, document, memory, continuity, etc.) are the reasons for the preservation of a structure that cannot be seen with the naked eye. (Madran, 2006).

In the conservation of cultural heritages that need to be protected, their intangible values should be taken into consideration as well as their tangible values and should be considered as one of the basic inputs of the conservation project. It has been attempted to evaluate the conversion of exemplary buildings that have a very important place in the memory of the city and that have been re-purposed in Kayseri into a museum based on a number of parameters.

Firstly, the process of urban change in recent years has been examined in the context of economics and brand values. The effects of cultural tourism, which the cities regard as a new area of existence, were evaluated socially and economically, reviewed in the context of Kayseri, and the place of museology in cultural tourism was attempted to be determined in general and detailed in Kayseri.

In Kayseri's memory, the buildings have somehow completed their original functions and have been reopened in order to preserve them. In all selected examples, the museum function has been implemented. While the focus for Kayseri Castle, was to use the space in the middle of the area, for Güpgüpoğlu Mansion, which is one of the oldest residential buildings in Kayseri, the focus was to describe the traditional life of Kayseri in a historical building whose authentic details were preserved.

As well, in Gevher Nesibe, which completed its original purpose many years ago, it is of utmost importance to preserve and highlight its unique architecture as well as its original purpose.

However, the situation is different for Kayseri High School. An existing building that had continued to serve its original purpose had been repurposed as a museum. The situation here is quite different from the others.

This building, which continues to perform its original function, has become a part of the culture industry by being associated with a context that does not belong to it.

As a final point, Kayseri Sümerbank has completed its original function, despite being a very worn structure architecturally. However, it has been repurposed to serve a new function similar to that of Kayseri High School.

All of these studies have resulted in conservation theory and practice focusing on protecting cultural heritage and ensuring its continuity.

As a result of this study, it has been shown with examples of how variable this balance is and how it will change in the future.

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Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

There is no material or moral conflict of interest with anyone.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-12

Designing Lime-Based Injection Mortar for Historic Masonry Consolidation: Determination of Performance Requirements and Mixture Design

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1. Introduction

Masonry structures show different characteristics, while some consist of a single leaf, others are made of multiple leaves in thickness (Figure 1). A multi-leaf wall section consists of two outer leaves and an inner area filled with mortar, small stones, or other unbound material. The connection between the outer leaves and the filling material of the middle part may differ (Szabó et al., 2023).

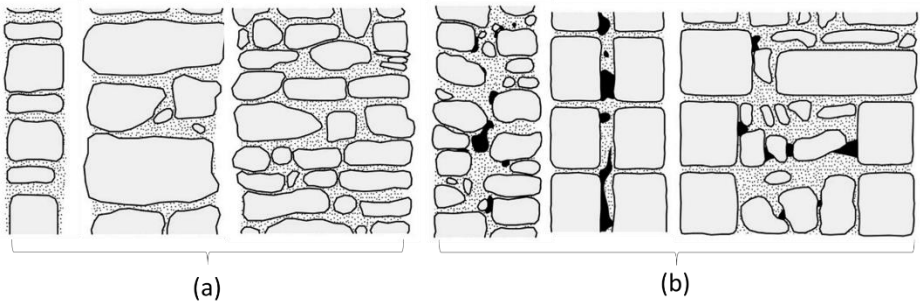

Figure 1. Cross-sections of some masonry walls; a) single leaf; b) multiple leaf masonry walls (Szabó et al., 2023).

The lack of cohesion between existing materials of the layers, the presence of cracks and voids, and the poor connection among the outer leaves all cause the non-monolithic behavior of the wall. Also, the walls become brittle and susceptible to buckling under both horizontal and vertical loading. Thus, flexural and shear strength are negatively affected, and deformation as well as leaf failure may occur (Bras & Henriques, 2012). So as to stabilize and consolidate masonry walls, grout injection technique is commonly used to prevent structural failure mechanisms (Van Gemert et al., 2015; Kalagri et al., 2010).

Grouting is used to form a three-dimensional framework that contributes to the entire masonry strength and improves the compactness of the masonry by filling voids, open joints and cracks in the wall and creating connections between materials and leaves in multi-leaf masonry. It makes weakened or damaged walls regain cohesion, continuity, and strength, enhancing the quality of masonry as well as preserving the load-bearing system and morphology of the original masonry. Thus, mechanical behavior such as bending and shear resistance and compressive strength of the walls are improved (Bras & Henriques, 2012).

In historical masonry buildings, the grouts used for consolidation should not cause deterioration and any other damage and compromise the building's authenticity. Because it is an irreversible restoration technique, grouting can often cause unintended consequences (Baltazar et al., 2012; Pachta, 2022). In this context, lime-based grouts are safely employed to strengthen historical masonry structures thanks to their high compatibility with original masonry materials and to fulfill mechanical and durability requirements (Duran et al., 2018).

The aim of this study is to present an overview of lime-based injection grouts for historic masonry consolidation with regard to performance requirements and design parameters. Within this scope, test methods used in the literature to measure grouts' injectability, mechanical strength, and durability are presented, and the significant parameters that are important in material selection and mixing processes are emphasized. At the end, a workflow proposal for the injection grout design process is presented.

2. Performance Requirements

The performance requirements of injection grouts include working properties evaluating its practical ease of use and physical-mechanical properties of the material linked to its long-term behavior in masonry. An appropriate injection grout should be chosen based on the existing masonry and site conditions that determine its efficacy in situ, and the properties of the fresh and hardened grout are considered in the decision-making process (Jorne, 2016).

Before an injection mortar is designed, the following factors should be considered first to determine its performance requirements in this context (Jorne, 2016; Kalagri et al., 2010; Papayianni & Pachta, 2015; Vavričuk et al., 2018):

- The masonry type (adobe, brick, or stone masonry) and characteristics (i.e., dimensions, cross-section, building technique, order, heterogeneity, and load capacity).
- Physico-mechanical and chemical properties of existing materials.
- Deterioration grade or state of conservation of the masonry (i.e., material losses, previous damages and repairs, stability problems, and soluble salt content).
- Environmental conditions, such as temperature, moisture, air pollution, etc., possibly endanger the durability after consolidation should be described.
- Minimum width of existing voids and fissures of the masonry structure to be injected.
- Targeted mechanical strength of masonry after injection.

A holistic examination process is required to evaluate the factors mentioned above because, besides structural damage like cracking, deterioration, and decay, factors including aging or chemical effects such as sulfate attacks and efflorescence can cause a softening of the wall components, leading to reduced strength (Pachta, 2022; Papayianni, 2014).

Mechanical properties of masonry, including strength and elasticity, are measured by using in situ nondestructive methods and laboratory tests. Long term in situ monitoring of deformations may be required to estimate the current stress levels. In addition, it is necessary to determine the chemical and physical properties of existing materials by laboratory tests to diagnose decay and determine the degree of deterioration (Papayianni, 2014).

After all the examinations and evaluations mentioned above are completed, the desired performance from the injection should be decided, and the requirements of the grout to be used should be evaluated in terms of injectability, strength, and durability aspect (Figure 2). Step-by-step experimental verification is necessary to evaluate whether the performance requirements are met (Miltiadou-Fezans & Tassios, 2022; Papayianni, 2014) (Figure 3).

Defining the properties of a fluid grout takes quite an extensive process, as it involves carrying out multiple tests to determine various characteristics of the final product. Currently, there are no specific standards for determining the characteristics of injection grouts for masonry. Existing standards, focusing primarily on cement grout, mortar, and concrete, serve more as a guide in the context of lime-based injection grouts to customize masonry

injection rather than a standard. This section explains the main requirements and the evaluation procedures used in the literature.

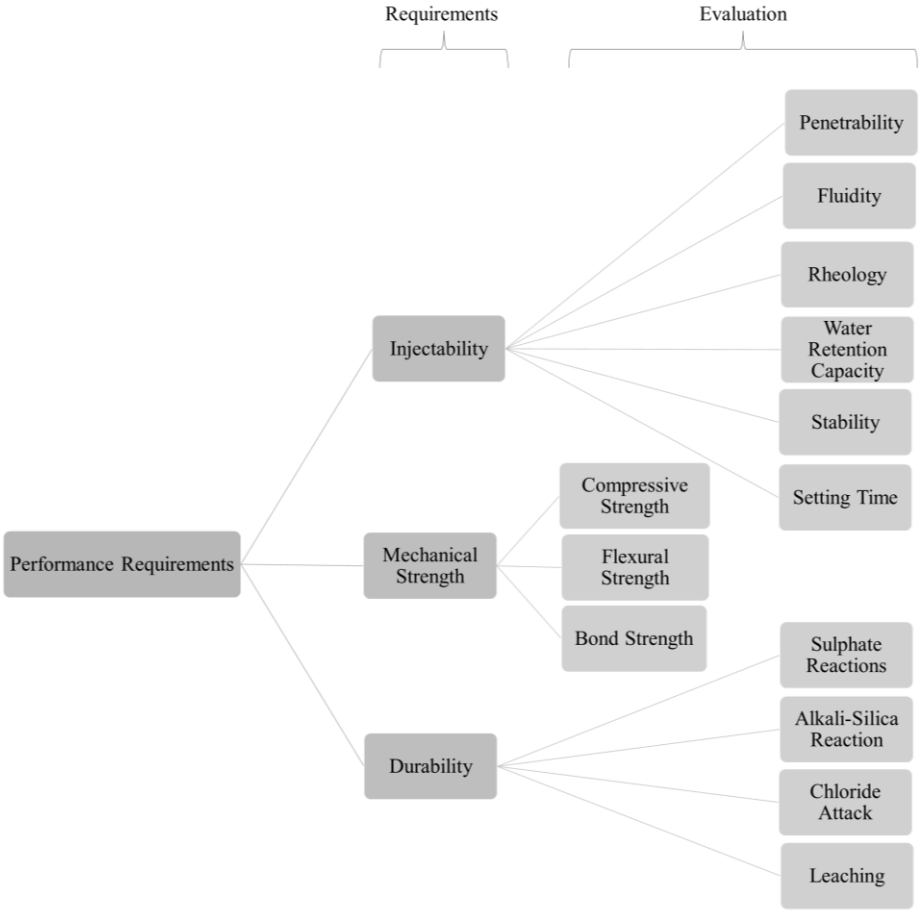

Figure 2. Performance requirements and evaluation of injection grouts.

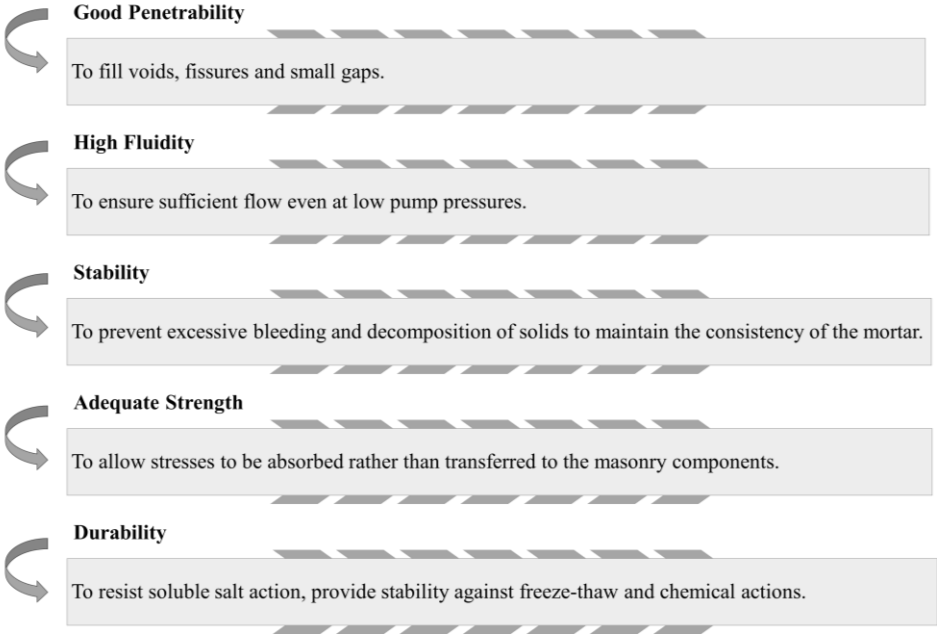

Figure 3. Milestones of performance evaluation of injection grouts.

2.1. Injectability

The injectability of grouts is a key criterion for masonry consolidation implementations. In order to ensure a successful injection, the grout must flow adequately, especially in the porous medium (Baltazar et al., 2012; Kalagri et al., 2010). Therefore, the first step of performance evaluation is to ensure injectability. This step includes the evaluation of penetrability, fluidity, stability, rheology, and water retention. Afterward, injection tests are performed for control purposes (Miltiadou-Fezans & Tassios, 2022) (Table 1).

Table 1. Injectability properties and test methods.

Properties	Test / Procedure	Standards
Penetrability / Fluidity	Standardized Sand-Column Test	EN 1771 NF P 18-891
Fluidity	Marsh Funnel Test	ASTM C939-02
	Flow Cone Test	EN 445
Fluidity / Workability	Mini Slump Test	EN 445
Water Retention	Water Retention Capacity	ASTM C941
Stability	Bleeding Test	EN 447 ASTM C940-16
Setting Time	Vicat Test	ASTM C191 EN 1015-9

2.1.1. Penetrability

Penetrability is a crucial parameter in the beginning of the systematic design of grouts. The interaction between grout and masonry determines grout penetration (Bras & Henriques, 2012). To achieve good penetrability, grout should be able to flow through the narrowest possible width of masonry cracks and voids (Miltiadou-Fezans & Tassios, 2022). The penetration capacity of the injection material can be mainly optimized by choosing the grain size, the amount of water, and the injection pressure appropriate for each porous medium (Bras & Henriques, 2012). Additionally, the mixer

type and the mixing procedure used in grout preparation affect the penetration capacity (Miltiadou-Fezans & Tassios, 2022).

The standardized sand-column test, generally following the EN 1771 or French Standard NF P 18-891, is used to control penetrability and fluidity. Grout is injected into a cylinder filled with natural siliceous sand to simulate different sizes of voids and cracks, and penetration time (s) is recorded. Using sand with different gradings allows for controlled simulation of the test's voids and fissures of varying widths (Magnon & Cayeux, 2021; Pachta & Goulas, 2020).

2.1.2. Fluidity

Fluidity is another essential factor in fresh grout performance. Grout must flow through the masonry, diffusing properly in fissures and voids for an appropriate duration to fill internal voids in the masonry (Baltazar et al., 2012). The fluidity of grout is influenced by binder type and content, water/binder ratio, superplasticizer type and content, and environmental conditions such as temperature and moisture. In addition, gran size, shape, and the specific surface area are highly influential on the fluidity of grouts (Bras & Henriques, 2012).

Fluidity is generally measured following the EN 445 or ASTM C939-2 standards. According to these standards, a longer flow time indicates lower fluidity (ASTM C939:2002; EN 445:2007). In addition, the mini-slump test is also used to measure the workability/fluidity of grout following EN 445. This test measures the spread diameter of fresh grout in a cylindrical mold with a 39 mm diameter and a 60 mm height. The grout is poured into the cylindrical mold on a horizontal base and the mold is lifted. Then, the

diameter of the mortar spread on base is measured. (Jorne, 2016; EN 445:2007). According to Biçer-Şimşir et al., (2009) the spread size and shape of the grouts at the stoppage are linked to the plastic yield stress. So, during the test, the grout flow stops when the shear stress of the grout is smaller than the yield stress. As a result, the spread diameter also can be used to evaluate the plastic yield stress of grout described in section 2.1.3.

2.1.3. Rheology

As mentioned before, consolidation quality can be controlled by its capacity to fill gaps and the masonry in general. From this perspective, plastic plastic viscosity and yield stress, among other features, should also be considered in evaluating this capacity (Bras et al., 2010). To recognize the crucial role of plastic viscosity and plastic yield stress on the flow behavior of the grouts, rheological characterization is performed using a rheometer (Bras et al., 2010; Miltiadou-Fezans & Tassios, 2022).

Yield stress is the value of limit stress required to induce the flowing of the grout. This critical characteristic influences the flow behavior of the grout as well as its ability to flow within a porous media (Bras & Henriques, 2012). The spread's shape and size during stoppage of grouts are connected to the plastic yield stress (Jorne, 2016).

The viscosity of grouts represents its workability and ability to flow and fill voids in porous media. The rate at which grout flows is linked to plastic viscosity, which, like yield stress, can predict if a grout can be pumped (Bras & Henriques, 2012). The evaluation of this impact is critical as porosity increases. A lower viscosity provides a better flow in grout injection. (Baltazar et al., 2012).

2.1.4. Water retention capacity

Water retention capacity is the capability of grout to keep mixing water when injected into dry and absorbent walls. (Baltazar et al., 2012). It is essential to evaluate the water retention capacity to preserve good rheological properties. Preserving water in grout suspensions for longer helps to maintain stable rheological behavior, which is crucial for successful injection (Jorne, 2016).

The absorptivity of the surrounding masonry blocks reduces the percentage of water retained in the mortar and negatively affects the fresh and hardened properties of the grout. Additionally, long setting durations of lime-based grouts enable masonry to absorb more grout water; potential quick evaporation further decreases its water content and may hinder the grout's hydration. To avoid extreme water losses and improve the water retention of grout, higher fine content and drastic mixing methods are needed. However, it should also be considered that higher ultrafine material content can lead to lower amounts of non-hydrated binders, as ultrafine materials hold onto water needed for binder hydration. In addition, it is important to avoid grouting during hot and dry periods as it can cause material absorption in masonry (Miltiadou-Fezans & Tassios, 2022).

Water retention is measured using ASTM C941. The test measures the time required to remove a certain amount of water from the grout. A Bruckner funnel with 500 ml of grout is subjected to a 5.0±0.2 kPa depression by a manometer while the water removed is collected in a graduated cylinder. According to the standard, the test should conclude once 60 ml of water has been extracted (Jorne, 2016).

2.1.5. Stability

Another important factor that must be controlled is the stability of the grout. Grout stability is a significant consideration in achieving desirable working properties. Instability issues like bleeding and segregation reduce grout homogeneity. Bleeding occurs when water separates from cement/lime, causing a layer of water on top of the mixture. The sinking of heavy or flocculated particles in the mortar is called segregation. Binder particles in an unstable grout tend to sink into an injected wall. As a result, the flow gets lower, obstructing the injection path and hindering further injection (Baltazar et al., 2012; Van Rickstal et al., 2003).

ASTM C 940 defines the bleeding test for grout. 800 ml of freshly mixed grout is poured into a 1000 ml graduated cylinder and covered. After complete sedimentation, the bleed water height is noted. According to EN 447, grout bleeding should be at most 2.0% of its initial volume after 3 hours (EN 447, 2007). On the other hand, Toumbakari (2002), stated that bleeding should be less than 5% to avoid segregation and obtain good injection behavior. Excessive bleeding in grout indicates substantial free water on the surface of fresh grout (Bras & Henriques, 2012; Pasian et al., 2022).

2.1.6. Setting time

Setting time is directly linked to the workability of the grouts, which significantly affects the injection process (González-Sánchez et al., 2020). A shorter setting time can damage the injection machine, while a more extended time can cause delays (Bayram et al., 2022). The setting time of the grouts can be measured according to EN 1015-9. A probe is gradually

inserted in the fresh grout, and its weight is measured as it slowly hardens. The process is stopped once it reaches a specific weight (EN 1015-9: 200; González-Sánchez et al., 2020). Another similar method used to determine the setting time is the Vicat Needle test in ASTM C 191. Although this method is primarily used to measure the setting time of cement-based mortars, it is also used for lime-based grouts because there is no specific standard for lime grouts (ASTM C191, 2012).

2.2. Mechanical Characteristics

While consolidating a historical or monumental building, it's crucial to ensure the grout used has appropriate mechanical strength. The suitable grout strength is determined by the mechanical characteristics of the masonry components (Table 2). Thus, before consolidating masonry buildings, the existing masonry strength should be determined. If masonry have a strength below the required value or if they are strong but show significant cracks, it is recommended to consolidate them using an appropriate grout, then mechanical strength needed range decided for the grout (Miltiadou-Fezans & Tassios, 2022).

Table 2. Mechanical properties and test methods.

Properties	Test / Procedure	Standards
Compressive and Flexural Strength	Compressive Test Flexural Test	EN 1015-11
Bond strength	Tensile splitting test Pull-Off Test	ASTM C496/C496M-1 EN 12390-6 EN 1542
Shrinkage	Volume Change	EN 447

2.2.1. Compressive and flexural strength

To ensure the masonry wall exhibits ductile behavior, the grout's compressive strength should be similar to that of the existing mortar and the desired strength of the masonry should not be significantly higher than its initial value. As an example, for rubble three-leaf masonry, an indicative upper limit of twice the initial strength value of the masonry has been suggested (Vavričuk et al., 2018).

Mechanical tests are conducted on prismatic samples that were molded beforehand for determining the characteristics of hardened grouts such as bond, flexural and compressive strength. According to recent studies, the bonds between external leaves and in-fill in three leaf walls are the primary mechanism responsible for the resistance and integrity of multi-leaf walls. For this reason, special attention should be given on the bond strength between injection grout and the stone/brick, with extra emphasis on this aspect (Gonzalez-Sanchez et al., 2019; Luso & Lourenço, 2016).

In the literature, the need for standard measurement for masonry grout strength has resulted in using EN 1015-11 standard for masonry mortars. To test flexural strength, prismatic samples measuring 4 x 4 x 16 cm are used, while corresponding cubic specimens are utilized to measure uniaxial compressive strength (EN 1015-11:1999). Generally, flexural strength, and uniaxial compressive strength measure over 28, 90, and 360 days. The 90-day strength is the most important measure to check if the (W/S) ratio is suitable. Earlier strength measurements help to quickly estimate the expected 90-day strength with control tests at shorter intervals. However, one year of testing is necessary to check for any potential strength

deterioration, which can occur in some cases of ultrafine binders. If the required strength is not achieved, it is necessary to check the mix design process (Miltiadou-Fezans & Tassios, 2022).

2.2.2. Bond strength and shrinkage

When concerning the strength of the masonry, the grout's flexural and compressive strength are not the primary parameters. Instead, the bond strength between the grout and masonry, typically evaluated through splitting and pull-off tests, is of greater importance (Jorne, 2016; Miltiadou-Fezans & Tassios, 2022).

The optimal grout composition's hardened state can be tested using the splitting tensile test, specifically from an interfacial bond point of view, on a test sample (Baltazar et al., 2012). For good bonding between grout and masonry components, the grout must have a minimum tensile strength (ASTM C496/C496M-1:2004; Bras & Henriques, 2012). The indirect tensile splitting test can be measured following the procedures described in the ASTM C 496/C 496M-04 and EN 12390-6. A cylindrical specimen is subjected to a diametral compressive force along the length of a sample until it fails. This produces tensile stresses perpendicular to the load plane and high stresses in the surrounding area (ASTM C496/C496M-1:2004; EN 12390–6:2011; Baltazar et al., 2012).

Another method for determining the bond strength is the pull-off test (Vavričuk et al., 2018). This test is carried out following EN 1542. Fresh mortars are placed on stone or brick surfaces with the help of molds, and when the mortar hardens, a steel dolly is attached to the mortar surface. This steel dolly is then pulled by applying a load at a constant speed and the

tensile force is measured according to EN 1542. At the end of the test, the failure modes, which are an important indicator of the adhesion and cohesion of the mortar, are recorded on the substrate, on the repair material and on the interface (EN 1542:1999).

One crucial property that significantly affects the bond strength between grout and masonry is shrinkage. This is because it creates extra stress on the interface, leading to the development of cracks and ultimately causing a decrease in adhesion between the two materials (Mirza et al., 2002; Toumbakari, 2002). Therefore, grouts must have little to no shrinkage to preserve their volume, prevent adhesion loss, and decrease moisture penetration through shrinkage-induced cracks (Luso & Lourenço, 2017). According to standard EN 447 (2007), acceptable volume change lies at $-1.0\% \leq \Delta V \leq 5.0\%$.

2.3. Durability

When designing a durable grout composition, it is crucial to consider the grouts' physical effects of water introduced in masonry, including dissolution of water-soluble phases, and freezing, as well as the chemical effects like alkali-silica reactions, sulfate reactions, leaching, and possible chlorides' attack (Miltiadou-Fezans & Tassios, 2022).

As known, a significant amount of water is introduced into the masonry walls with grout injection. The pores in existing materials in masonry absorb the free water in the wall and evaporate it. Therefore, the permeability of grout and masonry materials must be evaluated to make durable and compatible grout. Grouting should ensure water permeability and not

significantly decrease the wall's air permeability, which is necessary for vapor to escape through masonry (Isebaert et al., 2016).

If grouting is done in freezing conditions, it may cause the water in existing materials to expand and increase the risk of damage due to freezing. Moreover, water-soluble materials within the masonry can dissolve and migrate to the pores, leading to internal crystallization. This, in turn, leads to negative consequences including cracking, flaking, and growth of salts (subflorescence) (Miltiadou-Fezans & Tassios, 2022).

That is why it is crucial not to add sulfates or soluble alkalis to grout as they can lead to salt movement. This is also important especially when these substances are present in masonry materials. If the existing materials are chemically susceptible, water absorption can allow some chemical components in the wall to leach, increasing the area where harmful substances can dissolve (Miltiadou-Fezans & Tassios, 2022).

In order to reduce the harmful effects mentioned, the following suspicious chemical factors including chlorides, sulphates, and alkalis should be considered and evaluated following EN 196-2 standard (Miltiadou-Fezans & Tassios, 2022; Papayianni et al., 2012; EN 196-2:2013) (Table 3).

Table 3. Durability evaluation and test methods.

Properties	**Test / Procedure**	**Standards**
Durability	Chemical Analyses	EN 196-2 EN 447

2.3.1 Sulphate reactions

Sulphate penetration can cause chemical reactions that create expansive substances, resulting in microcracking and spalling. The moisture in historical building masonry can cause sulphate attacks on hardened grouts, leading to loss of cohesion and structural weakening. To minimize sulphate attack risk, using pozzolans to decrease portlandite content can be helpful (Miltiadou-Fezans & Tassios, 2022).

2.3.2 Alkali-silica reaction

Materials which include active silica minerals can lead to alkali-silica reaction (ASR) due to the creation of a silicate gel with sodium or potassium. The gel's formation causes stress to the aggregates and binders, leading to cracking and dissociation. Most cement and some pozzolans contain such alkalis. However, finely grinded pozzolanic material is commonly added to the mixture to prevent ASR. Active silica in the pozzolan particles reacts with alkali and portlandite, dispersing alkali silicate gel on a micro-scale to prevent stress evolution. If there are reactive aggregates in the grout, it is crucial to keep the alkali mass content under 0.6% (Uranjek et al., 2012).

2.3.3 Chloride attack

When chloride reacts with calcium hydroxide in the grout, it creates soluble products that can reduce the strength of materials. Chlorides can form salt crystals in the pores when subjected to wetting and drying cycles, such as fluctuations in groundwater. This can lead to cracking and disintegration. One solution is to add finely grinded pozzolan, which can decrease the amount of available calcium hydroxide. This is especially helpful in

structures where chloride ions may be present, such as those located in coastal areas (Uranjek et al., 2012). According to EN 447 (2007), the chloride limit value is set to 0.1% by mass.

2.3.4 Leaching

Leaching occurs when excess water dissolves calcium hydroxide in the grout. Water flow intensifies this effect by washing out ions, preventing the solution from saturating, and maintaining a high alkaline PH. To avoid this, free water movement within masonry should be inhibited or greatly reduced (Miltiadou-Fezans & Tassios, 2022).

3. Mixture Design

Designing a fluid grout is a complex process requiring a wide range of tests to define various final product characteristics. Grout composition should enhance the performance of masonry structures without adversely affecting their durability. To ensure injection quality, grouts must be properly designed according to the performance requirements mentioned above (Miltiadou-Fezans & Tassios, 2022).

After determination of the targeted durability and mechanical parameters, the main consideration while designing grouts should be achieving sufficient penetrability. To do this, first, solid phase grain size should be selected based on the effective minimum width of masonry discontinuities. Then, to achieve the desired injectability, the suitable water-to-solid ratio, mixing technique, and superplasticizer content should be determined.

Once the sufficient level of injectability of the grouts is achieved, fresh grout is molded and left to harden in convenient cure conditions. Afterward, the mortars' mechanical properties are tested, and suitability evaluated. In the

last step, the long-term durability of the hardened samples that show sufficient mechanical strength is evaluated. In the end, samples found suitable can be injected.

3.1. Material Selection

When selecting a grout composition for historical masonry structures, special attention must be given to compatibility with the original masonry material because grout injection is an irreversible consolidation practice. Poorly designed grout can cause unfortunate failures. For this reason, use of suitable raw materials is critical to avoid incompatibility problems concerning the composition and nature of the historic masonry materials. It is important to ensure that the grouts have chemical, physical, and mechanical characteristics compatible with the original material (Van Gemert et al., 2015; Van Rickstal et al., 2003).

Grouts consist of one or more binders, water, and additives. These mixtures may or may not contain aggregate. Fine aggregates (fillers) may be added to enhance their characteristics (Luso & Lourenço, 2017; Papayianni & Pachta, 2015).

Many parameters can affect grout properties, including the type of binder and aggregates/filler, additive and/or admixture type and dosage; as well as the water content, mixing procedure, and environmental conditions (Pachta, 2022) (Figure 4).

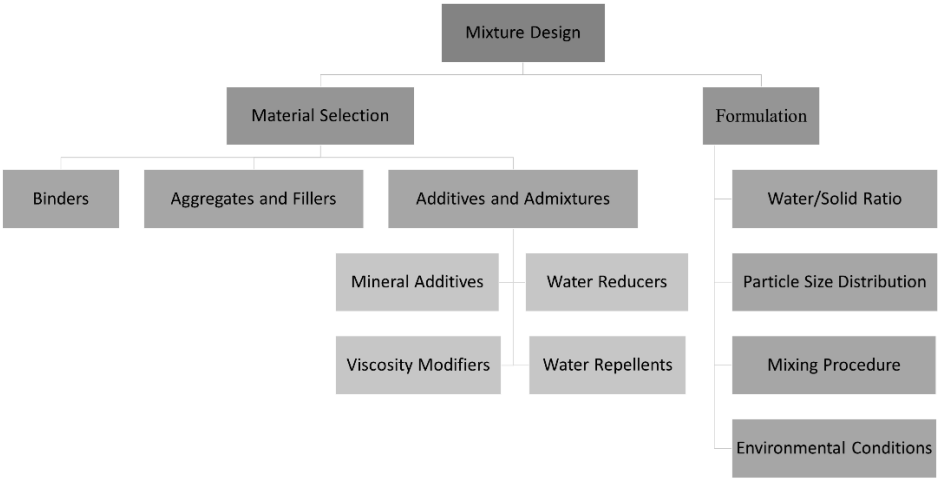

Figure 4. Important parameters influencing mixture design.

3.1.1. Binders

The selection of the binder type should be based primarily on durability considerations. Next, the mechanical consequences of grouts should be taken into account. Furthermore, it is crucial to use chemically and mechanically compatible binders with old masonry for grouting in order to achieve the most reliable results for consolidation. In this context, cement-based grouts are not suitable for consolidation due to their high mechanical strength, as well as also because they contain water soluble salts (Miltiadou-Fezans & Tassios, 2022; Veiga, 2017).

Considering their compatibility with traditional materials, lime-based grouts are the most suitable materials for consolidating historical masonry (Kraus & Droll, 2009). However, it is important to consider the low structural efficiency of air lime-based mixtures (Luso & Lourenço, 2017). In this context, hydraulic lime mixtures (natural hydraulic lime or pure lime in

combination with pozzolan) are widely used in grouts due to their high-water vapor permeability, moderate strength, and chemical compatibility with conventional materials in old masonry (Navarro-Blasco et al., 2014). They can also harden in humid conditions, which makes these binders very suitable for fieldwork (Papayianni, 2014).

3.1.2 Aggregates and fillers

While selecting the aggregates, it is important to consider their shape and porosity (water absorption). The shape of particles plays a crucial role in working properties. Round shape aggregates enhance injectability and flow. Conversely, angular particles typically hinder these abilities (Pachta, 2021; Pasian et al. 2020). They can make it difficult to inject through small needles, but they are required to achieve good cohesion and packing geometry. For this reason, to achieve good flow and cohesion in mortars, it is preferable to use a mixture of round and angular particle shapes (Pasian et al., 2022).

Aggregates with high water absorption increase viscosity by reducing grout flow and injectability. Aggregates like quartz sand and marble powder, which are non-porous or poorly porous, have better working properties than porous aggregates like crushed limestone, which absorb liquid during mixing. On the other hand, finer fractions - which have a larger surface area - show more mixed water absorption than coarser fractions (Pasian et al., 2022).

The existence of ultrafine materials increases the specific surface area of the solid phase, which can prevent harmful bleeding and also increases fluidity without compromising mix stability. However, adding excessive ultrafine

materials to meet strength requirements and ensure a good penetration can decrease fluidity and increase the required water content, which could result in strength reduction (Miltiadou-Fezans & Tassios, 2022).

3.1.3. Additives and admixtures

To improve the grouts' fresh and hardened states it is necessary to incorporate various mineral and chemical additives into the mixture (Bayram et al., 2022). There are two groups of additions used in lime mortar: additives and admixtures. Additives like ceramic powder and mineral fillers are used to enhance certain properties and increase the strength of mortar. Admixtures are added in small content (the total mass not exceeding 5%) and create permanent modifications such as improved workability, decreased density, or waterproofing (Arizzi & Cultrone, 2012).

3.1.3.1. Mineral additives

The addition of pozzolanic materials to lime-based mortars results in the formation of calcium aluminosilicate composites that exhibit hydraulic activity. This process also leads to the developing of a microstructure with smaller pore radii and higher apparent density. (Frankeová & Slížková, 2016; Maravelaki et al. 2023). This reaction consumes $Ca(OH)_2$, reducing hardening time and increasing mechanical strength as well as durability (Duran et al., 2018; Maravelaki et al., 2023). The addition of pozzolanic material is especially useful for air lime-based grouts in deep cracks and cavities with limited CO_2 access, as it accelerates setting time in low CO_2 environments (Toumbakari, 2002).

Natural and artificial pozzolans are widely used in lime-based grouts. Byproducts like fly ash and silica fume (also known as micro silica), and

treated clays, with metakaolin being the most well-known artificial pozzolans (Mardani-Aghabaglou et al., 2014; Papayianni & Pachta, 2015). Some natural materials, like volcanic ashes and diatomaceous, also have pozzolanic activity when milled. They can help in developing both early and long-term strength (Frankeová & Slížková, 2016; Massazza, 2002). However, it is possible for natural pozzolans to have a significant amount of soluble salts. Ferragni et al., (1981), were initially skeptical about the usage of natural pozzolans due to the high levels of potassium ions in them. Metakaolin has been one of the most widely studied pozzolans. It is obtained from kaolinitic clay through heat treatment at temperatures ranging from 500 °C to 900 °C (Mohammed, 2017). The addition of metakaolin to lime-based grouts affects the properties of fresh grout. The water demand of mixtures increases proportionally with the metakaolin content when the fluidity is kept constant. Meanwhile, the grout's ability to retain water is improved due to the increase in the number of fine particles. Besides, adding metakaolin to lime based grouts improves setting time, initial and long-term compressive strength, and bond strength. Due to its filler effect, it also prevents microcracking in hardened grouts. It improves resistance to freezing-thawing cycles by reducing porosity and prevents absorption of liquid water, blocking expansion damage and improving overall resistance (Pachta et al., 2019).

Metakaolin reacts strongly with lime when substituted appropriately and when favorable curing conditions are provided. High levels of substitution cause an increase in porosity and a decrease in the average pore diameter. Simultaneously, Increasing the substitution amount can enhance grouts'

compressive strength (Vavričuk et al., 2018). However, it should be considered that lime-metakaolin grouts may undergo long-term strength loss. This instability is attributed to the unstable calcium aluminate hydrates in the presence of high aluminum phases found in MK. (Mohammed, 2017; Vavričuk et al., 2018).

Besides metakaolin, brick dust is also used as a pozzolanic additive in lime grouts based on compatibility or stability concerns even though its Pozzolanicity Index is lower than other artificial pozzolans (Papayianni & Pachta, 2015). While using brick dust in a grout mixture, it's important to consider its high surface area and porosity. Because fine particles can absorb a high amount of water, using excessive amounts of brick dust can result in the need for more water to achieve the desired mortar consistency (do Rosário Veiga et al., 2010). According to F. Jorne & Henriques (2016), lime mortars containing 20-25% brick dust by weight had excellent volume stability, good permeability, and satisfactory fluidity.

Silica fume addition increases the mixtures' specific surface, causing a decrease in grouts' fluidity and injectability (Baltazar et al., 2017). Interparticle friction increases with silica fume dosage surpassing a threshold value dependent on the solid volume fraction (Baltazar et al., 2017; Phan et al., 2006). Thus, the grout's penetration capacity reduces tremendously, making it challenging to inject at low pressure. To achieve the desired penetrability, the water content must be increased, but this could negatively impact the stability of fresh grout and its properties when hardened (Baltazar et al., 2017). Regarding compressive strength, higher amounts of silica fume lead to increased strength due to the reaction of

amorphous silicon dioxide with calcium hydroxide. This results in an increased number of calcium silicate hydrate structures in the grout (Shihada & Arafa, 2010).

Another type of artificial pozzolan utilized in lime grouts is fly ash. This material is generated as a by-product when pulverized coal is burned for thermal energy production (Bras et al., 2010). Fly ash's round shape and small size enhance grout density, decrease material voids, and thus, contribute to the mortar's durability (Laefer et al., 1996). Beside this, consumption of calcium hydroxide by the fly ash, also has a positive impact on durability of the grout by decreasing the likelihood of ettringite and thaumasite formation (Bras et al., 2010).

3.1.3.2. Water reducers

Another component in grout design is water reducer admixtures (WR). These admixtures are composed of anionic surface-active agents or surfactants that get absorbed onto binder particles. This absorption results in the binder particles acquiring a negative charge, which then facilitates the creation of repulsive forces. This way, particle flocculation is prevented or decreased, reducing water demand, and improving injectability of the grout (Silva et al., 2021). Also, they can decrease the setting time and increase the strength of lime mortars (Fernández et al., 2013; Silva et al., 2019). Using less water can reduce drying shrinkage and porosity, making them less susceptible to degradation. The admixtures can also improve the application and adherence of mortars to the substrate (Silva et al., 2019). In addition, WR admixtures improve the grouts' fluidity, stability, and water retention capacity by reducing yield stress and plastic viscosity. (Baltazar et al., 2012;

Gonzalez-Sanchez et al., 2019). Nevertheless, these changes aren't found to be significant enough to affect the compatibility of the air lime mortars with older materials (Silva et al., 2019).

WR admixtures are classified by water-reducing ability into (P) plasticizers (5-10% reduction) and (SP) superplasticizers (12-40% reduction) (Gonzalez-Sanchez et al., 2019; Navarro-Blasco et al., 2014). Lignosulfonate (LS), polymelamine sulfonate (PMS), polynaphthalene sulfonate (PNS), melamine-formaldehyde sulfonate (SMFC) and polycarboxylate ether (PCE) are the most used water reducing additives in grout mixes today (Navarro-Blasco et al., 2014).

There are mainly two mechanisms for the dispersion of binder particles: steric hindrance and electrostatic repulsion. The second generation of superplasticizers like PMS and PNS, disperse through electrostatic repulsion from ionization of binder particles with similar charges. The polycarboxylate causes particle repulsion via steric hindrance and ionization dispersion forces. The long side-chain polymer creates steric repulsion that prevents binder particles from flocculating and keeps them apart (Baltazar et al., 2013; González-Sánchez et al., 2020).

Dispersion effects of plasticizers can change according to the binder properties and additives as well as SP type and dosage. As Hanehara & Yamada (1999) expressed, the interaction between SP and the binder, and hence the dispersion effect of it, mainly depends on the binder's physico-chemical properties. Studies conclude that the naphthalene SP exhibits superior performance when used with hydraulic lime instead of polycarboxylate because this combination leads to a shorter flow time and

to maintaining fluidity for a longer period (Baltazar et al., 2012; Bayram et al., 2022). However, in air lime-based injection mortars, PCE is found to have higher dispersion ability and requires less quantity compared to PNS. Also, the fluidity loss is lower with PCE over time, but this comes at the cost of a higher bleeding tendency. Both types of additives significantly increased the mechanical strength even in the early stages and had minimal effect on the porous structure of the mortars (Silva et al., 2019). Similarly, some studies found that PCE is significantly better than SMFC and PNS at enhancing the flow and fluidity of the air lime-based grout (Baltazar et al., 2013; González-Sánchez et al., 2020). Considering all these results, it is important to choose the appropriate chemical composition of the superplasticizer based on the type of binders used in the grout.

The effectiveness of the admixtures can vary considerably in the presence of pozzolanic additives. Van Rickstal et al., (2003), has shown that the addition of PCE to lime based grouts including micro-silica delayed the hardening of the mortars. The reason for this effect is that PCE clings to the binder particles and prevents them from clumping permanently. PCE attachment onto binding particles restricts their agglomeration, thus preventing the grouts' early hardening. (Navarro-Blasco et al., 2014; Rodriguez-Navarro et al., 2005). However, there was no delay when a high dosage of PCE was added to grouts with MK. This behavior can be attributed to the rapid pozzolanic reaction of MK, which is faster than microsilica (González-Sánchez et al., 2020).

On the other hand, it should be considered that the amount of superplasticizer added in the grout can significantly affect the grout

properties. The viscosity-reducing effect of SP are mainly dependent on the concentration of it. It's effective only if the saturation dosage is below a certain level, as higher concentrations can make the mixture unstable, reducing fluidity (Baltazar et al., 2012). Baltazar et al., (2022), said that adding an amount of superplasticizer can significantly increase the risk of excessive bleeding.

Considering all these parameters, SP effectiveness should be evaluated with additions and admixture characteristics while designing a grout mixture. Moreover, the effects of different SP types and dosages should be comparatively taken into account.

3.1.3.3. Viscosity modifiers

Viscosity modifiers (VM) are commonly used admixtures to adjust the fresh properties of the grouts. Viscosity modifiers improve grouts' consistency and homogeneity, thus keeping grouts stable and making them easier workable (Bayram et al., 2022; Silva et al., 2021).

They are usually utilized in combination with a high dose of water-reducing admixtures to prevent bleeding and segregation and enhance the cohesion of a grout, particularly in mixtures rich in fine additive (Bayram et al., 2022; Maravelaki et al., 2023; Silva et al., 2021).

Most viscosity modifiers consist of hydrophilic polymers with long chains, which are often modified polysaccharides like starch, cellulose ether, and gum. They minimize the amount of free water by absorbing and fixing the water molecules, thus improving the viscosity of grouts (Silva et al., 2021). In addition, they also have the ability to enhance mechanical strength,

diminish porosity, and decrease water absorption. (Fernández et al., 2013; Perez-Nicolas et al., 2016).

3.1.3.4. Water repellents

Water repellents (WRep) form another type of admixture that reduces water absorption in grouts. Water absorption can damage the structural integrity of masonry by dissolving soluble salts and causing efflorescence. In addition, it causes mechanical damage to the masonry during freeze-thaw cycles. To reduce these possibilities, water-repellent admixtures can be used to decrease the water absorption of mortars and enhance the long-term resistance by the way of the grouts by imparting hydrophobicity (Izaguirre et al., 2009; Silva et al., 2020).

Nowadays, many products rely on fatty acid salts such as calcium stearate, zinc stearate, sodium oleate, and silicon compounds. These additives can improve water absorption properties and resistance to freeze-thaw cycles, as well as even increase the mechanical strength of mortars (Veiga, 2017).

When choosing WReps to use in lime mortar for restoration intervention, it is important to be careful in the selection process. This is because, combined with different substances already present in grout, WRs can have different effects on the performance of the mortar. Therefore, it is important to pay attention to the interaction between water repellents and additives when they are used together. It has been discovered that combining sodium oleate with SPs can decrease the effectiveness of superplasticizers, particularly those of SMFC and PNS. This is due to the high adsorption of SMFC and PNS into the oleate layer, which reduces water-repelling properties. It has been observed that using PCE is a comparatively good option as it provides the

highest injectability and hydro repellency with sodium oleate (González-Sánchez et al., 2020).

3.2. Formulation

The process of grout formulation for conservation of historic masonry structures is complicated due to specific requirements like high fluidity, adequate strength, and compatibility (chemical and physical) with existing materials. Choosing the appropriate binding system and proper proportion is essential for lime-based grouts to be effective. The water to binder ratio and the proportions of superplasticizers and viscosity modifiers are determined based on the limits of fluidity, penetrability, and bleeding tests (Bayram et al., 2022).

3.2.1. Water/solid ratio

Water content has a considerable effect on the fresh and hardened properties of grouts and is also a very important factor for grouting efficacy and applicability (Pachta, 2022). The high demand for fluidity in grouts requires a high water/binder (W/B) ratio, but this can cause the problems with volume stability and the development of the early strength in grouts (Bras & Henriques, 2012).

According to Patcha (2022), reducing the water content in grout mixture improves mechanical properties and decreases the volume change but increases the penetration time due to reduced fluidity. It is suggested in the literature that the water/binder ratio should be at least 50-55% by weight to provide sufficient water for lime hydration (Bras & Henriques, 2012; Padovnik & Bokan-Bosiljkov, 2021). This ratio also provides high compressive strength in grouts with sufficient fluidity. As the amount of

water increases, the grout structure gets more porous and hence, becomes weaker (Baltazar et al., 2014).

In order to achieve the necessary fluidity, adding a high amount of water can negatively impact the mechanical properties and stability of grouts. To avoid this, it is advisable to use proper super-plasticizers and/or other admixtures like viscosity modifiers to minimize for the needed water-to-solids ratios (Miltiadou-Fezans & Tassios, 2022).

3.2.2 Particle size distribution

While designing dry mixtures, it is crucial to carefully evaluate dry mixtures' particle size and particle size distribution to obtain the desired injectability, maintain good cohesion, and prevent shrinkage. Choosing the appropriate grain sizes for grout can be challenging because of the various sizes of gaps in the wall. Even though grouts can easily penetrate large voids, thin cracks (2-3 mm) pose a challenge for grouts to penetrate and fill voids. Therefore, it is crucial to make sure that the size and distribution of the particles in the mixture are suitable for the minimum width of fissures and voids. (Jorne, 2016; Miltiadou-Fezans & Tassios, 2022).

According to Van Rickstal et al. (2003), the grout's biggest particles should be less than 0.15 times the smallest crack size. If cracks with a high opening of 2-10 cm are present, using a flowable mortar rather than grout is better because the sand content in the mortar with a maximum grain size of 0-8 mm helps maintain volume stability and reduces shrinkage cracks (Papayianni, 2014).

Moreover, the particle size distribution in a mixture can affect its viscosity and flow. A wider range of particle sizes can decrease viscosity and improve

flow (Duran et al., 2018; Pasian et al., 2022). Therefore, it is suggested to use a broad range of particle sizes as long as they remain fine enough to be injected (Biçer-Şimşir et al., 2009).

3.2.3. Mixing procedure

Mixing procedures is a critical step for creating a consistent grout, where it is ensured that the binder is distributed throughout the water, and flocculated grains which behave like large grains are separated. To attain optimal fluidity while maintaining stability at the same time, it is important to follow the correct procedure (Van Rickstal et al. 2003).

The proper mixing speed and duration are crucial for achieving proper grain dispersion and complete surface wetting, minimizing the risk of non-hydration of grout, ultimately resulting in higher strength. Grouts that are mixed for a long time and faster are more fluid. Thus, high turbulence or ultrasound mixing are recommended to ensure both satisfactory injectability and strength (Miltiadou-Fezans & Tassios, 2022). Low mixing speed (300-600 rpm) results in lower viscosity values, it causes lumps in the mixing bowl. Mixing the grout with the high-speed mixers results in better deflocculation compared to low-speed mixing (Jorne, 2016; Toumbakari et al., 2002). Increased mixing speed causes particles to disperse more, creating a higher specific surface area. Therefore, the grouts which are mixed at high speed generally require more SP to maintain fluidity (Gökyiğit Arpaci et al., 2019).

3.2.4. Environmental conditions

For a successful injection application, it is important to consider the environmental conditions that may affect the injection capacity (Baltazar et

al., 2014; Kalagri et al., 2010). In grouted masonry, the air's relative humidity is quite high due to the fact that thicker masonry prevents relatively dry external air from easily entering and the enclosed air content in masonry is limited. Thus, evaporation happens only through the pores. Therefore, when grout specimens are cured under insufficient humidity conditions, the outer and inner layers undergo disproportionate differential shrinkage, which leads to internal tensile stresses. This causes a reduction in both compressive and mainly tensile strengths (Miltiadou-Fezans & Tassios, 2022). Luso & Lourenço (2016), found important differences among SP products in terms of their mechanical strength, fluidity, and sensitivity with respect to the substrate under different humidity and temperature conditions. In the study of Bras et al. (2010), the effects of temperature on the injection method were investigated. It has been stated that the ambient temperature should be between 5 °C and 35 °C for an effective injection, and the optimum temperature is 20 °C (Bras & Henriques, 2009).

4. Evaluation

Designing a suitable lime-based injection grout requires extensive consideration of various parameters. A methodical approach is necessary to make sure the final product meets all required performance criteria. This study provides an overview of the design steps of lime-based injection grouts for historic masonry consolidation, as summarized below (Figure 5). The design consideration should begin with a holistic examination of the masonry. This step includes assessing the current condition of the walls, identifying damage or deterioration, and evaluating the mechanical

performance of the wall. Based on these evaluations, desired performance from the injection should be decided.

The next step is to design the mixture, starting with selecting the type and amount of aggregates/fillers and binders. Then, it is needed to assess the water/solid ratio to ensure the mixture is sufficiently fluid to infiltrate the cracks and voids in the wall, while still maintaining stability. If the required fluidity and stability values are not achieved, the use of water reducers can be an additional step to achieve the desired results. If controlling the type and amount of the superplasticizer is not effective, other admixtures, as mentioned before, can be added. When the grouts are determined to be injectable, fresh grout is molded and cured under the appropriate conditions. The mechanical properties of the mortars are then tested and evaluated for suitability.

The final phase involves assessing the long-term durability of the hardened samples that exhibit adequate mechanical strength. The performance of grouts should be evaluated by taking into consideration physical effects of water introduced in masonry, including dissolution of soluble phases, and freezing, as well as the chemical effects like alkali silica reactions, sulfate reactions, leaching, and possible chlorides' attack.

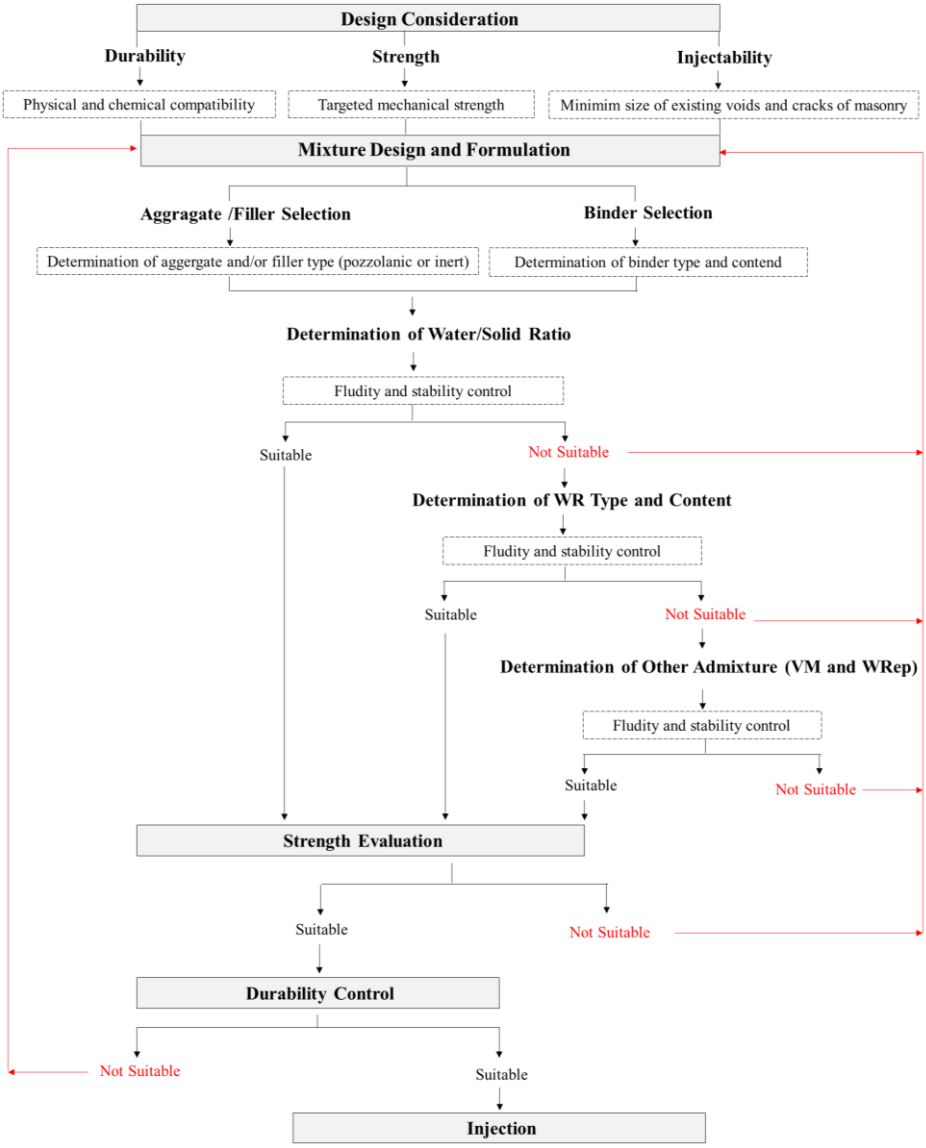

Figure 5. Workflow proposal for grout design process.

4. Conclusion and Suggestion

For historical masonry, designing an injection grout with appropriate characteristics necessitates a comprehensive process of production and assessment. Considering their compatibility with traditional building materials, lime-based grouts are the most suitable materials for consolidating historical masonry because they don't cause damage or compromise authenticity. However, the lower strength and performance efficiency of lime mortars taken into account, the necessity of improving the properties arises. For this reason, the use of various additives and admixtures becomes inevitable. Considering the different chemical interactions, it is necessary to evaluate the type and dosage of additives used. These several parameters make it difficult to design and manufacture such injection mortars.

The necessary procedures in the design of injection grouts also require systematic and thorough laboratory studies. Currently, there are no specific standards for determining the properties of injection mortars for masonry. As current standards primarily focus on cement mortar, lime mortar, and concrete, current standards are only guidelines in the context of lime-based grouting mortars. For this reason, it is essential to evaluate the results in accordance with the special requirements of traditional masonry structures within the framework of the conservation of cultural heritage.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-13

A Review of the Urban Identity Through Traditional Bursa Mudanya Giritli Neighbourhood Houses

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1. Introduction

The traditional houses, which have formed many old Anatolian cities that have survived until today even though their numbers have decreased gradually, have a great contribution to the transfer of the culture of the period they lived in to the future, as well as the facade features that make up the street silhouette. Houses are social, cultural, functional and aesthetic indicators of human life. However, depending on the change and transformation of the city, the change of the existing facades of the houses also causes the visual image that forms the memory of the city to change. The disappearance of the existing texture creates a space in the urban memory, making it impossible to relate to the past. Urban identity cannot be protected in cases where the memories of those living in the city, events, stories, houses, streets, monuments cannot be transferred to future generations. Mudanya, located in the southeast of the Marmara Sea in Turkey, is a region where Turkish and Greek peoples lived together for many years and formed by blending each other's cultures.

When evaluated in terms of our recent history, Mudanya is a strategically important place both because it is close to the administrative centre of the Ottoman Empire and because it is a port city. In Mudanya, on the one hand, houses and mansions built for summer purposes by some wealthy families dealing with trade in Bursa and on the other hand, houses built by Greek families who trade with the Greek islands and have advanced their business in olive cultivation, are located together. It is a fact that societies belonging to two different cultures, which have lived together for many years in the Giritli Neighbourhood, which is mostly preferred by the Greek people in

Mudanya, were influenced by each other. It is seen that most of the two-three-floor traditional buildings that form the region are two-storey, built in an adjacent order and families with middle income groups are located there. However, it is observed that the houses of Greek merchants with high income levels are larger, multi-roomed and located in a garden. Giritli Neighbourhood houses have features from both communities as a result of the fusion of the Greek people with the Turkish culture. Features such as the grid plan layout of the houses, the facades that lead to the street, the window layout on the facade, the entrance doors with windows in the niches, the neighbourhood relations constitute the traditional texture of the city that needs to be preserved. The traditional houses on Fevzi Pasa Street, 12 Eylul Street and Cardakli Kahve, Cinarli Kahve, Ali Fuat, Akinci Abidin Bey, Sukru Cavus, Harmanlar and Genis Streets that make up the district are the most beautiful examples of the architectural texture of the region. Within the scope of the study, the contribution of the architectural elements and components of the traditional houses, which constitute the urban identity of Mudanya Giritli Neighbourhood, the texture of the Giritli Neighbourhood and which is one of the biggest components of the urban life setup, to the urban identity will be expressed.

2. Material and Method

The architectural formation of the mostly two-storey and adjacent Giritli neighbourhood houses, built using brick-filled construction techniques between masonry and timber frame, plays an important role in the formation of Mudanya's city image and urban identity. Within the scope of the determined method, the value added by the architectural identity of Giritli

Neighbourhood to the urban texture was investigated, its current situation was determined by visiting the region again and the documentation studies in the author's master's thesis prepared in 1994 about the region were evaluated. Besides, definitions such as urban culture, urban identity and its components and urban image were researched and opinions on this subject were summarized in the article. Within the scope of the study, the architectural features of the facades such as entrance doors, window types, facade layouts and protrusions of the houses that make up the Giritli Neighbourhood texture are expressed with drawings and other visuals.

3. Assessments on Urban Identity and its Components

The components that make up the urban identity can be listed as the beauties of nature, natural landscapes, historical and cultural values created by nature and human beings and forming our physical environment.

Factors such as climatic conditions, topography, geography and cultural diversity, activities and lifestyles of the people living in that region play an integral role in the formation of urban identity. The cultural, socio-economic and historical data of each city, which has its own characteristics, plays a major role in defining the "urban identity" of that city, which will extend from the past to the future. Working on this subject, Morley & Robins states in their research that the continuity of urban identity can be sustained by "collective memory and shared traditions, sense of shared and lived history" (Morley & Robins, 1997). Urban identity, which has been formed over many years, is based on a certain cultural accumulation. Factors such as family structure, family life, kinship relations, habits, language-religion characteristics that constitute cultural factors can be counted in this cultural

accumulation. These variable factors make that region different and unique from other regions.

According to another study, place has a soul and urban identity is examined in four different dimensions (Ardoin, 2014). According to Ardoin, these are the biophysical structure or physical structures that the buildings and natural environment are affected by an individual psychological state that develops depending on the physical condition of the place, socio-cultural elements in social communities and linked to cultural concepts and political and economic elements that develop as a reflection of local processes.

When the features such as the urban identity and the character of that place, the colour formed together with the environmental factors, the urban texture that emerged as a result of the harmony of the built environment with nature, the forms, the street and zoning situations formed over the centuries, come together, they form a characteristic environment of that place.

4. The Factors that form the Urban Identity of Mudanya Giritli Neighbourhood

With the settlement of tribes from the Aegean in Anatolia since the VII century BC, traces of Greek culture can still exist in the Northwest Marmara. Mudanya and its surroundings have also been a port city that has been used continuously since the settlements of the Bithynia Kingdom in this region and afterwards during the Roman, Byzantine and Ottoman Empire periods. Therefore, it has become possible to talk about the identity of the settlement when the civilizations that have left their mark in the region until today, combined with the natural data such as climate, topography and vegetation, which are effective in the city identity of Mudanya. The legacies left by the

people who lived before (cultural diversity, beliefs, forms of worship, rituals, livelihoods, neighbourhood relations, forms of education, morals and etiquette, etc.) and the principles created by them have shaped both their living spaces, houses and neighbourhoods.

4.1. Natural Values (Geographical structure, Topography, Climate, Vegetation, etc.)

Gemlik District in the east, Bursa Central District in the south, Karacabey in the west and Gemlik Bay, which is the extension of the Marmara Sea in the north are among the border neighbours of Mudanya District of Bursa Province. Mudanya, which has a coastline of approximately 15200 meters to the sea, is accessible by sea and highways. Nilufer Stream, one of the important rivers of the Marmara Region, determines the southern border.

The territory of Mudanya District is a mountainous, hilly terrain cleaved by valleys. The elevation of these ridges, which are around 400-550 meters above sea level, decreases from northeast to southwest and meets the sea. However, the Giritli Neighbourhood, which is the subject of the article, is a settlement by the sea and the land of the neighbourhood is almost flat, there is no elevation difference between the parcels. Therefore, two or three stairs are used to connect the houses to the street.

The climate of the region is between the Mediterranean climate and the Black Sea climate. Winters are mild and rainy; summers are hot and dry. With the effect of winds coming from the north, summers are cooler than the Aegean and winters are more severe. The most effective winds in the region is northerly wind.

The vegetation of Mudanya is similar to the Mediterranean vegetation. The maquis, which appear along the coast, rise to a height of 200-250 centimeters. There is oak, arbutus and beech trees on the hills. Olive groves occupy the largest part of the district's territory. The vineyards in the region made an important contribution to the economy of the region when the Greeks lived in the region, but they remain in a limited area today.

4.2. Historical Development

The main settlement in the region, in where the Tins arrived around the XII Century BC during the Thrace migrations, begins by the Bitins who came from the Aegean region in the VII Century BC. It is found out that the place where the settlement named “Mirlea” was first established during the Bithynia Kingdom is about 1 km east of today's centre. Apameia (Mudanya), Kios (Gemlik), Nikaia (Iznik), Prusia (Bursa), Nicomedia (Izmit), Kalkhedon (Kadıkoy), Cphysopolis (Uskudar) and Heraklia (Eregli) are among the richest cities of the Kingdom of Bithynia (Dogantan, 1940). With the recognition of the sovereignty of the Roman Empire by the King of Bithynia in 75-74 BC, it became one of the 12 most important cities of the Roman period (Ozguc, 1984). Apameia remains in Byzantine territory after the division of the Roman Empire into two. After the Crusades to Anatolia between 1204-1261, it was captured by the Latins and the region is called "Montanya”; it is thought that its current name comes from here (Yurt Ans., 1982).

Osman Gazi, who founded the Ottoman Principality in 1299, began to dominate Bursa and its surroundings after this date. During the Ottoman Empire, Mudanya was important as the pier that opened out to Bursa and its

surroundings. The railway line connecting Mudanya Port to Bursa was established at that time. The famous traveller Evliya Celebi wrote the following about Mudanya in his Travel Book; "… *It is a port town. It is a safe harbour for passing ships…. There is a customs house at the beginning of the pier…. It is a beautiful town. It has three mosques, seven mihrab masjids, three inns, a bath, two children's schools and about two hundred shops. The people of the city are Greek. There are many Greek beauties come from the beauty of the water and air. It is famous for its figs, grapes and must. Especially since its vinegar is distributed all over the world, they call this city Dar-ül Hall…*" (Evliya Celebi, 1987).

Mudanya, which was under Greek occupation for two years between July 1920 and 1922 during the National Struggle, gained its real historical value and importance at the end of the Independence War and the "Truce", the milestone of the Turkish independence history, was signed here on October 11, 1922. The Mudanya Armistice was the first victory document of the War of Independence for our country. The wooden building where the armistice was signed has been turned into a museum today. Located by the sea, this building is preserved as it was in 1922, with discussion, study, rest and signature rooms.

4.3. Socio-Cultural Life

With the migration of the Greek population dealing with viticulture to Greece after the population exchange in 1930, this economic activity decreased and the production of olives and agricultural products (wheat, barley, corn, legumes, etc.) started to increase. Unfortunately, today, olive groves and agricultural lands are in the process of disappearing continuously

and in a short time as a result of rapid construction. With the decrease in agricultural lands, the search for new business lines to ensure the livelihood of the population living in the region causes rapid industrialization in the region.

5. Architectural Features of Traditional Houses Which Affect in Mudanya Giritli Neighbourhood Urban Identity

When the city plan of Mudanya is examined, it can be mentioned that there are two different urban textures in the region. The first is the Turkish Neighbourhoods, consisting of narrow and organic streets, inland and far from the sea. The second is the Greek Neighbourhoods, which are formed both parallel and perpendicular to the coastline of the sea and consist of streets with a grid plan. Mutareke Neighbourhood, Sukrucavus Neighbourhood and Halit Pasa Neighbourhood are the oldest known Greek Neighbourhoods and the general name of the area covering these areas is known as Giritli Neighbourhood and this area is also within the Mudanya Urban Protected Area.

5.1. Layout of traditional houses on the parcel and relationship of these houses with the Street

The city, which was re-planned after the fire at the end of the 18th century, consisted of smooth parallel edges (Turk Ans., 1976). The traditional houses of Giritli Neighbourhood are mostly located on the parcel according to the adjacent layout and the majority of the houses have backyards that cannot be seen from the street.

It is known that the parcel sizes in the region show a density between 50-100 m^2 (Aydogan, 1994). The size of the parcel is the most important factor that determines the positioning within the parcel. Houses with a street front,

a single entrance, backyards that are shaped in a rectangular plan adjacent to both sides and half the length of the residence are the most widely used examples in the region. In the following order and table 1, the houses are examined in two main groups as located adjacent to the parcel and as separated in the parcel (Aydogan, 1994) (Table 1).

5.1.1. Houses located on the parcel according to the adjacent layout

5.1.1.a. Buildings entered from the street

5.1.1.a.1. With back garden; the main entrance of the building is from the street front and there is also an exit to the garden behind the building. Such structures are the most widely used examples in the region.

5.1.1.a.2. Without a garden; the building has a single entrance from the street front and the building covers the entire parcel. These building samples are mostly the corner parcel of the building block in which it is located.

5.1.1.b. Buildings entered from the garden

5.1.1.b.1. With front garden; the garden is on the street front, the building is at the back. To reach the building from the street, it is necessary to pass through the garden. There are very few such examples in the region.

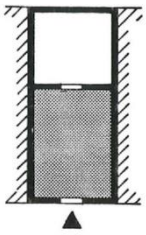
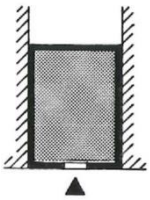
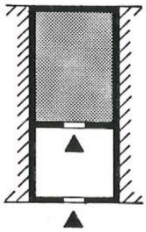
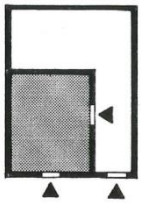
5.1.2. Houses located as separated in the parcel (Table 1);

5.1.2.a. In the garden; the building has no street frontage. The entrance of the building is reached by passing through the garden and there is also an exit to the garden.

5.1.2.b. At a corner of the garden; the building and the garden are located side by side on the street front and both are directly accessible from the street. There is also another entrance to the building from the garden. It is

generally the type of housing owned by families with high income levels. This type has been applied to a small extent in the region.

Table 1. The layout of the Giritli Neighbourhood Houses within the parcel and their relationship with the street (Aydogan, 1994). The arrows in the drawing show the entrance to the house and the garden.

Buildings built in adjacent order			Buildings built in separate order	
buildings entered from the street		buildings entered from the garden		
5.1.1.a.1 with back garden	5.1.1.a.2. without garden	5.1.1.b.1. with front garden	5.1.2.a. in the garden	5.1.2.b at a corner of the garden
				

5.2. Planning Features of Traditional Houses

Depending on the grid plan type that forms the Giritli Neighbourhood, the parcels in the region are also shaped as rectangles. The most repeated parcel sizes are the ones with a width of 4.50 – 7.00 meters and a depth of 8.00-10.00 meters (Aydogan, 1994). Two-storey buildings with a rectangular plan were applied to these rectangular parcels.

In the vast majority of traditional houses, a stony is entered first on the ground floor and a staircase, room and/or kitchen are lined up on one side of the stony. There is usually a door leading to the garden from the stony or

under the stairs. If a kitchen is also designed while the house is being built, most of these kitchens have a stove. The kitchens added to the house later are the ones in which the room is divided and the countertop is fitted to one side. Although most of the toilets have been arranged as a separate outbuilding in the garden, it has been observed over the years that the houses have either been enlarged to the outbuildings or the toilet has been added inside. The act of bathing is mostly solved in the cabinets in the rooms. On the first floor, there are rooms facing the front and the back when you climb the stairs. All rooms are accessible from the hall. The hall in the middle is generally close to the dimensions of the room and is in dimensions to allow a sit-in. One of the rooms on the front facade on the first floor protrudes into the façade. The cantilever made from the room has been applied in almost every house in the region, as it is a feature that both enlarges the room and brings movement to the facade.

Adjacent houses, which make up the majority of the Giritli Neighbourhood, generally have this type of plan typology. These houses, which are planned similar to each other, are used by families with low or middle income levels in the past and today. Almost all of these houses have two floors and have small backyards.

On the other hand, families with high income levels in the neighbourhood have separate houses with gardens on all four sides. It has been found that these houses, which are less in number, belonged to Greek merchants in the past.

When the rooms are considered in terms of interior architecture, it is generally seen that they are in rectangular form (Aydogan, 1994). There are

wooden thresholds at the room entrances. In the room, there is a wide wooden profile nailed to the wall, which continues along the wall, known as the “bed moulding", at the lower level of the window. Likewise, 15-25 cm below the ceiling, there is a wide wooden profile nailed to the wall that continues along the wall called the “crown moulding". In many houses, geometric patterns are created with profiled strips on the ceilings. The floors and ceilings of the rooms are wooden beam floor. Floor coverings used in floor finish are about 27-33 cm. There is a couch (general dimensions: height 27 cm, width 75-80 cm) on the cantilever facade of the room (Aydogan, 1994).

There are wooden cabinets in the room, some of which serve as a cupboard and a part of which serves as a bath called "gusulhane".

In room doors, double-winged doors are applied more than single-winged doors. The width of the double-winged doors made with heart is 1.10-1.20 meter and their height is 2.00-2.20 meter. The width of the single-wing doors made again with heart is 0.60-0.90 m. and their height is 2.00-2.20 m. There is a wooden threshold in front of almost all of the room doors. There are profiled mouldings around the doors (Aydogan, 1994).

5.3. Facade Features of Traditional Houses

The house facades of the Giritli Neighbourhood, which show a simple but a certain order, have their own characteristics. The windows are usually repeated in vertical rectangular dimensions and at regular intervals on the facade. The doors of the houses are the most striking architectural elements on the facade.

5.3.1. House Entrance Door Examples

The entrance doors of the traditional houses of Giritli Neighbourhood are usually in a niche. The house is accessed by 1-4 steps. The entrance niche in the houses is arranged in two ways (Table 2):

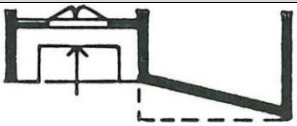
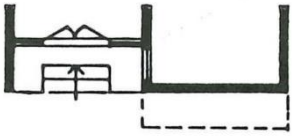
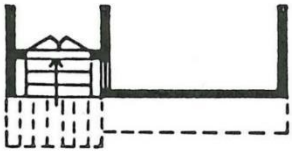
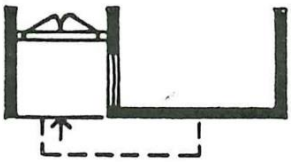
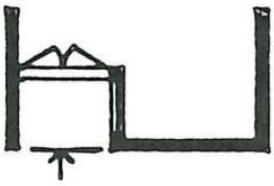
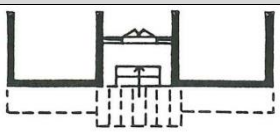
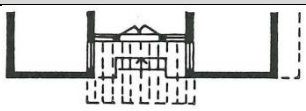
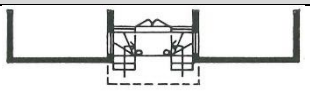
5.3.1.a. On one side of the facade

5.3.1.b. In the middle of the facade

Taking the entrance of the house into a niche and hiding the entrance from the street are related to the living traditions in the region. In addition, it protects the waiting person and the wood, which is the door material, from external weather conditions. The control of the entrance door has been strengthened with a window opened from the room next to the niche. The locations of the entrance doors in the niches in Giritli Neighbourhood on the front facade plan are indicated in table 2 with a sketch. From the table 2, the projection of the niche on the facade, the entrance door in the niche, the entrance steps, the room next to the entrance and the cantilever on the first floor expressed with dashed lines can be read.

The entrance doors of the houses are very special, most of them are double-winged. There are long narrow claws on and next to the profiled wooden winged doors. Door widths are between 1.20-1.40 m. and heights are in the range of 2.30-2.60 m. (Table 3 & 4) (Aydogan, 1994).

Table 2: The locations of the entrance doors in the niches in Giritli Neighbourhood on the front facade plan

5.3.1.a. examples of entrance doors located on one side of the facade		
		
12 Eylul Street No 57	Fevzi Pasa Street No 3	12 Eylul Street No 51
		
Okul Street No 5	Genis Street No 71	Fevzi Pasa Street No 5
5.3.1.b. examples of entrance doors located in the middle of the facade		
		
Cinarlı Kahve Street No 20	Cinarlı Kahve Street No 12	Ali Fuat Street No 1

The side windows of the entrance door are designed to see the person at the door and to illuminate and ventilate the stony where the door opens. The door side windows are 0.45-0.60 m. wide and 2.00-2.30 m. high (Aydogan, 1994). It is seen that beautiful examples were created with iron bars with

motifs placed in front of these narrow windows. Thus, it is understood that attention was paid to the entrance doors in the Giritli Neighbourhood.

Table 3: Examples of double-winded house entrance doors in Giritli Neighbourhood

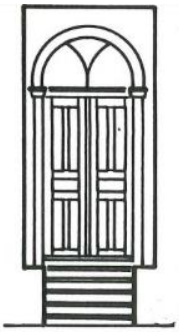
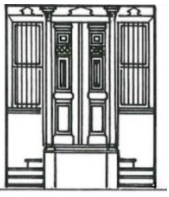
Examples of double-winded house entrance doors				
				
Genis Street No 71	Mustafa Kemal Pasa Street No 113	12 Eylul Street No 24	Cardakli Kahve Street No 2	Fevzi Pasa Street No 4
				
Fevzi Pasa Street No 10	12 Eylul Street No 90	Munir Pasa Street No 13	12 Eylul Street No 88	

Table 4: Examples of double- winged with side window house entrance doors in Giritli Neighbourhood

examples of double- winged with side window house entrance doors					
					
Alay Street No 13	Fevzi Pasa Street No 3	Fevzi Pasa Street No 32	Sukru Cavus No 6	Cardakli Kahve Street No 12	Alay Street No 14
					
Sukru Cavus No 6	Cardakli Kahve Street No 12	Alay Street No 14	Cinarli Kahve Street No 20	Ali Fuat Street No 1	

5.3.2. Window Typology

Since the life on the ground floor is similar to the one on the upper floor, the facade layout repeats each other on both floors. Window proportions and the positioning of the windows on the facade often create a symmetry on the facade. Symmetry can be across the entire width of the facade, as well as only in a certain part of the facade (e.g next to the entrance door).

The ground floor windows are the same size as those on the first floor and there is a grating in front of the window. Sliding up (guillotine) type or

winged type was applied as window opening system in houses (Aydogan, 1994) (Table 5, 6).

Table 5: Examples of sliding up windows found in Giritli Neighbourhood

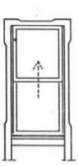
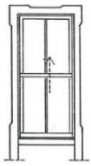
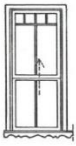
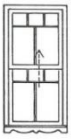
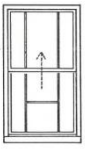
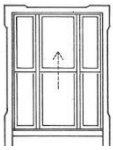
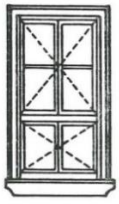
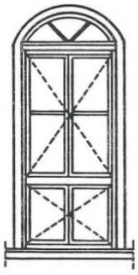
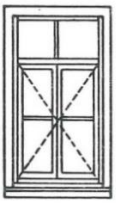
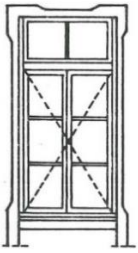
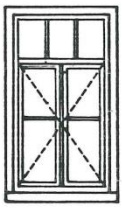
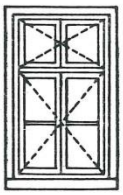
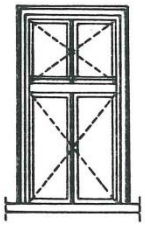
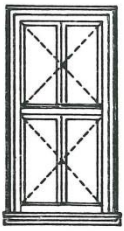
Examples of sliding up windows						
						
Alay Street No 20	Fevzi Pasa Street No 10	12 Eylul Street No 14	Cardakli Kahve Street No 36	Fevzi Pasa Street No 34	Merdivenli Street No 2	Fevzi Pasa Street No 10

Table 6: Examples of winged type windows found in Giritli Neighbourhood

Examples of winged type windows				
				
Alay Street No 8	Akinci Abidin Bey Street No 4	Fevzi Pasa Street No 9	Akinci Abidin Bey Street No 2	12 Eylul Street No 34

				
Ali Fuat Street No 7	Mustafa Kemal Pasa Street No 99	Ali Fuat Street No 23	Alay Street No 14 (ground floor)	Alay Street No 14 (1st floor)

5.3.3. Cantilever typology

In almost all of the houses, “cantilever” has been built on the main floors. Along with "closed cantilever", "open cantilever= balcony" was also applied quite frequently in the region. The street view angle has been expanded with the windows made on the two sides of the closed cantilever. The cantilevers were shaped in line with data such as the way the house was positioned on the parcel and the street formation and the cantilevers of the Giritli Neighbourhood houses were shaped for the following purposes:

- ensuring that the rooms open to the view and the street and get enough light and air,
- to create right-angled spaces by correcting the sloping façade created by the trapezoidal parcels in the settlement on the upper floors,
- obtaining a larger space on the upper floor compared to the ground floor,
- protecting the entrance door and entrance floor facade from rain and wind in winter and sun in summer,
- establishing a relationship with the street as much as possible and watching the events outside while spending daily life on the upper floor (Aydogan, 1994).

When the cantilevers are defined according to the plan projections applied on the facade, they can be grouped as with

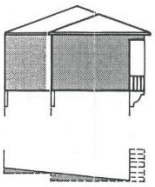
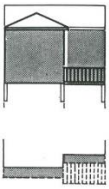
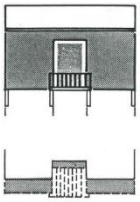
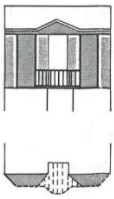
5.3.2.a. Triangular plan,

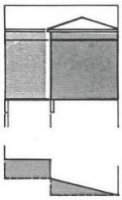
5.3.2.b. Rectangular plan,

5.3.2.c. Polygonal plan.

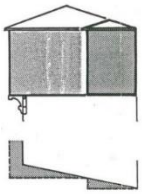
5.3.2.d. Mixed plan (rectangular and triangular projections together) cantilever types (Table 7) (Aydogan, 1994).

Table 7: Examples of cantilevers applied on the facades of houses in Giritli Neighbourhood

5.3.2.a. triangular plan cantilever examples (plan+front view)
 
12 Eylul Street No 69 12 Eylul Street No 51
5.3.2.b. Rectangular plan cantilever examples (plan+front view)
 
Alay Street No 14 Cinarlı Kahve Street No 20
5.3.2.c. Polygonal plan cantilever examples (plan+front view)
 
Alay Abidin Bey No 10 Fevzi Pasa Street No 4
5.3.2.d. Mixed plan (rectangular+triangular cantilever together) cantilever examples (plan+front view)



12 Eylul Street No 57



12 Eylul Street No 38

6. Evaluation on Urban Identity Consciousness

It is important to reproduce the correct information on our traditional housing culture in terms of establishing the bond of our culture with the past, enlightening the future generations of our country on this issue, as well as contributing to the world culture. In this regard, our Anatolia has a diversity and richness that cannot be ignored. The Mudanya Giritli Neighbourhood houses, which are the subject of this article, have been selected to contribute to the research on Anatolian Traditional Houses (Figure 1,2,3,4,5,6,7).

Recognition of traditional housing architecture to the extent that it is researched, preservation and survival to the extent that it is recognized will be contributed in transferring the culture owned to the future. The houses that make up the Neighbourhood still preserve the street texture and the architectural features of the houses facing the street. Preservation policies should be developed and expanded for traditional houses in Giritli Neighbourhood without losing their identity on an urban scale.

The power of preserving the collective urban memory in protection policies is related to supporting the citizens living in that region both culturally and socio-economically. It is also necessary to plan for families who will adopt their own houses to stay in the region for a longer period of time and for

young family members to claim their own living space and city. The sense of belonging to the city is beyond the attachment to the house or neighbourhood in which one lives should envisage that the individual feels like an urbanite and unites with others by integrating into the city (Ercoskun et al., 2016).

In order to raise the awareness of urban identity, it should be ensured that the citizens of the city come together in common public spaces apart from the life culture on the street. It should be ensured that the citizens of the city express their feelings, goals and expectations, cultural values, aesthetic preferences and spatial needs through the local government and civil society organizations (CSO) and efforts should be made to realize these. Collective memory will be formed in this way, different social groups will thus be fused and socio-cultural life will be enriched (Birol, 2008).

Figure 1. The surveying of Fevzi Pasa Street Southeast part (Aydoğan, 1994)

Figure 2. The surveying of Fevzi Paşa Street Northeast part (Aydoğan, 1994).

Figure 3. The surveying of Fevzi Paşa Street Southwest part (Aydoğan, 1994).

Figure 4. The surveying of Fevzi Paşa Street Northwest part (Aydoğan, 1994).

Figure 5. 12 Eylül Street (Benli, 2022)

Figure 6. Ali Fuat Street (Benli, 2022)

Figure 7. Cınarlı Kahve and Alay Street (Benli, 2022)

7. Conclusion and Suggestions

It is noteworthy that the local architectural identities of the ancient cities in Turkey have been lost in the last century due to many reasons. Factors such as the change in the profile of the society, rapid migration from the village to the city, unplanned urbanization, social, economic and political factors also cause rapid change and transformation of the local architectural identity formed in that region over the centuries. With the rapid change of cities over time, it is seen that they have moved away from their unique architectural identities and each city is becoming more and more similar. One of the most important parts of the city, which is the object of memory and reflects the identity elements of a period, is the residential architecture.

Traditional houses are the most important elements that carry the traces of the past, reflect the history and cultural heritage of a city and ensure that the city's deep-rooted past and cultural identity are transferred to future

generations by preserving it. The architectural patterns and styles that emerged with such residences reflect the cultural richness of a city by carrying the traces of local traditions, handicrafts and construction techniques. Traditional houses have an important role in the promotion of a city with their aesthetic values, cultural riches and tourism potentials.

Preserving and restoring traditional residences helps preserve the identity of the city and pass it on to future generations. Traditional houses also have an important value in terms of tourism. These houses, which are part of the historical and cultural heritage, attract the attention of visitors and are effective in attracting tourists to the city. Tourism activities contribute to the economy of the region and help local businesses develop. Traditional houses form a city's identity and reflect that city's history, cultural heritage, and identity of the local community.

Traditional houses may reflect the expression of identity and commitment of a city's local community. These houses are important as spaces that reflect the lifestyles, values and traditions of the people of that region. The existence of traditional houses shows the local people's commitment to their roots, tradition and local identity.

As a result, Mudanya Giritli Neighbourhood houses reflect the character of the region with their regular facades, wooden decorated entrance doors in niches, rich window types, cantilevers that add movement to the facade and ornate consoles reflecting the architectural style of the Ottoman period (Figure 1,2,3,4,5,6,7). These houses have a positive effect on the identity of the city and have become symbols that reflect the historical and cultural values of Mudanya.

Giritli Neighbourhood houses create a city-specific atmosphere by carrying the traces of the past. Mudanya Giritli Neighbourhood houses are an example of efforts to preserve the traditional texture of Bursa by strengthening its urban identity and are seen as a part of the historical and cultural heritage of Bursa's local people and visitors. At the same time, they constitute an important attraction centre in terms of tourism and contribute to the touristic values of the city.

Mudanya Giritli Neighbourhood houses have aesthetically attractive details. The facades draw attention with their original architectural styles, decorative elements and handcrafted details. These houses create a visually different atmosphere in the streets and neighbourhoods of the city and offer a character specific to the identity of the city and the holistic view on the street basis also contributes to the touristic attraction of the city.

The city creates a permanent image in the memories of both the residents of the region and the visitors who have come for a certain period of time.

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Architectural Sciences and Cultural Heritage
Traces of the History

CHAPTER-14

Application of a Cultural Route Evaluation Model (CREM) for Cultural Tourism in Case of Karaman

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1. Introduction

Tourism emerges as a popular and significant industry that affects various sectors. In today's world, innovation has led to qualitative changes in tourism, with a growing emphasis on culture-focused tourism. Cultural-based visits prioritize the built environment, making cultural resources, as components of the environment, closely related to tourism (Lasansky & McLaren, 2004). In the last decades, culture-based toursim routes has become very popular since they offer important opportunities for demonstrating new places, promote the city's brand value with new products and experiences. In this context especially developing countries with rich valuable and cultural heritage have more advantege for showing their potentials.

The Council of Europe created and organised the first and the most popular types of cultural routes and defined the trends of cultural tourism development. A considerable progress have been reached in the las years in small and medium scale. Beside cultural routes encourage the local communities, they also promote the awareness of cultural heritage, create important sources for local economy by promoting cultural heritage.

According to the ICOMOS Charter on Cultural routes (2005):

"The consideration of cultural trails as a newconcept or category does not conflict nor overlap with other categories or types of cultural properties– monuments, cities, cultural landscapes, industrial heritage, etc., that may exist within the orbit of a given cultural corridor. It simply includes them within a joint system which enhances their significance"

(ICOMOS Charter on Cultural Routes, 2005).

Research indicates that cultural route evaluation has become a popular topic in recent years, leading stakeholders to develop various heritage assessment models that are continually updated and improved over time. Cultural routes, as a response to these endeavors, bring together multiple destinations under a common theme, contributing to regional development and serve as means to understand heritage values (Taşkan et al, 2020).

This study focuses on the city of Karaman in Anatolia, which has a multi-layered cultural structure and has been home to multiple civilizations, making it a potential destination for cultural tourism. The aim of the study is to integrate the city's heritage sites into tourism routes to promote its development and achieve the recognition it deserves, thus creating a vision for its future.

For this aim, a Cultural Route Evaluation Model (CREM) is applied for improving cultural tourism in Karaman. In the first step, a cultural route including important cultural heritage structures and areas was designed and proposed. Then main indicators and sub-indicators were determined for CREM Model. These indicators were asked to ten experts in order to determine the potential of the proposed cultural route. At the end of evaluation main values and tourism specific values are calculated of the proposed route. Regarding to these values, some suggestions were made for teh future of Karaman cultural tourism development.

2. Material and Method

This study addresses the integration of heritage sites with tourism activities for promotion of Karaman cultural heritage and tourism. In order to be able

to propose a cultural route, regional and local cultural heritage and their values in Karaman have been examined through on-site inspections, situational assessments, interpretation and photography. These values have been identified for experiencing the city's heritage sites through route-based tourism. Furthermore, in order to improve the effectiveness of policies concerning rural areas, a cultural route has been proposed then an evaluation model was applied to evaluate this route.

For evaluation of cultural route, the model developed by Božić and Tomić (2016) was mainly used in this study. As evaluation model called CREM (Cultural Route Evaluation Model) was asked to ten experts in order to evaluate the potential of the route. At the end of the evaluation, some recommendations were made for improving Karaman tourism potential in order to led the development of cultural tourism.

3. Cultural Tourism and Cultural Route

3.1. Cultural Tourism

Cultural tourism is a type of tourism that involves understanding and experiencing a place's history and way of life, along with various cultural factors that can be presented within a specific context of travel. (Mousavi et al, 2016). The approach to cultural tourism can be seen as convergence of individuals supported, managed, and facilitated by various actors (Smith, 1992).

Among the emerging alternative tourism activities with changing tourism patterns, cultural tourism has been the most rapidly developing form of tourism. This is because it is learning-oriented and can be sustained throughout the year, rather than being seasonal, which motivates developed

and developing countries to focus on cultural tourism. In addition to its income-generating impact, cultural tourism has also been emphasized as a tourism type that plays a significant role in preserving cultural values from the perspective of countries, institutions, and organizations related to the subject (Davutoğlu, 2019).

Cultural tourism, by diversifying the range of tourist products, has become popular not only in well-known tourism destinations but also by expanding to a broader area through thematic routes, contributing to regional development. Additionally, it can transform the identity of a city and breathe new life and meanings into neglected spaces (Santana, 1997). However, it should be emphasized that the preservation of cultural heritage as a whole remains the primary concern of cultural tourism because with a well-developed cultural consciousness and planning, cultural tourism becomes a significant catalyst for carrying cultural heritage into the future (ÇEKÜL & Tarihi Kentler Birliği, 2012).

3.2. Cultural Route

The idea of enabling people to rediscover their cultural practices has led to the concept of tourism being carried out in a route-based manner (Nagy, 2012). A cultural route is a local and national-scale transportation corridor that has gained significance by encompassing valuable cultural heritage sites, either established in the present or utilized in the past, created with the aim of enhancing conservation efforts and consisting of diverse elements of communication and exchange (Gül & Yılmaz, 2020). Cultural routes, by incorporating other cultural assets within a common system, foster a collaborative network and create an exceptional cultural environment

characterized by mutual understanding and tolerance (ICOMOS Charter on Cultural Routes, 2005) (Oikonomopoulou et al. 2016). Therefore, it is accurate to say that routes have an innovative, complex, and multi-dimensional structure.

Cultural routes were first noticed in Europe and were initiated by the Council of Europe with the aim of increasing public awareness and consciousness about cultural heritage (Meyer, 2004). Institutions such as the Council of Europe and ICOMOS work in harmony, developing rules and programs for the recognition, development, and management of routes and organizing meetings (Oikonomopoulou et al., 2016). In this context, a technical body has been established by the European Institute of Cultural Routes to coordinate joint efforts. Another significant development related to cultural routes is the publication of the Cultural Routes Charter by ICOMOS. The Charter emphasizes the necessity for created cultural routes to increase awareness while respecting the uniqueness and integrity of the area (Höbel & B. Akkurt, 2018). In summary, based on various examples of cultural route implementations, it can be observed that routes with narrative storytelling are more captivating, representing the qualitative representation of cultural heritage conservation practices (Chairatudomkul, 2008).

3.3. Cultural Route Evaluation Models and CREM

There are numerous researches evaluating tourism from different perspectives. It is observed that early evaluation models were based on a more general system, focusing solely on the commercial values of tourist products and neglecting cultural, natural, conservation, and other values. As a result, new methods have been developed by enhancing existing models

and shifting the focus towards different tourism resources. Particularly in recent years, as heritage and route concepts have been emphasized, various heritage evaluation models have also shown development. However, these established heritage evaluation models are not considered comprehensive methods since they consider specific criteria. For this purpose, CREM was applied, which comprehensively evaluates heritage along with tourism values. This new and comprehensive model assesses heritage through various sub-indicators, providing an objective and realistic outcome (Božić & Tomić, 2015).

3.4. CREM

Experts examining previously established models for the evaluation of cultural heritage developed the comprehensive CREM. The model was initially created and applied on the potential of the Roman Emperors' Route, which had not yet been introduced to the cultural tourism market in Serbia. The key distinguishing feature of CREM from other methods is its comprehensive set of sub-indicators, enabling the attainment of objective and realistic outcomes. Through these sub-indicators, it becomes possible to identify obstacles in areas with potential but requiring development and to reveal the advantages and disadvantages of new routes. As a result, investment and planning decisions can be guided effectively (Božić & Tomić, 2015).

3.4.1. The indicators of CREM

The model, created for the objective evaluation of cultural corridors, draws attention not only to economic assessments but also to other important characteristics through various sub-indicators. These indicators consist of

two main groups: "Main Values of the Cultural Route" and "Tourism-Specific Values of the Cultural Route" (Figure 1).

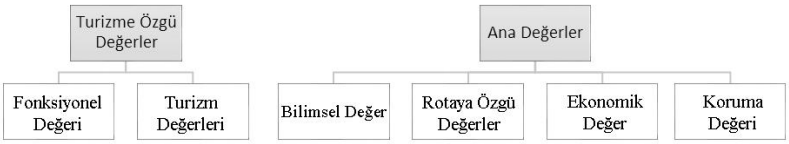


Figure 1. CREM indicators groups (Božić & Tomić, 2015)

Cultural value, historical value, artistic value, social value, educational value, research value, and aesthetic value represent the scientific values, which are one of the main values of the cultural route.

Tourism-specific values of the cultural route are one of the most distinctive aspects of the CREM model, referring to the specific characteristics of the route itself. These values are comprised of sub-indicators that highlight the uniqueness and rarity of the route in the region, its geographical character, the number of attractive points along the route, the appeal of the theme promoted by the route, and the existence of a cultural route management plan.

The model assesses the economic significance of routes through several sub-indicators. These indicators are as follows: contribution to the local community, impact on the economic development of the region or country, investment potential, contribution to brand formation, contribution to the formation of a positive country image, and possibility for cross-border cooperation. The last sub-indicator group within the main values of the cultural route is conservation values, which relate to the preservation and safeguarding of cultural heritage. These sub-indicators include the current

state of points along the route, security vulnerabilities, the level of conservation, and the number of tourists.

The other main indicator, the tourism-specific values of the cultural route, consists of two sub-indicators: functional value and tourism values. Within the tourism-specific values, the first group, functional values, comprises sub-indicators such as the arrangement and accessibility of structures along the route, the location of the route, tourist signage, and the density of attractive places along the route.

Experts who consider the evaluation of the tourism potential of cultural routes to be of great importance have, similar to some heritage assessment models, added sub-indicators related to tourism product values to the model. When assessing heritage sites within the model, the significance of the experiential component has been emphasized, and it has been noted that the created opportunities are not only related to historical events but also create understanding or emotional responses to enhance the harmony and awareness of cultural heritage (Puczko, 2006) (Laing et al., 2014) (McKercher & Ho, 2006).

4. Karaman Cultural Route Evaluation Model -Crem and Analysis

Karaman, located in the Central Anatolia region of Turkey, is a city with a rich cultural heritage, having hosted numerous civilizations such as the Byzantine, Seljuk, Karamanoğlu, and Ottoman periods. Despite its potential, including favorable physical surroundings and significant historical background, the heritage sites in the city have not received sufficient attention and await integration into tourism with the power of cultural routes. The study aims to guide the planning process by analyzing

the proposed cultural route, highlighting its advantages and disadvantages, and contributing to the promotion of the city's cultural heritage through tourism.

4.1. Proposed Cultural Route for Karaman: Mixed Periods Cultural Route

In the designed route for the city, areas that represent the identity of the region well and require preservation and development have been identified parallel to the historical development of the city, and these areas have been considered within the context of heritage potential. The route, which is designed along a north-south direction, includes specific focal points and the surrounding areas that contribute to these focal points.

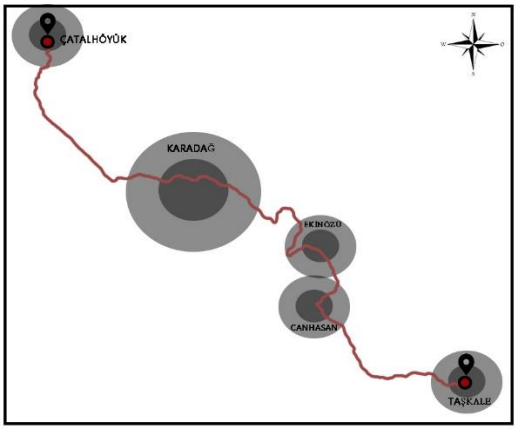


Figure 2. Proposed cultural route landmarks

In route design, Çatalhöyük Ancient City has been determined as the starting point, with the belief that its settlement system will nourish and support the common identity. Following the ancient city, another focal point is Karadağ and its surroundings, which is an important settlement for Christianity. Karadağ holds a significant place in the design due to its inclusion of many

cultural assets. The route continues with the settlements of Ekinözü, Canhasan, and Taşkale Village, and the fact that these areas are at risk of disappearing further emphasizes the importance of this study.

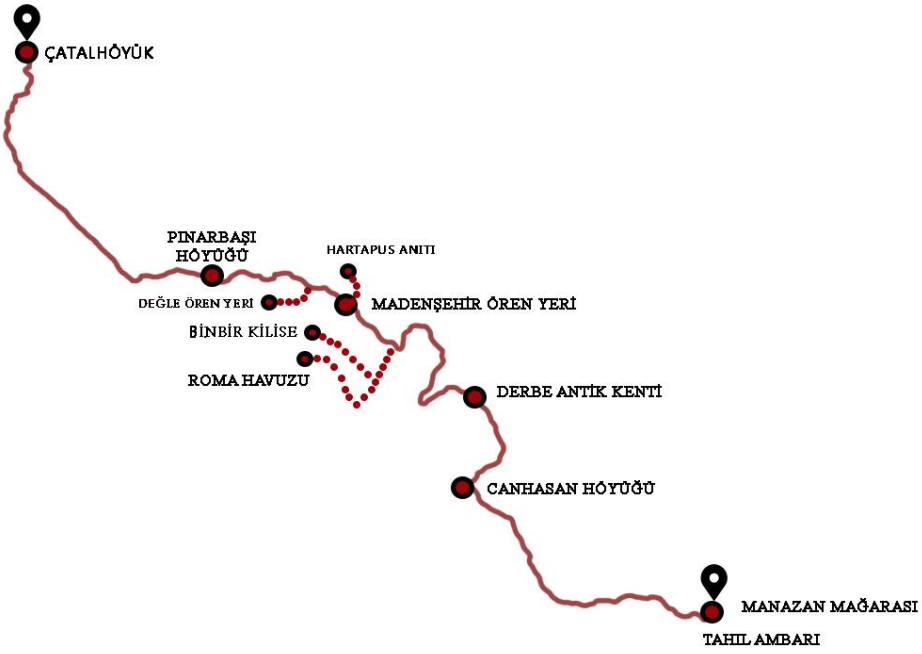


Figure 3. Proposed route design

The developed route system for the city is believed to contribute to the promotion of regional values, the elevation of the local community's cultural awareness, support for development, and the establishment of a comprehensive conservation system. Additionally, it is envisaged that it will draw attention to existing issues and help involve relevant stakeholders effectively.

4.2. Structures on the Proposed Cultural Route

Çatalhöyük Ancient City: A settlement reflecting the rich history of Anatolia, with its first architectural organization, findings related to the first religious structures, and the representation of multiple layers of human history, making it a unique and influential site worldwide (Hodder, 2010). These characteristics have played a significant role in earning the area the title of "Cradle of Civilizations" (Tuncer & Bulut, 2019). This site, which is listed on the UNESCO World Heritage List, is located in the Çumra district of Konya, Turkey.

Figure 4. Current state of Çatalhöyük (Personel Archive, 2023)

It is believed that attracting visitors to the region as a result of the increased focus on Çatalhöyük will be crucial for regional development within the scope of the route. Additionally, considering the theme of the route, Çatalhöyük will make significant contributions to the network of routes.

Pınarbaşı Open-Air Settlement and Rock Shelter: This site, located in the village of Ortaoba, contains eroded remnants of a settlement dating back to the Neolithic, Bronze Age, and the Roman-Byzantine period (Asouti, 2001).

Studies conducted at the site have revealed that the people living here had a culture similar to Çatalhöyük (Topal, 2000). Additionally, there is a hypothesis that the inhabitants of Çatalhöyük used Pınarbaşı as a seasonal area, and ongoing DNA analysis studies are being conducted on this subject (Baird, D et al. 2011).

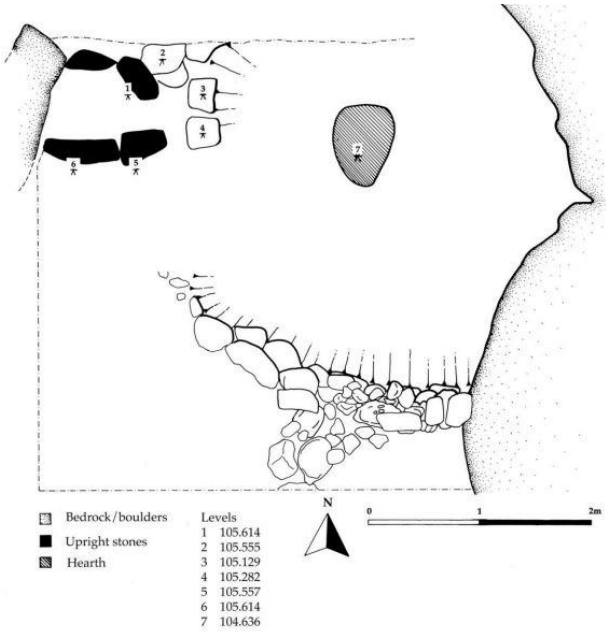


Figure 5. Pınarbaşı archaeological site plan (Baird et al., 2011).

The association of the site with Çatalhöyük is of great significance within the scope of the route design. It is believed that the inclusion of the site in the design is crucial for the success of the overall route.

Degle Archaeological Site: Located within the 1st-degree Archaeological Site Area, the site is situated on the Karadağ massif. The presence of Saint Paul, who is believed to have undertaken missionary work here, has sanctified and made the area noteworthy (Tapur, 2017). The site contains

significant cultural heritage values, such as numerous churches, chapels, tombs, and residential structures related to Christianity. Considering the current abandoned state of the area, studies related to this site are of great importance. Therefore, the inclusion of the archaeological site in the route design is expected to create a prestigious cultural environment.

Figure 6. Degle archaeological site (Ulvi, 2019)

Kızıldağ and Hartapus Monument: Located on the southern slope of the Kızıldağ mountain range, there is a large flat rock mass that contains the remnants of a Hittite castle, sacred areas, the relief of King Hartapus, and inscriptions (Kurt, 2009). Some experts have related the monument to the landscape with the King and the Deity, suggesting that religious rituals were performed in this area (French, 1996). Additionally, the site, which is associated with the Hittites, became a place of pilgrimage in Early Christianity, and temples were constructed here.

Figure 7. Kızıldağ I Inscription and Hartapus Relief (Kurt, 2013- Rojas & Sergueenkova, 2014)

Figure 8. Kızıldağ I Inscription (Hawkins, 2000)

The area, which is relatively less known compared to the other structures within Karadağ, has been included in the route design with the aim of creating spatial integrity with other structures and ensuring its development with the support of these structures.

Madenşehir Archaeological Site: This "Urban Conservation Area" is located in Madenşehir Village, in the middle of the volcanic mountain massif of Karadağ, 37 km away from the city center. Due to its significance as an important religious center, many researchers have explored this site in search of important but not fully known centers (French, 1996).

Figure 9. Basilica No. I (Personal archive, 2022)

Binbir Kilise Site, the largest among the Binbir Kilise structures, encompasses several architectural groups from the Early Christian Period, including military buildings, tombs, and residences. Extensive research conducted by G.L. Bell and W.M. Ramsay indicates that the site, referred to as the "Lower City," has maintained its existence from the Hellenistic Period to the Byzantine Period of the Middle Ages (French, 1996). The remains found here have been dated back to the Late Roman and Byzantine eras. Currently, the site is in a state of ruins and is gradually deteriorating, making it crucial to increase interest and attention to preserve its cultural heritage. In this context, incorporating the site into the cultural route network presents a valuable opportunity.

Karadağ Binbir Kilise: This area has consistently captured the attention of researchers as it encompasses numerous church structures spreading from the foothills to the summit of Karadağ. The site contains a multitude of churches, monasteries, religious, and military buildings, making it one of the most significant centers of the Late Antique Period. Its location is also regarded as a sacred site, and it is known to host remnants from the Hittite civilization (Hawkins, 1992).

Figure 10. Hill Ruins (Personal archive, 2023; Sucu, 2019)

In terms of both architectural and historical values, the area is one of the places that must be experienced in cultural tourism. Additionally, with its cultural assets, location, and natural beauty, it holds significant tourism potential. The site has been observed as a stopover in tours conducted on behalf of the city, and it is believed that it will also support less-developed areas in the route design.

Başdağ Castle and Roman Pool: Located on the elevation of Karadağ, the area contains a castle, military structures, and a Roman pool known to have been used during the Roman and Byzantine periods. The ancient archaeological site of the pools is believed to have been used as a sacred area related to water cult during the Hittite period as well (Turgut, 2015). Considering that the pools and remains are still in use today, the area has been considered as a must-visit place in terms of route coherence and has been included in the route plan.

Derbe Ancient City: Hosting the Bronze Age, Hellenistic, Roman, and Byzantine periods, this city is referred to as the lost city. Inscriptions found in the vicinity strengthen the belief that the city was located here. Derbe, where Saint Paul settled and delivered sermons, is considered to have been

the bishopric and administrative center of the period. Additionally, there is a church, which is believed to have been built by Saint Paul 13 years before the Church of Virgin Mary, making it the first Christian church built on Earth (Şahiner, 2012).

Figure 11. Derbe City Ruins (Arkeonews, 2023)

Based on this data, it is evident that the area contains significant cultural heritage values. The lack of promotion and archaeological excavation works related to the area negatively affects its development. At this point, the efforts and initiatives regarding the area are crucial. Integrating the area into the cultural route network is believed to have positive impacts on its recognition and visibility in cultural tourism. With the opportunities provided by the cultural route network, the area will attain the recognition it deserves.

Canhasan Mounds: Located in the village of Canhasan, the area has provided evidence from the Neolithic and Chalcolithic periods (French, 1998). The site consists of three significant mounds, named Canhasan I, Canhasan II, and Canhasan III, which have been dated to different periods. The excavation works conducted in the area have revealed settlement typologies indicating that the site is one of the important settlements reflecting the urbanization process. This characterization has contributed to

the classification of the mounds as a continuation of Çatalhöyük in Karaman (Kurt, 2009). Additionally, the excavations at Canhasan III have led to the assumption that the site might be older than Çatalhöyük and could be the place where the transition to agriculture began.

Canhasan Mounds; as a place that summarizes a lot of information about the history and culture of the city and the region, and considering its spatial similarities with Çatalhöyük, its inclusion in the route design will provide significant contributions to the area.

Grain Silos: Located in the village of Taşkale, the area was established on a plateau with erosion features on the slopes of the Taurus Mountains. The karst formations surrounding the village have provided opportunities to create unique spaces such as cave systems, grain silos, and shrines, adding distinctiveness to the area.

Figure 12. Grain Silos (Personal archive, 2023)

The findings at the site indicate that Taşkale has been a settlement for various civilizations, including the Phrygians, Romans, Christians, Byzantines, Seljuks, Karamanoğulları, and Ottomans, starting from the 2nd century. However, specific construction dates could not be determined. The grain silos, with multiple rooms, were used for long-term grain storage due

to the heat and humidity-regulating properties of limestone (Topal, 2009). Initially used by Christians, the function of these silos later changed with the arrival of the Turks, and today they are observed to be used not only for grain storage but also for storing various goods (Gültekin & Uysal, 2018).

Despite having unique conditions, location, interaction area, form and design, and traditional function, the grain silos hold similarities with formations found in the Cappadocia region. However, it is observed that tourism activities have remained limited, and the desired momentum in tourism has not been achieved. Therefore, the cultural route system, considered an essential strategy, is expected to provide the necessary boost for the area by offering a curated and experiential journey for visitors.

Manazan Caves: Due to the karstic features of Taşkale Village, numerous cave systems have developed in the surrounding area. Among these caves, Manazan, an ancient settlement, was used as a living area during the Roman and Early Christian periods (Konyalı, 1967). Being an archaeological site, Manazan showcases how humans shaped the natural structure according to their needs, creating a unique living space. With these characteristics, Manazan holds the distinction of being one of the largest human-carved caves in the world.

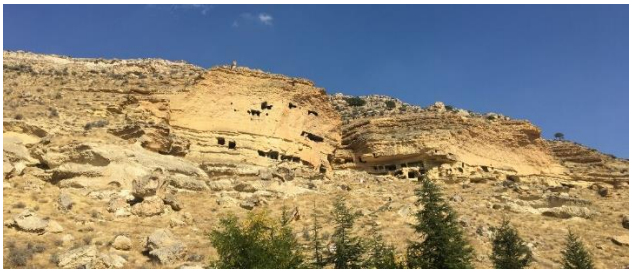


Figure 13. Manazan Caves, facade (Personal archive,2023)

The cave, which still maintains its mystery, is one of the areas that should be considered for cultural tourism due to its unique conditions, distinctive form shaped by the environment, authentic structure, and representation of the culture of a specific period.

4.3. Evaluation

The proposed cultural route's potential was assessed using the CREM model's sub-indicators, and the current status, along with all advantages and disadvantages, were clearly identified by presenting them to 10 experts through the Likert Scale (1-least, 5-most important). It should be noted that each sub-indicator group does not have equal value. The calculation method for the indicators is described in the scientific value table, and other indicators were calculated in a similar manner. The scientific value of the route consists of seven sub-indicator groups: [Note: The specific sub-indicator groups and their corresponding values need to be provided to complete the translation accurately:

- Cultural Value (the relationship between the route or itinerary and culture),
- Historical Value (the connection of the route with the past or its significance for the region's history),
- Artistic Value (the unique nature of the place, being an example, or deriving value from the work of a specific individual),
- Social Value (the ability of the place to provide social connections and serve as a gathering place, fostering a sense of attachment to the location),

• Educational Value (the potential to provide information about the past),

• Research Value (the contribution to science and research),

• Aesthetic Value (the visual quality).

The importance factor (Im) is calculated based on the expert ratings given to these indicators. It is calculated as follows (Božić &Tomić, 2015):

$$Im = \frac{\sum_{k=1}^{K} Iv_k}{K}$$ where Ivk represent the assessment/score of one expert for each subindicator and K is the total number of experts, meaning that Im represents the average Importance for all respondents included in the survey (Božić & Tomić, 2015). Values according to the method were found as follows:

- Cultural Value Im Value:

Im = 3+4+4+3+2+3+3+4+2+3 = **3,1**
10

- Historical Value Im Value:

Im = 4+4+4+3+3+3+4+4+4+3 = **3,6**
10

- Artistic Value Im Value:

Im = 4+4+3+2+2+3+3+2+4+4 = **3,1**
10

- Social Value Im Value:

Im = 3+3+3+2+2+3+1+3+3+2 = **2,5**

10

- Education Value Im Value:

Im = 4+4+3+3+3+2+3+3+4+4 = **3,3**

10

- Research Value Im Value:

Im = 3+3+3+2+2+2+3+3+2+3 = **2,6**

10

- Aesthetic Value Im Value:

Im = 4+4+4+3+2+3+4+4+4+4 = **3,6**

10

When the Importance factor (Im) is calculated, the next step is the determination of the maximum value or maximum number of points for each subindicator in the CREM model. The mentioned is done in the following manner:

- The subindicators with Im valued from 1 to 1.49 have the maximum number of points 1.
- The subindicatorswith Imvalued from1.5 to 2.49 have the maximum number of points 2.
- The subindicatorswith Imvalued from2.5 to 3.49 have the maximum number of points 3.

- The subindicatorswith Imvalued from3.5 to 4.49 have the maximum number of points 4.
- The subindicators with Im valued from 4.5 to 5 have the maximum number of points 5.

Accordingly, the maximum value results of the sub-indicators are as follows:

Cultural Value Maximum Value: **3**

Historical Value Maximum Value: **4**

Artistic Value Maximum Value: **3**

Social Value Maximum Value: **3**

Training Value Maximum Value: **3**

Research Value Max Value: **3**

Aesthetic Value Maximum Value: **4**

Finally, after making the necessary improvements, the indicators were scaled to determine the position of the route proposal. The results were recorded in Table 1.

Table 1. Results of the route's scientific value

Sub Indicators	Description of Values	Im	Maximum Value of Sub-Indicators	Writer Value Given by
Cultural Value (relationship of route or route to culture)	**1**-none **2**-low **3**-medium **4**-high **5**-utmost	3,1	3	(4)
Historical Value (relationship of the route to the past or importance to the history of the area)	**1**- none **2**- low **3**- medium **4**-high	3,6	4	(4)
Artistic Value (value based on whether the place is unique, exemplary, or the work of a particular person)	**1**- none **2**- low **3**- medium **4**-high	3,1	3	(4)
Social Value (the ability of the place to provide social connections and be a gathering place and develop a sense of attachment to the place)	**1**- low **2**- medium **3**- high	2,5	3	(3)
Educational Value (potential to provide background information)	**1**- none **2**- low **3**- medium **4**-high	3,3	3	(3)
Research Value (contribution to science and research)	**1**- low **2**- medium **3**- high	2,6	3	(3)
Aesthetic Value (visual quality)	**1**- none **2**- low **3**- medium **4**-high	3,6	4	(4)

The total maximum value of the sub-indicators is calculated as "23" for the scientific value of the route.

Table 2. Results of the route's original value

Sub Indicators	Description of Values	Im	Maximum Value of Sub-Indicators	Writer Value Given by
Uniqueness and Rarity of the Route in the Region (presence of similar routes nearby)	**1**-common **2**-regional **3**-national **4**-international	1,9	2	(2)
Geographical Character of the Route (the size of the area where the route spans)	**1**-local/regional **2**- national **3**-international	1,5	1	(1)
Number of Attractive Points on the Route	**1**- none **2**- low **3**- medium **4**-high	2,5	3	(3)
Attractiveness of Theme Encouraged by the Route (theme's popularity and appeal)	**1**- none **2**- low **3**- medium **4**-high	2,7	3	(3)
Existence of Cultural Route Management Plan (eg existence of master plan etc.)	**1**-there is no plan **2**-the plan is in preparation **3**-there is plan	1	1	(1)

The maximum value total of the sub-indicators for the route's original value is calculated as '10'.

Table 3. Economic value results of the route

Sub Indicators	Description of Values	Im	Maximum Value of Sub-Indicators	Writer Value Given by
Contribution to Local Community (creation of new workplaces, new local job opportunities)	**1**- none **2**- low **3**- medium **4**- high	2	2	(1)
Impact on the Economic Development of the Region or the Country as a Whole (financial benefits from tourist visits, improvement of infrastructure and infrastructure)	**1**- none **2**- low **3**- medium **4**- high	1,9	2	(1)
Investment Potential (potential to attract companies to invest in the cultural route)	**1**- none **2**- low **3**- medium **4**- high	2,4	3	(3)
Contribution to Brand Formation (possibility of the cultural route to be a national or international brand)	**1**- none **2**- low **3**- medium **4**- high	2,3	2	(1)
Contribution to the Formation of a Positive Country Image (the effect on the positive image of the country with the development of cultural tourism)	**1**- none **2**- low **3**- medium **4**- high **5**- utmost	1,8	2	(2)
Cross-border Cooperation Possibilities (probability of the route being included in routes in other countries)	**1**- low **2**- medium **3**- high	1,3	1	(1)

The total maximum value of sub-indicators is calculated as "12" for the economic value of the route.

Table 4. Results of the route's conservation value

Sub Indicators	Description of Values	Im	Maximum Value of Sub-Indicators	Writer Value Given by
Current Status of Structures on the Route	1-much damaged (as a result of human activities) 2-moderately damaged (as a result of natural processes) 3-slightly damaged (preserving its basic features) 4- no damage	1,4	1	(1)
Vulnerability (vulnerabilities of points along the route)	1—high 2—medium 3—low or none	1,5	2	(1)
Level of Protection by Institutions (protected by local or regional groups, national government, international organizations)	**1**-local **2**-regional **3**-national **4**-international	1,3	1	(1)
Number of Visitors Tourists per Building on the Route (recommended number of visitors for the building based on the current situation)	1-(0-10 people) 2-(11-20 people) 3-(21-50 people) 4- (more than 50 people)	2,5	3	(1)

The total maximum value of the sub-indicators is calculated as '7' for the conservation value of the route.

Table 5. Functional value results of the route

Sub Indicators	Description of Values	Im	Maximum Value of Sub-Indicators	Writer Value Given by
Layout and Accessibility of Structures on the Route (probability of approaching the point)	1—low (on foot with special equipment and expert guide tours) 2—medium (by bicycle and other means of man-powered transport) 3—high (by car, bus)	2,6	3	(2)
Location of the route (location of road networks)	1—not convenient 2—medium convenient 3—favorable	2,5	3	(2)
Touristic Signaling (information boards showing the location and distance of points)	1—none 2—low 3—medium 4—high	1,8	2	(2)
Density of Points of Interest on the Route (number of points of interest compared to the length of the route)	1—none 2—low 3—medium 4—high	2,8	3	(1)

The maximum total value of the sub-indicators for the functional value, which is one of the main indicators of the route and includes values specific to tourism, has been calculated as "11".

Table 6. Route's tourism value results

Sub Indicators	Description of Values	Im	Maximum Value of Sub-Indicators	Writer Value Given by
Accommodation Services (accommodations close to the route)	**1**-more than 25 km **2**-10-25 km 3-5-10 km **4**-less than 5km	1	1	(1)
Restaurant Services (restaurants close to the route)	**1**-more than 10 km **2**-5-10 km 3-5-1 km **4**-less than 1 km	1,2	1	(1)
Availability/Need of Tour Guide Service (if any, level of expertise, foreign language knowledge, interpretation skills)	1-none 2-low 3-medium 4-high 5-highest	1,7	2	(1)
Tourism Infrastructure (pedestrian roads, resting places, garbage cans, toilets, etc.)	1-none 2-low 3-medium 4-high 5-highest	1,8	2	(2)
Presentation/Output Possibilities (potential to create an interesting/original story about the route)	**1**-yok **2**-düşük **3**-orta **4**-yüksek **5**-en yüksek	2,9	3	(3)
Eligibility for Event/Organization (organization possibilities of various events)	0.50-none 1-low 1.50-medium 2-high	1,15	1	(2)
Organizational Opportunities for Providing Authentic Experience)	1-none 2-low 3-medium 4-high 5-highest	2,8	3	(4)
Opportunities to Provide Interesting Visits for Tourists	1-none 2-low 3-medium 4-high	3,5	4	(4)
Attractiveness of Places Along the Route (tourist attraction-number of points on the route)	1-none 2-low 3-medium 4-high 5-highest	3,6	4	(3)
Level of Tourist Visits (number of tourists per year)	1-low (less than 25 000 2-medium (between 25 001-50 000) 3-high (between 50 001-100 000) 4-highest (more than 100 000)	1,1	1	(1)
Availability of Additional Interpreting Facilities (interpretive panels, visitor and information centres, museums, exhibitions)	1-none 2-low 3-medium 4-high 5-highest	1,2	1	(1)
Presence of Travel Arrangements for Cultural Activities (presence of itineraries related to the route in travel agencies)	1-none or low 2-medium 3-high	1,1	1	(1)
Availability of Authentic Souvenirs (souvenirs related to the route theme)	1-none 2-low quality 3-medium quality 4-high quality	1	1	(1)

The maximum value sum of the sub-indicators was calculated as "25" for the tourism value of the route.

The maximum score for each sub-indicator group in the Main Values and Tourism-Specific Values has been calculated by summing up the maximum value numbers for each sub-indicator group in both categories, and their importance levels have been determined. The overall evaluation score for

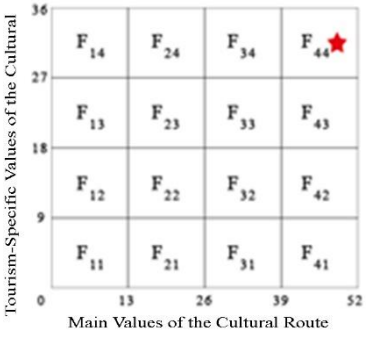
the analyzed route is shown in Table 7. This equation can be expressed as follows (Božić & Tomić, 2015):

Table 7. Route's overall value results

Main Values of the Cultural Route	25+10+9+4 = 48
Tourism-Specific Values of the Cultural Route	7+25=32

The results have been mapped onto the CREM matrix, where the x-axis represents the "Main Values" of the route, and the y-axis represents the "Tourism-Specific Values" of the route. The matrix system has been divided into sixteen areas denoted by Fij (i, j = 1, 2, 3, 4) based on the results of the evaluation process. According to the value results, the Main Value is 48, and the Tourism-Specific Value is 32, indicating that the current position of the route can be expressed as F_{44}.

Table 8. Result matrix of the cultural route



4.3.1. Expert Evaluations

According to the evaluations, it has been concluded that the main values of the route are more significant. Among the main values, the scientific value category is seen to be more important compared to other groups. This situation can be attributed to the city's history of hosting significant civilizations and leaving behind their heritage sites.

Looking at the distribution of values specific to the route, it can be observed that the overall structure of the route is evaluated at the local/regional level. Additionally, the attractiveness of the theme encouraged by the itinerary is seen to be at a moderate level. This situation can be explained by the fact that some assumptions related to certain areas along the route have not been brought to light and therefore, they might not receive the necessary attention.

The current economic significance of the route is seen to be at a quite low level. This can be explained by the lack of implementation and development plans for the route, as well as the absence of relevant promotion and advertising efforts. Without proper promotion and marketing, the potential economic benefits of the route may not be fully realized, leading to its relatively low economic importance at present.

Considering the conservation values, it can be observed that all values are at a low level. This can be explained by the fact that heritage sites have been damaged as a result of human activities and natural processes. Some areas may have been abandoned or left to their fate, lacking proper conservation efforts from institutions. Illegal excavations and misuse of cultural assets are other factors that have led to significant deterioration of heritage sites. These issues have collectively contributed to the low conservation values of the route. Proper preservation and conservation measures are crucial to safeguard these cultural assets for future generations.

Indeed, when considering the functional values within the main values related to tourism, it can be said that the route is in a favorable position. This can be attributed to the proximity of the focal points to the main settlements

along the route. The central point of the route, Karadağ, may require special efforts for access. It is important to note that despite the favorable location of the focal points, ensuring easy and convenient access to the route's attractions is crucial for enhancing its overall appeal to tourists. Improved transportation options and well-designed visitor facilities can play a significant role in attracting more visitors and promoting the cultural route effectively.

The tourism values of the route include some sub-indicators that indicate insufficient efforts and investments to make the areas suitable for tourist visits. The concentration of accommodation and restaurant services in the central area negatively impacts the development of other areas along the route. While the attractiveness of the places along the route receives high scores, the low scores for tourism infrastructure summarize this situation.

Considering all these indicators, when the current state of the route positioned at F44 is examined, it becomes apparent that there are deficiencies in investments made in tourism values. Additionally, one of the main problems preventing the areas from opening up to the tourism sector is the lack of promotion. Without adequate promotion, these places cannot be embraced by the society, and as a result, the route may not achieve success.

Therefore, the success of the route's structure relies on sustainable conservation approaches and promotional efforts to foster the development of rural areas. It is crucial to address these promotion gaps to generate interest in the less-known locations and ensure the route's success.

4. Conclusion and Suggestions

Cultural heritage sites that establish a connection between the past and the future, reflecting common values and the identity of their location, are the shared heritage of all humanity, and preserving these treasures is the responsibility of everyone, from individuals to the broader community. In this regard, approaches to the conservation of cultural heritage are now shifting towards new perspectives. These new approaches are focused on finding a balance between tourism and heritage areas, and they lead countries to consider experiencing culture through the route structure.

Routeways emerge as an effective tool for the preservation of cultural heritage, and they go beyond conservation, playing a significant role in promotion, economy, and creating a positive image. The power of routes in forming networks and spreading across vast areas can be seen as an opportunity for the development of rural areas, especially in the case of Karaman city.

Considering the results of the evaluation conducted with the CREM model, it is essential to take into account the importance of the areas proposed in the recommended route structure and to provide a perspective on how to develop the missing aspects for the planning process. The evaluation results indicate that the lack of promotion and the failure of the local community to embrace their values are the most significant shortcomings that hinder the development of interest in the area, and this situation also affects the investment process. Additionally, the lack of conservation and excavation efforts related to cultural assets in the proposed structure prevents the areas from being assessed for tourism.

To implement and ensure the sustainability of the route system established in Karaman, certain strategies are needed. The fundamental approach for the success of the structure is to bring together the residents and workers of the city and act with a sense of responsibility towards the common heritage. The main objective of this collaboration should be the preservation of heritage, promotion of regional values, and support for local development.

The key step in the implementation process of the route is the creation of promotional strategies and materials, which should be regularly updated to reflect the image of Karaman to the target audience. These efforts play a crucial role in generating interest in the route.

Moreover, supporting assumptions about areas with significant values through necessary research and studies is essential in creating interest in the route. This approach enhances the credibility and appeal of the cultural assets and historical sites.

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Examining the Change of Local Cultural Values After Bolshevik Revolution in a Palimpsest Space: Istiklal Street Number 142

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1. Introduction

Contemporary historians begin the emergence of the 'Revolution' concept with the English Revolution in the 17th century. Since the English Revolution took place locally, it was effective in a limited area. Although the English Revolution was important, it was effective in a limited area to cover a certain region. On the other hand, the French Revolution in the 18th century affected a wider area and created a more comprehensive differentiation in the social structure. The international effects of the social change process that started with the French Revolution, which changed the history of humanity, are still among the issues discussed. Like the French Revolution, the Bolshevik Revolution in the 20th century also had important international consequences. Socialist ideology, which emerged as an alternative to existing ideologies due to the Bolshevik Revolution, which had a different structure from other revolutions, affected societies from different perspectives. Having a different structure from other revolutions, the Bolshevik Revolution, which emerged as an alternative to existing ideologies, affected societies in different ways.

1.1. General Definition and Concepts

The word 'Bolshevik' means 'one of the Majority' (plural Bolsheviks or Bolsheviki) (Britannica, 2023). The word was first coined at the 2nd Congress of the Russian Marxist Socialist Workers Party, held in 1903, as a result of the disagreement between the supporters of Vladimir Ilych Lenin and Julius Martov (Carr, 2011). Although both factions participated together in the Russian Revolution of 1905 their differences increased. While Martov's supporters supported Marxist ideology Lenin supporters

supported socialist ideology. Since Markov's supporters of Marxist ideology remained in the minority, those of the minority was called 'Mensheviks'. This ideological movement was named the 'Bolshevik Revolution' because of the majority of Lenin's supporters among two separate groups that defended the proletariat against the aristocracy. Thus, for the first time, the socialist ideology supported by the proletarian political power, which was formed with the Bolshevik Revolution in Russia, had a field of application in the state administration for the first time (Ağır, 2019). The ideological restructuring process under the leadership of Vladimir Ilyich Lenin has been called by various names such as the 'October Revolution', 'Russian Revolution', and/or 'Great October Socialist Revolution'. This event, which laid the groundwork for cultural as well as political change, was described as the 'Bolshevik Revolution' during its period. The ideas produced in the Revolution environment in different fields were later described as 'Leninism' under the influence of political tactics and anti-marxist understanding of Lenin. The thoughts that caused the Bolshevik revolution are inherent in Lenin. In short, it can be said that Bolshevism is a democratic centralist political formation consisting of professional revolutionaries in a hierarchical structure. Thus, it is seen that the Bolshevik Revolution was effective in other social groups such as politics as well as throughout the process such as economy, politics, and education. Along with the developing socialist ideology, innovative social movements that spread from Russia to the world directly affected the societies politically.

On the other hand, they also indirectly caused changes in cultural terms. With this innovative ideology, a divergence began in the axis of socialism-capitalism, depending on the differentiation of thought in social institutions. In this context, one of the main events that is effective in today's bipolar world restructuring after World War II is the Bolshevik Revolution. This separation has caused differentiation in the cultural field as well as in fields such as economy, education, and politics. The political, economic, and social effects of the Bolshevik Revolution, which Italian thinker, politician, and socialist theorist Antonio Gramsci described as the 'Revolution Against Capital' (Yetiş, 2017) were seen in the Ottoman Empire as well as in other states.

Civil War broke out in Russia in late 1917 after the Bolshevik Revolution. After the Revolution, the Russians, who did not accept the socialist ideology imposed by the proletariat, took refuge in the Ottoman Empire in 1917. The proletariat consisted of industrial workers, peasants, soldiers, and sailors. They also volunteered for military squads during the Civil War and were called Reds. Those who defended the aristocracy against the reds representing the proletariat were called whites. For this reason, the aristocratic Russians who had to emigrate were called 'White Russians'. This definition has no connection with the people of the eastern part of Belarus, who are called 'White Russians' in Turkey today. This description is just a name similarity. The people defined as 'White Russians' in the research are people with high qualifications who had to take shelter in Istanbul for a while.

It can be said that the common features of White Russian asylum seekers/refugees -especially from Odesa and Crimea- are their aristocratic identities. The aristocrats defeated by the rising proletariat were displaced by the revolution. However, they also caused a social change by carrying their cultural characteristics to the geographies they migrated to. During the period until France accepted the Russian Aristocrat refugees in 1923, the Russians became the initiators of the socio-cultural transformation of local values in the public sphere, as they wanted to maintain their lifestyle in the regions they settled.

Istanbul, which they see as a nearby and safe center, is one of the places where those fleeing the revolution settled in the Ottoman Empire. It is known that Russian Aristocrats brought many innovations to the daily life and social life of Istanbul. Among these, innovations such as new entertainment venues, restaurant/patisserie culture, and swimming habits can be counted (Dumesnil, 1993). When the relevant literature is examined, it has been seen that the subjects such as the daily life (Göçmen, 2008) and lifestyle of the Russians in Istanbul (Bakar, 2015), the reflections of the Bolshevik Revolution in the Turkish Era (Gündüz, 2005), the views of the Russians about the Turks (Şahan, 2012), the Russian influence in the architectural transformation of Istanbul (Ar, 2019), the influence of the Russians in Turkish literature (Özdemir, 2011) are frequently studied. However, the cultural effects of this forced migration period, which took place just before the War of Independence (1919-1923), have not been adequately researched due to the political importance of the armistice period (1918-1922) of the Ottoman Empire.

1.2. The Structure of the Research

In this study, the change in the cultural field in terms of local cultural characteristics after the Bolshevik Revolution against the economic-based injustice in the social structure of Russia in 1917 was chosen as the subject. Assuming that the effects of the Russian Aristocrats (White Russians) fleeing the Bolshevik Revolution on social change did not end with their departure from the country, it is thought that the innovations brought by the Russian Aristocrats to Istanbul spread over the years as a result of the multi-layered (palimpsest) stratification. In this context, the hypothesis of the research was determined as "The effectiveness of the innovations brought by the White Russians in social change depends on the sociocultural continuity of innovative practices beyond the imported socialist ideology". To investigate the continuity of the practices that are effective in social change regarding the determined hypothesis, Istiklal Street Number 142, which is a palimpsest address that has been renewed many times over time, has been chosen as the research object. The idea that the continuity of social change can be understood from the spatial traces left on a space has been influential in the selection of an address beyond a certain place. Although the same place/address was examined in the research, the interior design features that differed with the socio-cultural continuity of the practices were discussed. The historical research method, one of the qualitative research methods, was preferred to observe the social change through architectural space features. In the descriptive research, a chronological evaluation of the places that existed in Istiklal Street Number 142 was made with the method of systematic comparison. During this evaluation, to adapt to the innovations

brought by the Russian Aristocrats, the differentiation in local cultural characteristics was accepted as cultural adaptation and the connection of this situation with social change was tried to be established. In the descriptive research, the visual documents obtained from various sources were examined and the data consisting of the interior visuals of Istiklal Street Number 142 was used.

The research was carried out in three stages. In the first stage, the historical background of the Bolshevik Revolution was researched to determine the situation. In the second stage, socio-cultural changes in the Ottoman Empire after the Bolshevik Revolution were examined. Attention was drawn to the social change this caused in local cultural characteristics. In the last stage, the interior design features of the spaces with different functions known to operate in Istiklal Street Number 142 were investigated comparatively in terms of architectural space features according to chronological order.

With the findings obtained, the socio-cultural continuity levels of the practices that are effective in social change were examined. Thus, the continuity of the practices and the ability to adapt to local values in the effect of the innovations brought by the Russian Aristocrats in socio-cultural social change has been questioned comparatively through different venues operating in the same place/address.

2. Material and Method

One of the entertainment centers concentrated in the Galata and Pera regions is Istiklal Street. Istiklal Street was named ‘Cadde-i Kebir’ during the Ottoman Empire Period. Foreigners named the street ‘Grande Rue de Péra’

in French. The use of the name Cadde-i Kebir continued until 1927. After this date, the name of the street was changed to ‘İstiklal Caddesi’.

The address chosen for the study is Istiklal Street Number 142, which is used today. Today, Odakule Business Center is located at this address. The address chosen as the research material has been the platform of multicultural structure, change, and innovative practices from past to present. The place, which has changed over time by taking on different functions such as bars, restaurants, and casinos, is one of the important entertainment focuses both in the Ottoman Empire and the early period of the Turkish Republic. Therefore, to observe the differentiation experienced in social change, instead of single space research, the spaces at the determined address were examined in chronological order. In this context, the historical research method, which is one of the qualitative research methods, was preferred to observe social change through architectural space features to conduct a chronological analysis. For this purpose, it has been tried to observe the change in the period starting from the oldest known function of Istiklal Street Number 142. The information about the specified place/address has been obtained from various printed and digital archive sources. Istiklal Street Number 142, chosen as the research material, is located in the Pera region, in an area where non-Muslims and foreigners live heavily.

Istiklal Street, located between Tünel and Taksim Square in the Beyoğlu district of Istanbul, is still a very popular place today. The history of the street dates back to the Byzantine Period.

During the Ottoman Period, when the activities in Galata, which was a commercial center in the Byzantine Period, intensified, foreigners settled on the Beyoğlu Plateau (Pera). In the 16th century, embassy buildings belonging to foreigners were settled in Pera, where foreigners from Europe lived to carry out commercial activities. In the 18th century, 'Cadde-i Kebir' was filled with buildings and turned into a suburb of the Galata region. This street, which includes Istanbul's shopping and commercial venues, has changed with the modernization movements in the 19th century. It can be said that the Levantines in Istanbul and the visiting Europeans had a great impact on this change in the Tünel-Taksim axis.

Levantine means 'eastern Mediterranean' in French. Levantines came to the Ottoman lands from Europe for trade in various goods and products after the Imperial Edict of Reorganization (Tanzimat Fermanı). While the Levantines preserved their religions and languages, they adopted some customs of the local people.

Before the 1917 Bolshevik Revolution, socialization in Ottoman society took place in the 'neighborhood' Which is important in the Ottoman cultural structure and Levantines. The place called 'mahalle' in Turkish has changed after this period. The change experienced caused a spatial differentiation as well as the social structure. Thus, new socialization spaces have emerged outside the neighborhood.

3. Findings and Discussion

Istanbul, the capital of the Ottoman Empire, has been the focal point of the political, economic, and social aspects from the 15th century to the 20th century. "With the Tanzimat Edict declared in 1839 in Istanbul, the capital

of the Ottoman Empire, changes occurred in a new socio-cultural environment through the concepts of change-transformation-modernization and that can be observed outdoors. This modernization process, which continued until the Second Constitutional Monarchy, affected the city of Istanbul intensely" (Yılmaz, 2023). In this period, Istanbul was shaped as a body according to the social structure of the Ottoman Empire.

According to the Islamic belief, which has an important place in the social structure of the Ottoman Empire in Istanbul, they are physical and social environmental structures. The modernization process experienced in the Ottoman Empire in the 19th century can be regarded as the beginning of the differentiation of various countries in Istanbul. Before the modernization period, the traditional Ottoman social structure developed on the scale of neighborhood organizations. Depending on this, it can be said that spatial organizations are also formed.

The neighborhood shows a structuring feature that allows the formation of social structure as well as the continuation of social institutions. For this reason, social, cultural, and economic activities can be carried out within the boundaries of the neighborhood without the need to relocate, as well as social institutions such as politics, religion, family, and education.

This situation allowed the activities of non-Muslims to be controlled at the neighborhood scale, and at the same time prevented social problems that may arise from differences.

Mosques, which are places of socialization located in the center of the neighborhood, and bazaars where trade is made together with structures such as baths, madrasahs, schools, soup kitchens, tombs, libraries,

darüşşifas, bazaars, lodges, and zaviyes are places where social needs are met. These spaces were also attended by coffee houses (kahvehaneler) in the 16th century. In this case, it can be said that the emergence of alternative spaces for socialization in Istanbul took place in the 16th century.

It is known that before the Bolshevik Revolution, organizing socio-cultural activities with entertainment content such as temporary theaters, festivals, and recreation areas outside the neighborhood during periods such as Ramadan and Sacrifice Feast or Hıdırellez provided wide-ranging socialization. In addition, it can be said that sports activities, various shows, and traditional forms of entertainment are socio-cultural activities with entertainment content in the Ottoman Empire. However, since this situation was carried out under the supervision of the state in periodically determined areas, continuity could not be ensured. After the 16th century, coffee houses assumed a new function by hosting entertainment events. Thus, the socio-cultural system could be maintained in a controlled manner for many years. In the first part of this chapter, the historical background of the Bolshevik Revolution was investigated to form the epistemological infrastructure of the research. Then, the socio-cultural changes in the Ottoman Empire after the Bolshevik Revolution were examined. In the last part, the findings of the places with different functions known to operate in Istiklal Street Number 142 were evaluated comparatively.

3.1. Historical Background: Migration of 'White Russians' to Istanbul

The fact that Soviet Russia's colonial policies were similar to those of the Ottoman Empire and that Russia did not want to be alone in this region had a positive effect on Ottoman-Russian relations. For this reason, the White

Russians, before taking refuge in Europe, saw the Ottoman lands as a station and especially accepted Istanbul as a migration center that they found safe. However, the White Russians did not accept Istanbul as a permanent settlement. When they could not return to their country in a short time, they tried to continue their lifestyles where they settled.

Kemal Karpat stated that the population of Istanbul in 1914 was 909.978 persons, 560.434 of whom were Muslims (Karpat, 1985). The population of refugees who came to Istanbul after the Bolshevik Revolution can be learned from the statements of General Baron Piotr Wrangel (1878-1928), one of the White Army Commanders. General Baron Piotr Wrangel declared that 135.000 Russian refugees came to Istanbul in 1920 and thus the total number of Russians in Istanbul was 167.000 (Wrangel, 1922). It is estimated that around 800.000 Russian refugees were left stateless when Vladimir Ilych Lenin revoked the citizenship of White Russians in 1921. On the other hand, Bilge Criss, states that the number of Russian asylum seekers who stayed in Istanbul after the immigration waves until 1921 was between 65.000-90.000 persons (Criss, 1994). In this case, it is understood that a huge number of White Russians immigrated to Istanbul, which compared to the population of Istanbul between 1917-1923. In this context, it is inevitable to have a cultural interaction. Thus, the main reason for social change can be associated with the population density of Russian refugees.

3.2. Change in Social Structure: Social Life in Istanbul After the White Russians

It is known that White Russian asylum refugees mostly settled around Galata and Pera (today's Beyoğlu) by adapting to the 'neighborhood'

(mahalle) organization of the Ottoman Empire. The reason for this situation can be given that Galata and Pera are places where non-Muslims in Istanbul are also densely settled. In this respect, Pera and Galata became places where White Russian asylum refugees had to both live and work.

The White Russians who came to Istanbul are highly developed socially and culturally. Because they belong to the aristocratic class in Russia. However, when the wealth they brought with them while escaping from the Bolshevik Revolution was exhausted, they had to do ordinary jobs. Contrary to popular belief, not all White Russians have worked in the entertainment industry. Among the White Russians, those working in the entertainment industry in Russia and Ukraine have been active in this field. Among them, it is known that there are aristocrats who work for low wages in these places, as well as those who operate places such as pubs, taverns, restaurants, and bars in Russian culture (Deaver, 1995). Most of the refugees worked as workers in textile, button, and cigarette factories. Noblemen, generals, and businessmen were among these people (Ziftlioğlu, 2019). The White Russians, who became impoverished in the process of fleeing from the Revolution, did not compromise their social life in Istanbul. They have tried to maintain entertainment venues such as theater, restaurant, and bar as a cultural continuity, albeit limited (Macar & Macar, 2010).

In addition, they introduced the swimming culture to Istanbul. It is known that Sea Baths and Public Beaches were established by the White Russians. The transformation of Sea Baths into Beaches in the Republican Period has been accepted as an indicator of modernism (Altuncu, 2019). Integration and social change in the Ottoman Empire caused the transition from a culturally

rich entertainment concept based on dance, acrobat, poetry, and stories specific to Eastern societies to new entertainment types such as ball, dance, and cabaret, which are Western-style entertainments (Şenyurt, 2021).

Along with these new spaces, it is known that coffeehouses also functioned as multi-functional spaces such as coffeehouses-casinos or taverns-casinos for a certain period. These places are used as coffee shops during the day and as taverns or musical entertainment venues at night.

Learning and practicing Western dances such as tango, foxtrot, and charleston, which were introduced to the Ottoman culture by the White Russians, also gained importance in this period. For this reason, dancing restaurants, bars, and cafes are especially concentrated in Pera and Galata regions.

In this period, it is thought by Turkish-Muslim circles that the nightlife in Pera represents a way of life that includes corruption, danger, and immorality (Woodall, 2016). The first dancing coffeehouse (dancing) was opened by the Russian-born African-American Frederick Bruce Thomas (Fyodor Fyodorovic Thomas) in a garden at Şişli, under the name of 'Stella/Garden Villa'. It is known that Thomas was the founder of Maksim Casino, which was later located in Taksim (Altuncu, 2022). In June 1919, Russian-French cuisine dishes, an American bar, a Jigan orchestra, and various performances were presented in the Stella/Garden Villa garden restaurant, which catered to Westernized Turks, Levantines, members of the occupying Entente States, British and American military personnel. In the same year, in August, the first jazz show in Istanbul was held in this venue (Alexandrov, 2015). This initiative, which was carried out to serve the

customers in the garden restaurant, also in winter, caused the entertainment venues to be moved to Pera.

3.3. Reflections of Change on Space: New Understanding of Entertainment

Starting from the service of the Sixth Department of the Municipality, the work of giving names and numbers to the streets was completed between 1864-1865. Pera Street, which is the main street of Beyoğlu named Grand Rue de Péra (today's Istiklal Street) from this date on (Akın, 2002). Grande Rue de Péra was renamed Istiklal Street in 1923. The first known owner of Istiklal Street Number 142 is a Levantine family.

3.3.1. Mansion on Grande Rue de Péra

The Baltazzi (Baltacı) Family, who came to Izmir to trade from Venice, Italy, settled in Istanbul to continue their commercial activities. It is known that the Baltazzi Family owned quite large lands in Western Anatolia and had close relations with Sultan Abdulaziz. In this respect, the relations of the Baltazzi Family with the Ottoman Empire started with their settlement in Izmir.

The first family member to come to Izmir from Venice in 1746 was Marino Baltazzi. The son of Marino Baltazzi Emanuele Baltazzi, took their place among the Galata bankers by moving the commercial activities they developed in Izmir to Istanbul in the 19th century. According to Mustafa Cezar, "The majority among Galata bankers are Levantines of Italian and French origin. Emanuele Baltazzi (Baltacı Manolki) is the most powerful banker among the bankers (Cezar, 1991).

Emmanuele Baltazzi (Baltacı Manolaki) moved to Istanbul as a result of the intensification of his business in Istanbul. During this period, foreigners were not allowed to own property. As a result of his close dialogue with the Sultan, he was given the right to own property (Çalışkan, Eryılmaz, & Oğlakçı, 2021).

A land belonging to Saide Hanım, the daughter of Yakup Ağa, located in the Grande Rue de Péra, where non-Muslims live intensively, was given to him to build a house (Çetin, 2009). It can be said that the first known function of Istiklal Street Number 142 was a residence. According to Haydar Kazgan, Emanuele Baltazzi was the first foreigner to own property before the 1869 law allowing foreigners to own property (Kazgan, 2022). The house located at Istiklal Street Number 142 is likely to be wooden or masonry. However, there is no valid evidence in this regard.

Seddad Hakkı Eldem emphasizes the following on the subject: “The oldest mansions in Beyoğlu are a pair of houses known as the Admirals. These are called Baltacı mansions. It has European-style tall windows. But apart from that there are no similarities with the structures built on a traditional scale, especially in the Turkish style. On the first floors of the structures imported products are sold. One of the oldest surviving mansions of the period is the mansions of the Baltacı Brothers. The house in Kâtip Mustafa Çelebi Mahallesi consists of two identical residences. In 1830 the mansions of Greek and Armenian merchants and Levantines in Beyoğlu were built very similar mansions. These mansions, which were built with completely European architecture, bore little relation to the local Turkish housing tradition.

Emanuele Baltazzi, together with French-born Levantine Jacques Alléon, founded Istanbul Bank (Bank-ı Dersaadet). It was the first bank established in the Ottoman Empire in 1847, under the auspices of the government (Coşkun, 2012). Jacques Alléon, who was the money changer (banker) of the embassies, bought the Baltazzi residence in Pera, which was damaged by the frequent fires in 1860. It is thought that Jacques Alléon bought the building to be used as a residence.

3.3.2. Au Bon Marché on Grande Rue de Péra No:354

After the Crimean War (1853-1856), the first large and modern store was opened, selling ready-made clothing at the Grande Rue de Péra number 297 (today Mısır Apartment-303/305). 'Au Bon Marché' named shop (like the famous store in Paris) was opened in 1854 by the French Louis and Jean Bartoli Brothers (Miller, 1994) (Figure 1).

Figure 1. La Monde no:1099 (Levantine Heritage Foundation, n.d.a).

The upper floor of the mansion was functioned as the residence of the Bartoli Family. Since the Baltazzi/Alléon house has an entrance from both Istiklal Caddesi (Grande Rue de Péra) (Figure 2) and Meşrutiyet/Tepebaşı Caddesi (Petits Champs des Mort) (Figure 3) the store was also used as a passage. It is also seen in the plan on the Goad maps (1905) of this period that Au Bon Marché had access to both streets (Figure 4). On this date, the address of the shop was given as Grande Rue De Péra No: 354 in the advertisement. For customers coming from Tepebaşı Street, the address shown in the advertisement is Rue de Petits Champs des Mort No: 9.

Figure 2. La Grande Rue de Péra 1908 (Salt, 2023).

Figure 3. Rue de Petits Champs des Mort (Levantine Heritage Foundation, n.d. b)

Figure 4. Constantinople vol. II Pera / Chas. E. Goad Maps1905 (Gallica, 2023)

In 1926 ‘Au Bon Marché’ was sold to the Austrian Karlman (Carlmann) Family from Vienna due to the financial difficulties brought by the First World War. The place called ‘Au Bon Marché' in 1870-1926 was named

'Karlman Passage' or 'Carlmann Bon Marché' after this period. It is understood from the advertisement on page 7 of Milliyet Newspaper dated 5th of March 1929 (Figure 5) that Carl Carlmann has more than one store in Beyoğlu (Other shops Grande Rue de Péra Number 368/352/376).

Figure 5. Karlman Stores 5th of March 1929 Milliyet Newspaper (İÜ Gazeteden Tarihe Bakış., n.d.)

3.3.3. White Russians on Pera Street

The Russian-influenced restaurant/bar combination entertainment venues in Istanbul were built by Russian immigrants who came to Istanbul with the 1917 Bolshevik Revolution. Among these places located on Pera Street are Bear, Kremlin, Le Grand Cercle Moscovite, Petrograd Patisserie, Hermitage, Golden Cockerel, Kyiv Circle, and Russian Corner. The most important of these is the Rejans Restaurant, which was opened in 1920.

The location of the first Rejans Restaurant in İstanbul (the former name of the Restaurant was Triamon Palace) is located between Olivo Pass and Panayia Pass (Emir Nevruz Street) on both sides of Galatasaray Panayia İsodion Church in Beyoğlu. In 1921, White Russian Mikhail Mikhailovich took over the management of the Restaurant but he could not operate it. Meanwhile, Mihailovic started to operate a new restaurant called 'La Regence, Cafe–Restaurant-Glacier Maison Française' on Pera Street. He changed the name of the restaurant to 'Turquoise' (Figure 6).

Figure 6. Turquoise Russian Restaurant at Olivo Passage (Rejans Restaurant) (Taktak, 2023)

Partnering with Tevfik Manars, Vera Chirik, Vera Protoppova, and Mikhail Mikhailovich moved the restaurant to the former Triamon Palace. The restaurant at Olivo Passage was redecorated in 1932 and opened as 'Rejans Coffee, Restaurant and Flower Garden' (Rejans for short and in Turkish). For this reason, the establishment date of Rejans is accepted as 1932. The reason why Rejans is known as a Russian Restaurant is that its founders, customers, and employees are White Russians who fled from Russia to Istanbul during the Bolshevik Revolution.

As it can be understood from here, it is a very common practice for restaurants to be set up or relocated instead of one another. It has been seen that there are quite a lot of restaurants using the same name. This situation confuses. It can be said that there were more than one 'Turquoise' and 'Rejans' restaurants with the same name on Pera Street in the same period.

The upper floor of the 'Karlman Passage' or 'Carlmann Bon Marché' was first used as a restaurant/bar in 1926. In 1926, Mikhail Mihaliovic rented the

upper floor and moved the Moscovite Restaurant/Bar here. Mihaliovic changed the name of the Moscovite Restaurant, which he moved here in 1926, to Turquoise (Turkuvaz in Turkish) after a while. It is known that there were about 10 Restaurants/Bar in Beyoğlu during this period. Tokatlıyan Turquoise, Black Rose, It is stated on page 5 of Milliyet Newspaper dated 5 December 1929 that Gardenbar remained open until morning (Gaste Arşivi, n.d.). The upper floor of Carlmann Bon Marché functioned as a Turquoise restaurant/bar until 1934. No visual evidence of the Moscovite Restaurant/Bar was found.

3.3.4. Turkuvaz (Turquoise) Restoran/Bar on İstiklal Street No:310

The Turquoise (Turkuvaz in Turkish) restaurant/bar, which completely occupies the upper floor of Bonmarşe, was a very spacious place that could accommodate over 250 tables. This place, which has three sections, was operated as a nightclub, patisserie, and restaurant/bar. In this period, the address of the restaurant was given as İstiklal Street no: 220 but this Restaurant was different than Turkuvaz. From this situation, it is understood that the name of the street, which was previously Grande Rue Pera, was changed to Istiklal Street, while the door numbers also differed.

Behzat Üsdiken said, “The Turkuvaz completely covered the upper floor of the bonmarşe. It had an exit to both Istiklal Avenue and Meşrutiyet Avenue. It was only possible to reach the top with a single staircase since it was entered on a straight foot from the direction of Istiklal Street. Since the direction of Meşrutiyet Caddesi was stepped, it was only possible to go up two stairs. There was a very large bar in the section to the left (according to the entrance) of Turkuvaz. The walls were covered with mirrors, and the

entrance doors to the living room were specially made. The tables were lined up to leave a dance floor in the middle. In the section where the bar is located, wicker seats, which were fashionable at that time, were placed so that the visitors could sit comfortably" (Üsdiken, 1999). (Figure 8).

Figure 7. 1930 Türkiye Beauty Contest at Turkuaz Restaurant/Bar (Akçura, 2023).

Figure 8. Turkuaz Restaurant/Bar Interior Design (Akçura, 2023).

As it is understood from the newspaper advertisements in this period (Figure 9), the restaurant/bar is also used as a socializing place. Among the performances at the club, the ones we encounter in the advertisements can be listed as follows: Christmas Reveyon, New Year's Eve, Society Family Ball, Famous Fuhrmans Orchestra, Beauty Contest (Figure 7), Russian Balayka, Surprise Sovare, Mashrik Azam Ball, Russian Carnival, Dauvia on Russian New Year, Japanese Suvaresi, Apaş Soiree organized by Madame Dauvia, Tango competition etc.

Figure 9. Akşam Newspaper of 12 January 1932 Page 12 (Anonymous, nd., b)

3.3.5. İstiklal Street Number 142

In 1933, Turkuvaz (Turquoise) restaurant/bar was reopened as Turan Bar. We understand the design of the bar from the article written by Hamit Görele for Arkitekt magazine. We also understand that the Turan Bar is also used as a social focus like the Turkuaz Bar. Görele described the interior design of Turan Bar as follows: 'After passing through the endless corridors, mirrors and doors in front of the oriental bazaar's windows, we enter the dimly lit hall where a sweet light glides as we get closer.' (Görele, 1936).

This place continued the European-based tradition of Turkuaz Bar, which was managed by Hasan Birinci. By following the advertisements, we can see what kind of events are organized in this period: Seasonal Ball, Fina ve

Perfekto (Spanish Stars), Duo Sarabati (Monden Belly Dancer), Mirabelli Sisters (Modern Dance), New Year's Eve entertainment, Emine Adalet Pee, Aegean Jazz with Fehmi Ege, etc. The activities of Turan Bar continued until the 1950s. In 1955, Turan Bar was replaced by Wagon Blö Bar.

Bon Marché was taken from the Karlman family in 1942 due to the Wealth Tax (Varlık Vergisi) and used as the warehouse of the Ottoman Bank. After 6-7 September 1955, the building was given to Ziraat Bank. It was demolished in the early 1970s and today 'Odakule' was built instead. Although the function of the building was a commercial center, it is mostly used as a gateway today. Odakule's architectural projects were made by Architect Kaya Tecimen and Architect Ali Taner. The construction of the building, which was designed as a gateway connecting Istiklal Street and Meşrutiyet Street, was completed in 1976. Today, there are two signboards at the entrance of Istiklal Caddesi no:142 to remember the old places that used to be here (Figure 10).

Figure 10. The Signboards at the Entrance of Istiklal Caddesi No:142 (Beyoğlu Belleği, n.d)

As can be seen, although the venues at the same address were set up in place of each other, the content of the entertainment did not change. However, it is seen that the understanding of entertainment is gradually degenerating.

At the beginning of the period, documentation elements such as photographs were more difficult to reach. However, despite this situation, information about the first Russian restaurants could be reached. Information about the venue and its owners, which changed after the Russians left Istanbul, is quite limited.

4. Conclusion and Suggestions

It has been observed that the venues organized by the white Russians, who stayed in Istanbul for a short time (1917-1923), according to their lifestyles and understanding of entertainment, continued after them.

The hypothesis of the research was “The effectiveness of the innovations brought by the White Russians in social change depends on the socio-cultural continuity of innovative practices beyond the imported socialist ideology”. In this hypothesis, it is assumed that the change made by the White Russians is related to social sustainability. As a result of the research, it has been understood that social sustainability is realized by protecting three important data sources.

The first of these are the names of the places where socialization takes place. The names of the places have also been moved between different addresses, considering it as a cultural element. The fact that the same place names were encountered many times in the research can be given as proof of this situation.

In addition to this, it can be thought that the White Russians kept their original names of the places to mark the places they used as social focal points or socialization places. However, it can be said that names that are more compatible with Turkish culture have been preferred over time in terms of the understanding and use of the local people.

Secondly, it can be said that the interior design remains the same. Although the door numbers of the addresses have changed over time, the interior design has been preserved. A certain interior design also wanted to be protected by being seen as a kind of nationalistic indicator. This is because other refugees or occupying peoples have their dominance in the Pera region. This attitude, which can be regarded as a kind of regionalism, has also made it possible to live in harmony.

Finally, the most important evidence that social sustainability is provided in the spaces examined is the entertainment types in the spaces. Although the venues have moved or their addresses have changed, the entertainment they offer has not changed. Even many years after the White Russians left Istanbul, maintaining the Russian-style entertainment or the Russian-style lifestyle is possible with the balls, dance parties, beauty contests, etc. continued activities. As can be understood from the newspaper advertisements of the period, restaurants/bars were also used as multi-functional to meet the needs of the period. In this respect, it can be said that the spaces established by the White Russians fill a gap in cultural life.

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The article complies with national and international research and publication ethics.

Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

The article has a single author and there is no conflict of interest.

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