ARCHITECTURAL SCIENCES AND CULTURAL HERITAGE

HISTORIC MATTER

Prof. Dr. Kağan Günçe
Assoc. Prof. Dr. Hale Kozlu

İKSAD Publishing House

September 2023

Institution of Economic Development and Social Researches

(The License Number of Publishing House: 2014/31220)

TÜRKİYE: +90 342 606 06 75 USA: +1 631 685 0 853

E mail: iksadyayinevi@gmail.com

www.iksadyayinevi.com

Architectural Sciences and Cultural Heritage – Historic Matter

ISBN: 978-625-367-258-4

Cover Design:
Kamiar YAZDANI

September, 22, 2023
Ankara / Türkiye

EDITORS

Kağan GÜNÇE

H. Hale KOZLU

AUTHORS

The authors were listed in alphabetical order.

Aliye MENTEŞ

Atila GÜL

Aynur DUYSAK MANKIR

Beyza TEMUR

Çağla AYDEMİR

Çiğdem ÇETİN

Doğa ÜZÜMCÜOĞLU

E. Sibel HATTAP

Fadime ÖNCÜ

Filiz ÇETİNKAYA KARAFAKI

Funda KURAK AÇICI

Gül YÜCEL

Gülşen DİŞLİ

Hande EYÜBOĞLU

Hatice Eda GÜL

İlknur ACAR ATA

Mustafa KORUMAZ

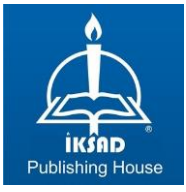
Ömer ÖZEREN

Seda IŞILDAK

Serap FAİZ BÜYÜKÇAM

Tuna KAN

Tülay UĞUR



REVIEWER LIST

The reviewers were listed in alphabetical order.

A. Emre DINÇER	Ankara Yıldırım Beyazıt University
Ahmet GÜLEÇ	Mimar Sinan Fine Arts University
Beyza ONUR	Karabük University
Dalia H. ELDARDIRY	Imam Abdulrahman Bin Faisal University
Demet ULUSOY BİNAN	Mimar Sinan Fine Arts University
Devrim YÜCEL BESİM	Cyprus International University
Emine YILDIZ KUYRUKÇU	Konya Technical University
Emine Dilay GÜNEY	Istanbul Topkapı University
Erhan V. KÜÇÜKERBAŞ	Ege University
Esma İGÜS	Mimar Sinan Fine Arts University
Esra YALDIZ	Necmettin Erbakan University
Fatih SEMERCİ	Necmettin Erbakan University
Funda KURAK AÇICI	Karadeniz Technical University
Gülnur BALLİCE	Yaşar University
Işıl POLAT PEKMEZCİ	Istanbul Technical University
İlke CİRİTCİ	Istanbul Gelişim University
İsmail Emre KAVUT	Mimar Sinan Fine Arts University
Marko KIESSEL	Arkın University
Mehmet Ergün HATIR	Necmettin Erbakan University
Murat AKTEN	Süleyman Demirel University
Neşe YILMAZ BAKIR	Erciyes University
Öner DEMIREL	Kırıkkale University
S. Armağan GÜLEÇ KORUMAZ	Konya Technical University
Suphi SAATÇİ	Fatih Sultan Mehmet Vakıf University

Şebnem ERTAŞ BEŞİR	Akdeniz University
Şengül YALÇINKAYA	Karadeniz Technical University
Timur KAPROL	Kırklareli University
Türkan UZUN	Istanbul Gelişim University

**Each book chapter has been evaluated by at least two reviewers.*

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 – Historic Matter’ 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 – Historic Matter’ 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 – Historic Matter’ 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
Assoc. Prof. Dr. H. Hale KOZLU

September, 2023

CONTENTS	Pages

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-1

A Retrospective Evaluation and Interpretation on the Conservation of Mosaic Cultural Heritage in Anatolia

Assoc. Prof. Dr. E. Sibel HATTAP [1]

[1]Mimar Sinan Fine Arts University, Vocational School, Architectural Restoration Program, İstanbul/ Türkiye.
ORCID: 0000-0003-3616-4421
E-mail: sibel.hattap@msgsu.edu.tr

Citation: Hattap, E. S. (2023). A Retrospective Evaluation and Interpretation on The Conservation of Mosaic Cultural Heritage in Anatolia. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter 1, 1-27. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Mosaic is a kind of art of painting arranged in various colors and lines in order to cover a surface with small pieces of materials such as stone, glass, terracotta, and even wood. To keep the small pieces together, that are arranged according to a certain harmony and compatibility among themselves, they are placed in a layer of mortar that is initially soft but hardens later on. Within this layer of mortar on which the stones are laid, the outward-facing surfaces of the stone pieces are adjusted to keep the same level. One feature that distinguishes mosaic art from other fields of art on this archytectonic surface is that it has not lost anything of its color properties despite the thousands of years that have passed. (Üstüner, 2002).

In Turkey, there are the largest mosaic museums in the world especially in Anatolia, and mosaics, which are works of art reflecting the best techniques of the period in which they were made, are located in these museums.

2. Mosaic Works Cultural Heritage in Anatolia

Anatolian lands are very rich in terms of mosaic cultural heritage. According to Gürol Sözen, there are very magnificent mosaic works throughout Anatolia, and works that have very different expressions are observed even in the same period. Considering the polytheistic and monotheistic periods, a certain golden age should be avoided to mention. According to Sözen, the following works might be mentioned as the best ones:

The mosaic work, which is dated to the 3rd century AD and which he defines as a contemporary piece, consisting of square and rectangle items; the portraiture on the Dionysos and Ariadne mosaic work, dated to the 2nd-3rd century AD; the portraits of the Achilles mosaic of in the island of Skyros, dated to the 2nd century AD; a resentful fish description on the Ocean mosaic dated to the 2nd century AD. The Seasons mosaic dated to the 2nd century AD, the geometric arrangement dating back to the 2nd-3rd century AD, and many other pieces which are exhibited in Antakya Museum, emphasize the importance of the period between 2nd and 5th centuries AD in terms of mosaic works [URL 1]. Besides the Zeugma and Ephesus mosaics, many valuable mosaics have been found and protected in Anatolia, in the form of in-situ in ancient cities or Hatay, Gaziantep, Urfa, Adana, etc. It is exhibited in museums in cities.

3. Mosaic Works Examples in Anatolia

3.1. Mosaics of Terrace Houses in Anatolia

3.1.1. Zeugma Ancient City

There are mosaic works involved in terrace houses in two parts of Anatolia. One of them, Zeugma, which is located on the Euphrates River and is located at a strategically important crossing point, was established as a military and commercial center. Zeugma presents the most beautiful and interesting examples of the mosaic art of the ancient world, provides unique information about the convivium culture, which is considered the most important means of socialization in Iran and the Roman world, and the architectural context of this culture, dinner invitations were the most important form of collective entertainment of Greek Roman culture, and

the music that formed the floor covering of the places where food was served was adapted from ancient literary stories and novels. The themes in the mosaics were chosen in a way that would make feel the owner's knowledge, inner wealth and financial power (Kutalmış, 2015).

Archaeological data from the rescue excavations carried out in the ancient city of Zeugma between 1992-2004 provided information about the architecture of the peristyle houses of Zeugma. During these excavations, 13 houses with mosaics were revealed in Zeugma. Peristyle houses used to belong to the wealthy, like merchants, doctors, or commanders. The size and ambiance of the house usually emphasized the wealth of the landlord. Compatible with the structure of the ancient city of Zeugma, inhabitation terraces with a view of the Euphrates River were built on terraces (Figure 1, 2) (Önal, 2013).

Figure 1. Zeugma Ancient city [URL 2)

Figure 2. Zeugma houses (Hattap, 2018)

3.1.2. Ephesos Terrace House 2

Located in the city center of Ephesos and spread over an area of approximately 4000 square meters, the houses group called Terrace House 2, consists of seven residences on three terraces. Scientifically, it is one of the most important and remarkable monuments of Roman dwelling culture. Mosaics are the most common material as the floor covering of Terrace House 2, they have been used for years due to their quality and durability. In addition to the aesthetic effect, the durability, waterproofness, and ease of maintenance played a role in the decision to cover the floor with mosaics. Although most of them are dated to the

Early and Middle Imperial period, the floor covering continued to be used without any intervention even during the later periods of the 3rd century AD (Figure 3-7).

In the Terrace House 2 mosaics, they are especially composed of black-and-white mosaics with geometric material and preserve patterns, etc. there are mosaics that do not hit the direction of movement in the sections, and bases decorated with a single emblem in the general middle that resembles a carpet on the faces in the living room. The shape of the mosaics is rarely directly related to the function of the space. Such examples can be seen in Terrace House 2 houses. Additionally, extremely expensive and artistically distinguishing glass mosaics are used in vault niches of these houses. Glass mosaics are observed in the construction of fountains as well. Glass mosaics seem very pleasant in terms of their light reflections (Ladstatter, 2013).

The intense arrangement of geometric patterns is mostly seen in Efes Terrace House 2. Figures were used for design of central parts of the mosaic plates. The mosaics of the hillside houses have very similar shapes to the Roman-era mosaics in Italy. The most impressive ones among the mosaics revealed are the colorful and figurative ones of Triton, Nereids, Dionysus, Medusa, and the description of a lion [URL, 3]

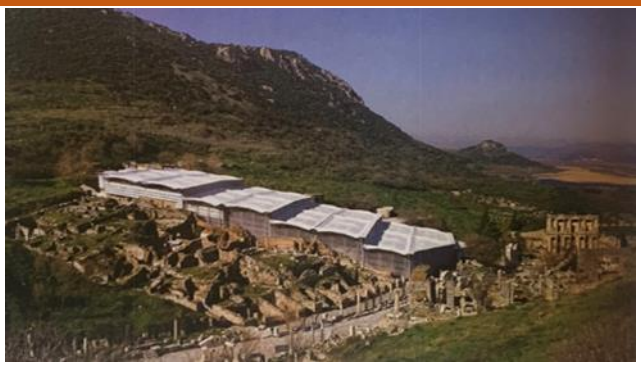


Figure 3. Efes Terrace House -The protective roof, which was built in 2000 (Ladstattter, 2013)

Figure 4, 5, 6, 7. Efes Terrace House 2 (Hattap, 2022)

The mosaics located in Zeugma and Efes Yamaç Ev 2 (Efes Terrace House 2), which are unique in Anatolia, have been closed on top and sides and protected so that they do not affect from degradation mechanisms.

3.2. Mosaics Exhibited In-Situ in Ancient Cities of Anatolia

3.2.1. Ancient City of Perge, Antalya

A place in the Ancient City of Perge in Antalya, an example of in-situ mosaic preservation, there is a space separated from other shops on the South Portico of the columned Western Street, which opened to visitors in 2013, the height of which can be preserved in the structure measuring 6.00 × 7.30 meters is also six meters, a mosaic depicting a dramatic scene of the Trojan War described by Homer in the Iliad Saga was found on the floor of the space, which is the largest shop excavated in the region. Four warrior hero figures are traced in the center, where a mythological composition is depicted on the mosaic base. Three male figures standing close to each other on the left side are selected under the stage. On the left of the stage, there is an expression that they did or had done in the article (Figure 10). A scene from the Trojan Wars, which marked the ancient period, is portrayed in the mosaic, the scene of sacrificing Agamemnon's daughter Iphigenia, but it is Nepele, not Artemis, who embraces and kidnaps Iphigenia in the Perge scene. According to the story, Nephele is Athamas' first wife. Athamas divorces Nepele in order to marry Ino. Correspondingly, the Cloud Goddess sends the ram with golden fleece to save her children (It says so on the information board of

the mosaic, however, many sources claim that a deer was descended from the sky). The place is considered to be converted to a religious sacrifice space in the 2nd century AD rather than a shop and afterward into a holy spring or a hospital during the Eastern Roman settlement in the 5th-6th century AD. Apart from the geometric shapes and the war scene on the mosaic floor, an owl figure draws attention (Figure 11). The owl is the symbol of wisdom and intelligence like Athena. Athena is the daughter of Metis, the Goddess of wisdom in Greek Mythology. At the same time, the owl is known as a bird sacrificed to Demeter, the Goddess of Fertility and Earth in Greek Mythology.

Figure 8, 9. A system designed to protect mosaics from the effects of nature and humans in the Anticent City of Perge (Hattap, 2022)

Figure 10. The Aancient City of Perge in Antalya, an example of in-situ mosaic preservation (Hattap, 2022)

Figure 11. The geometric shapes and owl figure-the Ancient City of Perge (Hattap, 2022)

3.2.2. Ancient City of Metropolis, Izmir

The mosaics, which were restored with modern techniques in the Ancient City of Metropolis, known as the City of the Mother Goddess, in the Torbalı district of İzmir, are dated back to 1800 years ago. During the restoration, mosaics depicting the love god Eros, the fertility god Dionysus, his wife Ariadne and theater symbols in Greek mythology were made prominent (Figure 12, 13). Among the mosaics that have been completed Deconstruction, there are also masks of theater symbol, fish and bird figures describing the fertility of the region [URL, 4].

Figure 12, 13. Izmir Metropolis Ancient City Dionysus, the god of fertility, his wife Ariadne [URL, 4]

3.3. Mosaics Exhibited in Museums in Anatolia

3.3.1. Adana Archaeological Museum

Apart from the Gaziantep Mosaics Museum and Hatay Mosaics Museum, which are well-known and one of the largest Mosaics Museums in the world, there are also other museums with very valuable mosaics in Turkey. One of them is the Adana Archeology Museum where 16 mosaic plates from the Roman Era are kept that are thought to have been designed between the 2nd and 6th centuries. The first stage of the restoration of the National Mensucat Factory in Adana was opened in 2017 at the Adana Archaeological Museum, and a mosaic exhibition area was created in two hangars with the completion of the restoration in 2018.

The "Hippocampus and Eros Mosaic", which depicts two Eros (cupids) fishing with fishing lines on two Hippocampus (seahorses), and sea creatures, revealed on the floor of a villa from the Roman Period in the Ancient City of Aigeai in the district of Yumurtalık, is among the most striking mosaics of the hall. It is the only example among the mosaics unearthed in Turkey with the Hippocampus depiction on which the Cupids were mounted. The Noah Flood Mosaic, which was exhibited in the museum and discovered in Misis in 1956, draws attention as well (Figure 19). In addition to that, the Peace Kingdom Mosaic draws attention with a pattern in which hostile animals stand together in a friendly position (Figure 14). There are mosaics in the Anavarza Ancient City in the Kozan district and floor mosaics in villa-type houses on the coastline of the Yumurtalık district [URL, 5].

Figure 14. Mosaic of the Peaceful Kingdom, Adana Archeology Museum (Hattap, 2022)

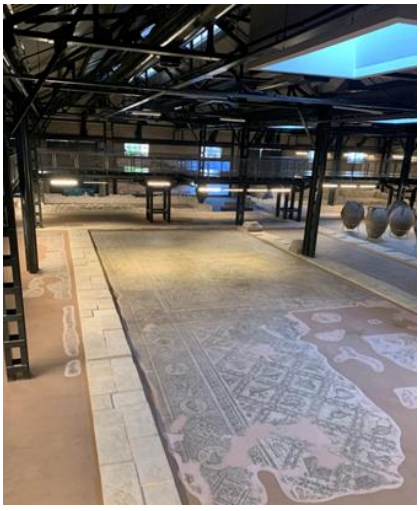


Figure 15, 16. Adana Archeology Museum (Hattap, 2022)

The mosaic of Tethys is dated to the beginning of the 4th century AD. in the center of the mosaic, the sea goddess Tethys is formed on the right of the ship's rudder, the sea dragon Ketos on the left, and eros fishing with a

fishing rod on both sides. One of the Eros is depicted on a dolphin and the other on the seashore with a basket on his arm (Figure 17, 18).

Figure 17, 18. Mosaic of Tethys exhibited at Adana Archeology Museum, (Hattap, 2022)

Figure 19. Mosaic with Noah's Ark exhibited at Adana Archeology Museum, (Hattap, 2022)

3.3.2. Amasya Archaeological Museum

In addition, it will be exhibited in the Amasya Archaeological Museum. As a result of the work of the Amasya Museum Directorate, there is a

mosaic covering an area of 80 square meters in a section located in the ruins of a Roman-era military unit building in the Gökmedrese Neighborhood in 2013. The mosaic with the motif of the Goddess of Fertility is 1700 years old. The mosaic, which could not be moved to the Amasya Archaeological Museum in the year it was found, was preserved closed at its location with proper precautions (Figure 20-22). Later, it began to be exhibited at the Amasya Archaeological Museum [URL, 6].

Figure 20. Amasya Archeological Museum (Hattap, 2023)

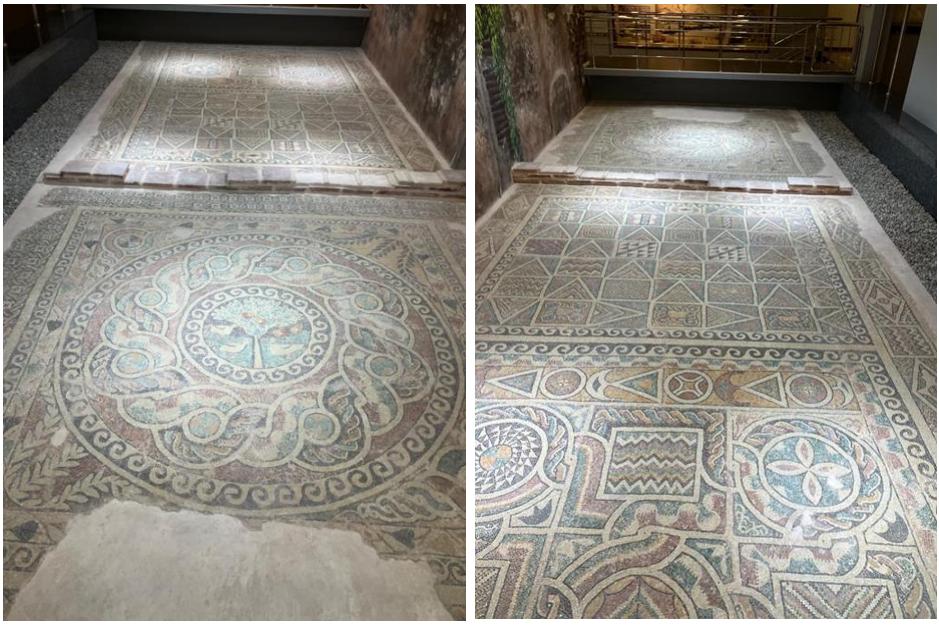


Figure 21, 22. Amasya Archeological Museum (Hattap, 2023)

3.3.3. Haleplibahçe Mosaics Museum, Şanlıurfa

Very valuable mosaics are exhibited in Haleplibahçe Mosaic Museum. Haleplibahçe Mosaic Museum is the largest column-free structure in Turkey, having an area of 6000 m^2 with a diameter of 82m (Figure 23-24). The mosaics here are exhibited both in the museum and in situ. Mosaics revealed in Haleplibahçe are exhibited in-situ. During the excavations carried out under the leadership of the Şanlıurfa Museum Directorate in Haleplibahçe, north of Balıklıgöl, floor mosaics were revealed besides some architectural remains. The mosaics were temporarily covered with soil and tarpaulin covers during excavations and were protected against environmental effects. It was decided to start

the conservation and repair implementations of the mosaics that have been revealed since the summer of 2008 (Karabulut, Önal & Dervişoğlu, 2011).

The area where the mosaics are concentrated is located in a building called the Amazons building because of a mosaic with depictions of Amazon warriors, which is thought to be a palace or villa belonging to the Byzantine period. The area of mosaic floor in this building is 693 m^2 in total. The second area, so named as called trench 2, where mosaics were revealed during the Haleplibahçe excavations is located in a bath dated to the late antique and early Byzantine period. Mosaics are usually of one cm and arranged with tessera patterns and stylized floral figures.

The area where the mosaics were found has been registered as a first-degree archaeological site. The Haleplibahçe Mosaic Museum is also home to the only mosaic depicting the female warrior Amazons mentioned in mythology. The mosaics depict hunting scenes of Amazonian women, some animals and people. Mosaics depicting the warrior Amazonian Queens are considered to be the first examples of the world. Due to its mosaic technique, art, being made from the original stones of the Euphrates River and similar features, it is considered by experts to be one of the most precious mosaics in the world.

Figure 23. Şanlıurfa Edessa Archaeological Museum, Haleplibahçe Mosaic Museum and archaeopark layout plan [URL, 7]

Figure 24. The Haleplibahçe Archeology Museum in Şanlıurfa where mosaics are exhibited in-situ [URL, 7]

Figure 25. The Haleplibahçe Archeology Museum in Şanlıurfa [URL, 7]

Figure 26. The Edessa Archeology Museum in Şanlıurfa [URL, 7]

While Syriac characters are seen in the mosaics designed during the Osrhoene Kingdom in Edessa, Greek mythology and the alphabet appear in the Haleplibahçe Mosaics, which are considered to have been designed during the Eastern Roman Empire (Figure 26).

4. Findings and Discussion

In Anatolia, some mosaics are repaired on-site and partially closed with architectural elements to protect them from atmospheric effects, as in the examples of Ephesus Hillside Houses and Zeugma Hillside Houses, Antalya Perge Antique City, Izmir Metropolis Antique City, and exhibited as in situ, and as they are quickly affected by degradation mechanisms after they come out of the soil. Apart from this, there are

also mosaics that are completely exhibited in museums in a sheltered environment. In fact, it is more convenient to repair and display the mosaic bases located in Haleplibahce, Ephesus, Zeugma, and the like, and to see the original places where they were made. But sometimes it is also necessary to bring together mosaics from different settlements and display them all under a single museum.

The important thing is that the resulting mosaics are protected without damage by the most accurate repair methods. One of the most important conservation principles in mosaic conservation is that the missing parts are not completed, which is a very correct approach. As with the pool floor mosaic in the Gaziantep mosaic museum, animation with hologram techniques provides more information about the mosaic. Recently, a Digital Restoration of Ancient Mosaics is being carried out by Egemen Ertugrul. The missing parts in the mosaics can be completed digitally without damage (Figure 27).

Figure 27. The Mosaics of Metiochus and Parthenope of which digital restoration was tried by Ertuğrul

Figure 28, 29. Inaccurate exhibition method of mosaics at Adana Archeology Museum (Hattap, 2022)

Mosaics need to be fully perceived when they are exhibited, for example, the technique of displaying mosaics found in the Gaziantep Mosaic Museum and the Amasya Archaeological Museum is very successful, and the mosaics in the Hillside houses in the Ancient City of Zeugma are exhibited correctly. However, the transparent glass sightseeing paths made in the Adana Archaeological Museum and Ephesus Hillside houses prevent the mosaics exhibited from being seen clearly due to the carrier structure or reflected light (Figure 28-33).

Figure 30, 31. Inaccurate exhibition method of reflection of light on mosaics exhibited in Adana Archeology Museum (Hattap, 2022)

Figure 32, 33. Efes Terrace House 2 sightseeing paths that prevent the full perception of the mosaic (Hattap, 2022).

5. Conclusion and Suggestions

In this study, the focus has been on mosaics found in Anatolia and exhibited both in museums and in-situ. There are also the Istanbul Great Palace Mosaic Museum in Istanbul in Turkey, the Kariye and Hagia Sophia Wall mosaics, and the mosaics in the Zeytinburnu Mosaic Museum, which have been discovered in recent years, and they are all extremely valuable.

Mosaics, which have a great place in the rich culture of Anatolia, tell about the lifestyle of the period in which they were made, mythology, Noah's ark, Amazon woman, Trojan war, peace, hunting, clothes of the period, clothes from hair to sandals, geography where they are located, Miracles of the Prophet Jesus, the Virgin Mary, respect shown to the Emperor, the model presented, many other things. The fact that they are usually made of stone, the fact that they have been under the ground for a

very long time, has protected them. To make a painting with a stone, to add emotion to it, to give it a shadow, even to make it perceived in three dimensions requires really great artistry. Alexander the Great also showed the importance he gave to this art by taking mosaic panels with him as a work of art when he went to war.

Today, in addition to the mosaics exhibited in-situ in the largest museums of the world or in the places where they are located in Anatolia, there are also mosaics taken from Anatolia abroad. For example, there are many Edessa mosaics owned by foreign collectors. It is possible to see examples of Edessa mosaics in museums in countries such as Australia, the United States and France. The Orpheus Mosaic in the Dallas Museum is not only the second Orpheus mosaic to be recovered in the city, it is also important with the artist's signature on it. According to the date contained in the inscriptions on it, it is the earliest Edessa Mosaic with an exact date (AD 194) [URL, 9].

There are attempts to return the mosaics belonging to Anatolia to the place where they were made again, some of them have been successful. There are also mosaics that are still waiting to be discovered. The important thing is to protect the mosaics of cultural heritage with the least damage, using the most accurate repair methods. If possible, it is necessary to repair it on site and protect it with light architectural elements as mentioned in the examples. On the other hand, the mosaics exhibited in museums should be made without covering the sightseeing routes in order to be seen. Again, the reflection of light on the exhibited

mosaics both makes it difficult for them to be perceived visually and causes them to come into contact with the harmful light of the sun.

The studies carried out for the protection of the mosaic cultural heritage in Anatolia, which has managed to come from the past to the present, are crucial. It is the right approach to preserve and complete as many of the discovered mosaics as there are. Their completion with hologram techniques or new software techniques is also very accurate for detecting missing mosaics. Whether preserved in a museum or in-Situ, the cultural heritage is enriched every time a new mosaic is discovered.

Acknowledgements 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. There is no conflict of interest.

References

Hattap, S. (2018). Geçmişten Günümüze Mimaride ve Sanatta Mozaik, *Mimarlık, Planlama ve Tasarım'da Akademik Araştırmalar* (s.153-173). Ankara: Gece Kitaplığı, Bizim Büro Matbaa. ISBN: 978-605-288-389-l.

Karabulut, H. & Önal, M. & Dervişoğlu, N. (2011). *Haleplibahçe Mozaikleri Şanlıurfa/Edessa*. İstanbul: Arkeoloji ve Sanat Yayınları, Bilnet Matbacılık. ISBN:978-605-396-181-9.

Kutalmış, G. (2015). *Geçmişten Günümüze Bir Geçit Zeugma*. İstanbul Türkiye İş Bankası Kültür Yayınları, Golden Medya ve Matbacılık. ISBN:978-605-332-644-1.

Ladstatter, S. (2013). *Ephesos Yamaç Ev 2*. İstanbul: Homer Kitapevi ve Yayıncılık Ltd.Şti. ISBN:978-9944-483-51-3.

Önal, M. (2013). *Posedion-Euphrates Evleri Belkıs/Zeugma*. İstanbul: Arkeoloji ve Sanat Yayınları, Bilnet Matbacılık. ISBN:978-605-396-180-2.

Üstüner, A. (2002). *Mozaik Sanatı*. İstanbul: Engin Matbaacılık San. ve Tic. Ltd.Şti.

URL 1. http://www.hurriyet.com.tr/kelebek/binlerce-yillik-bir-anadolu-masali- mozaik-l82078l8

URL 2. https://www.kulturportali.gov.tr/turkiye/gaziantep/gezilecekyer/belkiszeugma-antik-kenti

URL 3. https://www.uztarih.com/2018/09/yamac-evler-antik-cagin-muhtesem.html

URL 4. https://www.cumhuriyet.com.tr/turkiye/metropolisteki-ask-1800-yil-sonra-yeniden-yuzunu-gosterdi-1876435

URL 5. https://www.aa.com.tr/tr/anadolu-mozaigi/hippokamposlara-bin en-eroslarin-mozaigi-adanada-sergileniyor/2803159

URL 6. https://www.aa.com.tr/tr/kultur/amasyada-1700-yillik-bereket-tanricasi-motifli-mozaik-sergilenmeye-baslandi/2926748

URL 7. https://gazianteproloveveanitlar.ktb.gov.tr/TR-180140/edessa-arkeoloji-muzesi-yapimi-ve-teshir-tanzimi-halepl-.html

URL 8. https://egemenertugrul.github.io/blog/Digital-Mosaic-Restoration

URL 9. https://aktuelarkeoloji.com.tr/uploads/images/300343bc8cc79298ca6bf065cd041417.jpg

Assoc. Prof. Dr. E. Sibel HATTAP

E-mail: sibel.hattap@msgsu.edu.tr

Educational Status

Undergraduate: Yıldiz Tecnical University, Department of Architecture, Istanbul (1987)

Master: Yıldiz Tecnical University, Department of Architecture, Department of Building Surveying and Restoration, Istanbul (1990)

PhD: Mimar Sinan Fine Arts University, Faculty of Architecture, Department of Building Structure and Materials (2002)

Professional experience; Mimar Sinan Fine Arts University, Vocational School, Architectural Restoration Programme (1994-…), Director of MSFAU Continuing Education Center (2019-…)

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-2

Execution and Importance of Characterization Studies in Historical Lime Mortars

Assist. Prof. Dr. Tülay UĞUR [1]

[1]Selcuk University, Faculty of Letters, Department of Conservation and Restoration of Cultural Heritage, Konya/Türkiye.
ORCID: 0000-0003-3080-2568
E-mail: tulayugur@selcuk.edu.tr

Citation: Uğur, T. (2023). Execution and Importance of Characterization Studies in Historical Lime Mortars. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 2, 28-54. ISBN: 978-625-367-258-4. Iksad Publications

1. Introduction

Tangible cultural assets are natural formations, human-made objects, materials, artworks, or structural remains that have survived from different periods to the present day. Materials of remains those carry the codes of various periods and cultures within the scope of tangible cultural heritage should be preserved in their original state and transferred to the future. Mortars and plasters are essential building materials that provide detailed information about the structures and remains they belong to, their respective periods, construction techniques, production technologies, deterioration conditions, etc. In order to obtain accurate results in research and characterization studies conducted on these building materials, the research process and system should be appropriately designed and executed from the very beginning. The research process should cover all stages, from the preliminary examination to the building, sampling, the well-structured design of the experimental plan, the proper execution of the defined methods, and the interpretation of the results.

The healthy continuation of cultural assets without altering their construction techniques and materials is the fundamental task of conservation science, which is formed and applied through the collaboration of different disciplines. Conservation ensures that the material not only retains its formal aspects but also preserves all its characteristics that provide data about its origin and production materials and technology without undergoing any changes The conservation steps can sometimes vary or may not require every stage depending on the

condition of the artifacts being studied. However, they are generally listed as Documentation, Diagnosis, Remedies (cleaning, bonding, filling and integration, consolidation, and protection), and Maintenance (Ersen & Güleç, 2009; Güleç, 2009). Studies focusing on the characterization of mortar-plaster materials, which play a significant role in historic buildings, are included in the diagnosis stage of the conservation process.

Decisions regarding the rehabilitation, restoration, and conservation of historic buildings have technical, aesthetic, and economic dimensions (Pescari et al., 2023). The concept of preservation, which started to take shape in the 17th century and gained strength in the 18th century, led to significant momentum in restoration work during the 19th century. Conservation practices began incorporating scientific methods after the mid-19th century, eventually becoming a discipline in the 20th century (Erder, 2020). Efforts have been made to conserve cultural heritage represented by structures and remnants that reflect the memory of the historical process in their original form through various international charters and agreements.

The history of contemporary conservation theory and almost all its common agreements in the process of universalization are based on the "style unity/anti-restoration idea conflict" and the emphasis on the concept of "authenticity." Concerns about preserving the entire authenticity of cultural heritage have also given an international dimension to architectural conservation. The scientific investigation of conservation materials and techniques began in the 1930s (Ersen, 2011). Nowadays, the

interdisciplinary position of conservation science is well understood, and research in this field has been detailed.

According to the definition in the 1st article of the Convention concerning the Protection of the World Cultural and Natural Heritage, cultural heritage includes monuments, architectural ensembles, and sites (UNESCO, 1972). In order to ensure the sustainability of cultural heritage structures that have lost their original functions, it is necessary to re-functionalize them. Heritage buildings that have been re-functionalized for public use, in particular, contribute significantly to the socio-cultural and economic development of their locations (Mısırlısoy & Günçe, 2016; Günçe & Mısırlısoy, 2019). However, when carrying out restoration practices for re-functionalization, it is essential to be cautious and keep interventions to a minimum to preserve the authenticity of the structure in all its dimensions. Partially standing remains of structures or ruins should not undergo completion, unless there are functional and static reasons, they should be preserved in their existing state by eliminating deterioration factors and consolidating them for protection. Structures representing the memory of specific periods, should be documented comprehensively and restored with minimal intervention to maintain their integrity. All layers of historical periods and cultural elements in the structures and remains, regardless of their aesthetics and amorphous form, should be conserved and studied, considering traditional materials, craftsmanship/form, and construction techniques. Especially in the case of ruins or remains within urban areas, which serve as unique data banks, they should be treated with extreme care, independent of aesthetics. Such cultural remains which

contain abundant information, should be handled with the awareness that once they are lost, there may be no chance to recover the same data again. It is crucial to work meticulously and assess the documentary value of building materials. Often, there is no possibility of accessing the same data in the material again. Therefore, especially in the characterization studies of mortar-plaster materials, it is essential to approach the sampling process with this awareness to ensure a more accurate transmission of information about the remains over time.

The state of preservation of buildings and materials varies over time from their construction to the present day, depending on their patterns of use, interventions, and the environmental conditions they have been subjected to (Kozlu, 2010; Ahunbay, 2021). Historic mortars and plasters, which hold the building components together, are often vulnerable to environmental factors. The conservation of these building materials is a significant and complex issue that should be carried out by qualified professionals (Polat Pekmezci, 2012).

Mortars and plasters should be seen as concrete elements that serve as tangible evidence of the development of traditional building production technologies throughout architectural history and different periods. Their significance should be taken into account when dealing with them. However, in some restoration practices, especially during rapid rescue excavations within urban areas, the documentation and preservation of mortar materials are often neglected while documenting and removing the structural remnants.

In the characterization studies of historical mortar-plaster materials, various simple and advanced analysis methods are used in line with scientific and technological developments for specific purposes. The accurate characterization of mortar materials will not only help identify their content and deterioration conditions but also reveal many data related to the periods of the structures. Additionally, it will shed light on the proper execution of conservation efforts and the development of compatible materials such as mortar, plaster, filling, and joint mixtures to be used for restoration purposes (Uğur & Güleç, 2014; Uğur, 2019).

This study aims to provide a foundational level of awareness and approach for researchers who wish to work on historical mortar-plaster materials before they begin their studies. It covers the importance of historical mortars-plasters, the stages, considerations, and evaluations of research and characterization studies aimed to identify their characteristic structures and current conditions.

2. Material and Method

The methods to be used and the evaluation of the results in experimental studies conducted on mortar and plaster materials, which are important elements in the construction phase of structures and their subsequent functions, are shaped according to the required information. Characterization studies are carried out for various purposes, such as determining the production technologies and construction techniques of historical mortar-plaster materials from different periods, identifying the causes and morphologies of deterioration, damage detection, determining and developing suitable protection methods and developing repair

materials that will work compatibly with similar properties (Güleç, 1992; 2009; Adriano et al., 2008; Polat Pekmezci, 2012; Uğur, 2011; 2019).

The planning, development, and design of methodological approaches to be used in characterization studies require researchers to initially ask and answer the following fundamental questions.

- What are the main objective and aims of the study?
- Has the literature review been conducted at a sufficient level?
- Has a comprehensive preliminary examination/evaluation of the structure/area been conducted?
- Are the results that can be obtained with the selected methodological approaches capable of answering the objective?
- What is the potential contribution of the study results to the literature and to the user?

Characterization studies conducted using various simple and advanced analysis methods in accordance with the established plan schema investigate the physical, mechanical, chemical, petrographic, and mineralogical properties of historical mortars, their microstructures, changes, deteriorations during the process, and raw material compositions. The obtained results are evaluated for usage according to the identified needs and objectives, and the study is concluded accordingly.

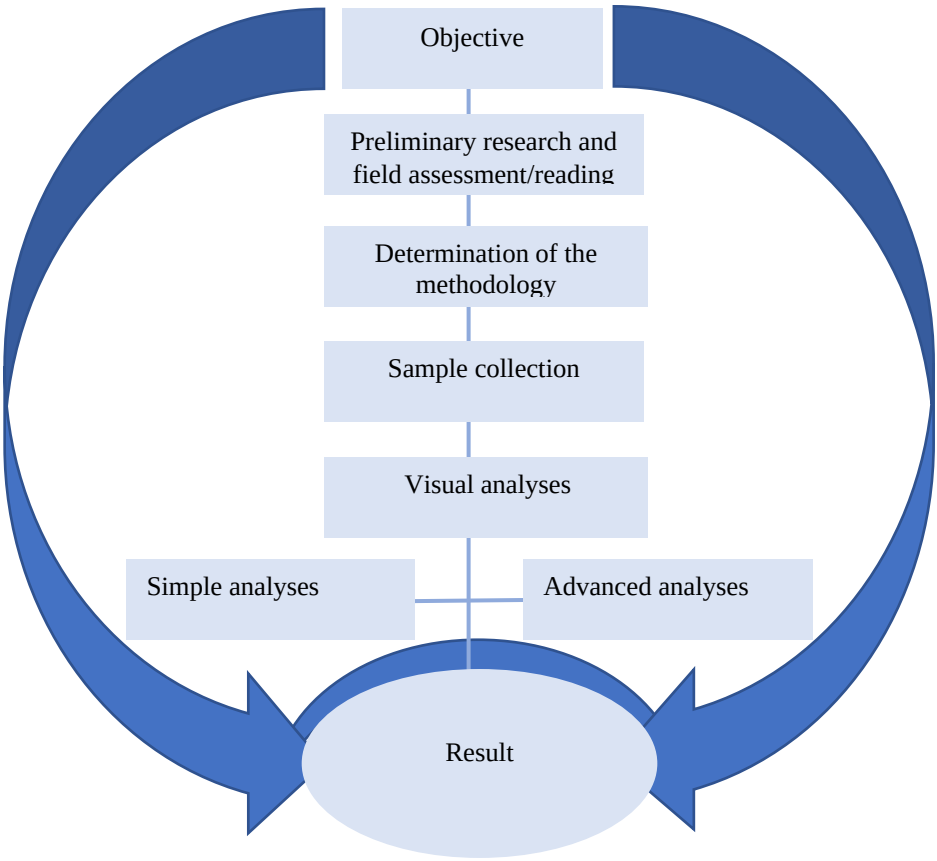


Figure 1. Study plan schema.

There are many valuable postgraduate thesis studies in our country that have conducted characterization studies on historical mortar-plaster materials for various purposes. In these studies, the literature and building/site investigations, sample collection, how the chosen methodological approaches were carried out, the standards and results, and how the findings were interpreted and evaluated are explained in detail

(Güleç, 1992; Tunçoku, 2001; Çizer, 2004; Uğurlu, 2005; Ekşi Akbulut, 2006; Kozlu& Ersen, 2011; Uğur, 2011; 2019; Polat Pekmezci, 2012; Günözü, 2014; Uğuryol, 2014).

2. 1. Preliminary Research and Sample Collection

The historical mortar-plaster materials used in historic buildings have specific characteristics related to their respective periods and are subject to problems depending on the conditions they have been exposed to over time. The successful implementation of conservation and restoration practices in these buildings primarily relies on understanding the content and qualities of the original materials, as well as the processes of deterioration. In restoration applications, starting from sample collection, meticulous experimental studies are essential to prepare repair mortars that will work compatibly with the original materials.

The initial stage of the experimental process, which is the sampling, is of great importance, and the timing and conditions of sample collection, the method used for collection, quantity, size, quality, and number of samples are variables that can lead to deviations in the results (Teutonico, 1988). The outcomes of mortar characterizations vary depending on the nature and suitability of the samples taken from the structure or remains. Therefore, sampling should be carried out in line with the objectives and goals of the research (Groot et al., 2000; Hughes & Callebaut, 2002; Güleç, 2009; Polat Pekmezci, 2012).

In the characterization studies of historical buildings or archaeological remains, a comprehensive visual assessment should be conducted, encompassing both the historical research process and the surrounding

environment. Sample collection should cover all periods of chronology, taking into account different historical additions or repairs identifiable through visual assessments of the structures. After investigating the historical context, a visual evaluation of the area, including environmental factors, damage detection, preservation status, and material diversity, should be thoroughly researched and documented before sample collection. Accurate evaluation of the structures or archaeological remains along with their surroundings is crucial for characterizing the mortars belonging to different periods. The mortar samples taken for characterization purposes should be representative in quality and quantity, considering different historical additions/repairs and deteriorations, representing the entirety of the structures or remains. It is essential to take samples from various locations such as the foundations, walls, domes, and different levels of the same location, as well as both the interior and exterior surfaces. Material samples should be collected not only from stable parts of the structure but also from areas that can explain the processes, conditions, and factors contributing to deterioration. Proper labeling, keeping the samples as intact as possible, and placing them in sample bags to prevent contamination are essential during the sampling process. Detailed documentation is a must during this process, and the locations of the samples taken should be marked on plans.

Based on the preliminary assessments conducted in the field and the nature of the collected samples, a study plan schema for the experimental work in the characterization phase should be created, and the process should be systematized.

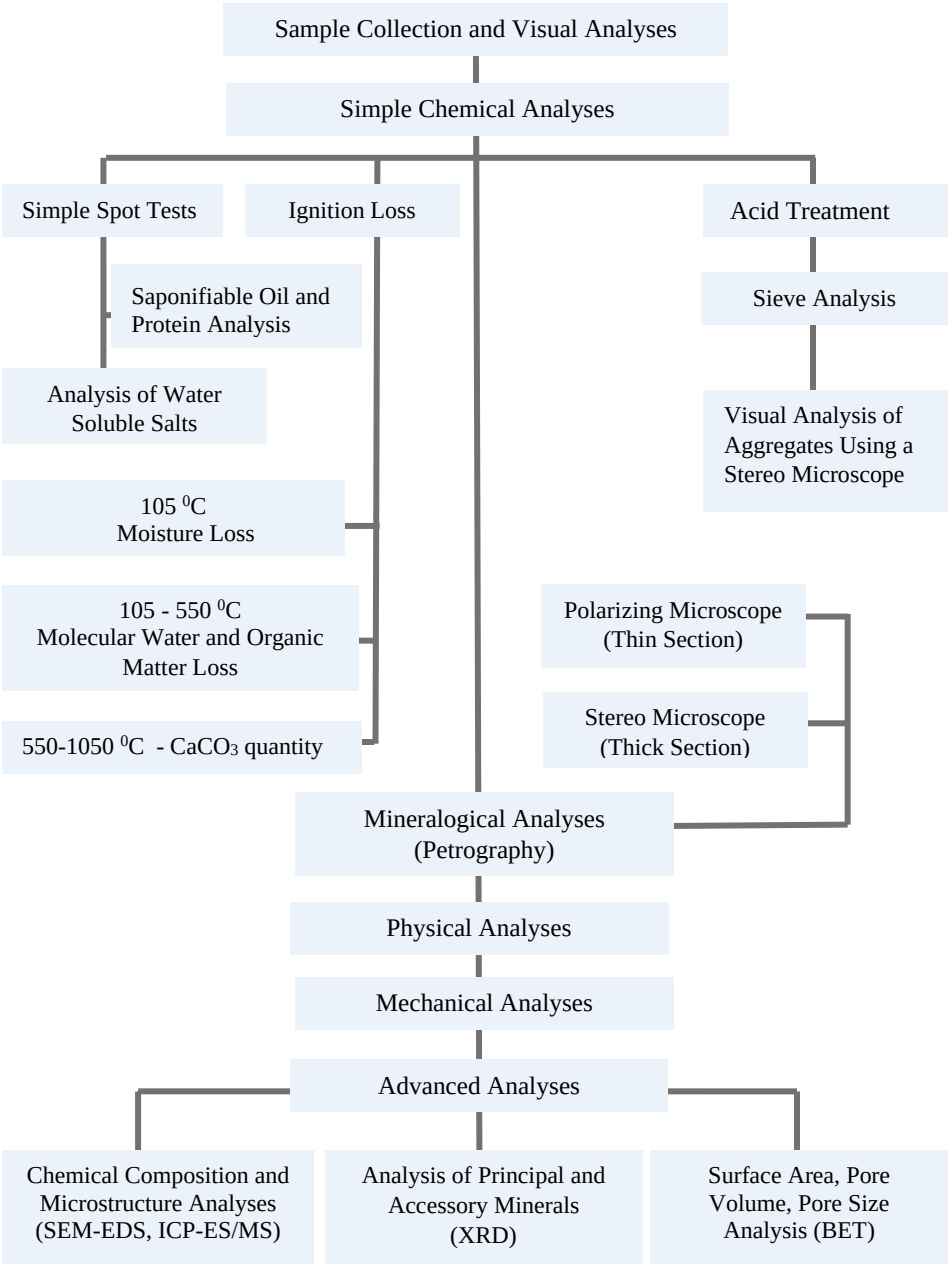


Figure 2. Experimental study plan schema

2. 2. Simple Analysis Methods

The experimental methods used for the characterization of historical mortars and plasters vary depending on the purpose of the conservation-restoration work. In some cases, simple analyses may be sufficient, while more sophisticated studies may require advanced analysis techniques tailored to the specific objectives. The stages, implementation methods, and key points to be considered in the experimental methods for the characterization of historical building materials have been detailed in some studies (Teutonico, 1988; Güleç, 1992; Güleç & Ersen, 1998; Borelli, 1999; Middendorf et al., 2005; Uğur, 2019).

The simple analyses conducted in basic laboratories to determine the fundamental characteristic properties of old mortars are essential for minimizing the cost of conservation and restoration applications (Güleç, 1992; 2009; Zacharopoulou, 2010).

The first stage of experimental studies conducted in the laboratory is the visual analysis, where raw samples are thoroughly examined and documented on a scaled basis. Based on the visual assessment, adjustments can be made to the pre-designed experimental plan as needed. During the visual examination, the layers of the samples, if any, paint and insulation layers, colors, sizes, and structural conditions are evaluated. Next, the color and condition of the binder, properties of aggregates, their colors, distributions, sizes, shapes, and visible additive content, such as straw-like materials, are investigated. This stage should be conducted with meticulous attention, and every detail should be examined and noted. By taking the results of the visual evaluation into account, a preliminary

understanding of the potential outcomes of the experimental work can be obtained. However, not conducting the visual examination in the laboratory's initial stage in a sufficiently informed and accurate manner can lead to significant deviations in the characterization results.

In the experimental process, simple spot tests are used to qualitatively and semi-quantitatively investigate the presence, qualities, and quantities of water-soluble salts, as well as the existence of saponifiable oil and protein content in mortar-plaster samples as additives (Güleç, 1992; 1998). Throughout the experiment, meticulous care should be taken from the sample collection and preparation stages to prevent any potential errors in the results and avoid contamination of the sample and materials used. This level of precision is essential for all stages of experimental studies.

The identification, qualities, and density of water-soluble salts will provide valuable insights into the understanding of deterioration processes and guide the determination of appropriate cleaning methods. The amount of saponifiable oil and protein content can indicate whether these materials were used as additives in mortars or as binders in paint or insulation layers. In necessary cases, advanced analysis techniques should be employed to investigate these results in detail and provide further correlation.

Calcimetry (Ignition Loss/ Calcination) analysis involves utilizing weight differences in samples resulting from specific decompositions due to the continuous increase in temperature. Based on these weight differences, the analysis calculates the moisture content (hygroscopic water), molecular water content, the quantity of organic additives present, and the amount of calcium carbonate ($CaCO_3$) after accounting for the loss of carbon dioxide

(CO_2) using a gravimetric factor (Güleç, 1992; 1998; Middendorf et al., 2005).

The wet chemical analysis known as the acid treatment analysis is used to determine the quantities of carbonate-based components (lime binder and carbonate aggregates) in mortar samples, as well as the amounts of non-reactive silicate particles and other visible additive materials. Silicate portions that do not react with acid are classified according to their size distribution using a sieve set (8000 µ, 5600 µ, 4000 µ, 2000 µ, 500 µ, 250 µ, 125 µ, 63 µ, <63 µ). After being weighed on a precision balance with 0.01 sensitivity, the portions classified by size distribution are calculated as percentages. The type, color, shape, and other characteristics of the particles classified by size distribution are visually examined under a stereomicroscope to determine their properties. While the acid treatment analysis and its results are crucial in identifying the characteristic properties of historical mortars, it is not sufficient on its own. In addition to the acid treatment analysis and simple analysis methods for determining the binder, filler, and additive materials in the samples, mineralogical and petrographic examinations should be conducted, and the results should be evaluated together (Teutonico, 1988; Güleç, 1992; Middendorf et al., 2005; Ersen & Güleç, 2009; Uğur, 2019).

The petrographic and mineralogical analyses of mortar and plaster samples are conducted using stereo and polarizing microscopes on prepared thick and thin sections of the samples. It is important that the sample sections are prepared by relevant individuals in a way that provides the desired information and represents the entirety of the sample.

The petrographic and mineralogical examination method provides detailed information about the mineral content and qualities of the samples, the spatial binder/aggregate ratio, visible additive content and characteristics, the bonding relationship between filler/additive materials and the binder material, and the textural structure of the sample. During the examination of the structural and textural properties, it provides information about aggregate sizes and types, binder-binder, and binder-aggregate phases, partial carbonation process, and, the application method of the mortar. For instance, the analysis of pore and void distributions and the determination of crack forms and contents provide insights into the mechanical properties of the mortar (Güleç, 1992; 2009; Middendorf, 2005).

Through microscopic observations, the presence of reaction products in the intermediate phase between filler/additive particles and the binder can be detected. Especially in samples containing pozzolanic materials as filler/additive, reaction products resulting from interface reactions between these materials and the binder, can be observed (Maravelaki-Kalaitz et al., 2003).

In the acid treatment analysis, the distinction between the proportion of carbonate-based portions that have reacted as lime binders and those that have been used as filler materials can be determined (Güleç, 1992; Uğur, 2011). The petrographic and mineralogical evaluation results significantly contribute to the interpretation of the chemical, physical, and mechanical analysis results of the samples (Güleç, 1992; Uğur, 2011).

In the characterization of historical mortar and plaster, physical and mechanical analysis methods are used to determine the physical and

mechanical properties of the original material in samples that are of appropriate size and quantity. The identification of physical and mechanical properties of old mortar and plaster materials is important to prepare repair mortar and plaster mixtures that will work compatibly and have similar properties to the original material. To ensure that repair mortars do not cause damage to the surrounding original material over time, these mixtures should be prepared after determining the characteristic properties of the original material. However, it is often challenging to obtain mortar and plaster samples of suitable size and quality in bulk form from historical structures or remnants, making it difficult to conduct physical and mechanical experimental studies.

Physical analysis of mortar samples includes investigating their mass and volume-based water absorption rates, bulk density, compactness, and apparent porosity properties (EN 1936:2006; TS 699:2009). Since mortar samples taken from historical structures often do not meet the necessary size and shape requirements, standard mechanical tests cannot be conducted (Polat Pekmezci, 2012; Tuncel et al., 2016). The compressive strength of historical building materials can be determined using the point load test (ASTM 1995; TS 699:2009). In some studies, the uniaxial compressive strength was calculated using correction factors based on the determined point load test results of the mortar samples (Tuncel et al., 2016; Uğur, 2019).

2. 3. Advanced Analysis Methods

In restoration applications of historical artifacts, using simple analysis methods to understand the material's degradation process and determine

mortar mixtures similar to the original composition is generally sufficient and more cost-effective. However, in sophisticated cases, where a more detailed investigation of the degradation processes, production technology, and microstructure properties of the material is required, various advanced analysis methods need to be conducted (Güleç & Ersen, 1998).

The samples that have been evaluated through petrographic and mineralogical examinations can be further investigated and visualized using Scanning Electron Microscope (SEM) analysis. With SEM-EDS (Energy Dispersive X-Ray Spectroscopy) analysis, both point and area-wise chemical compositions can be determined in the examined parts of the samples, providing detailed information (Güleç, 1992; Tunçoku, 2001; Middendorf et al., 2005; Adriano et al., 2008). Prior to SEM-EDS analysis, examining the sample sections under stereo and polarized microscopes will facilitate the more efficient use of this method. With SEM-EDS analysis, the microstructure of mortar-plaster samples is investigated in detail, along with the chemical properties and qualities of binders and fillers/additives. The morphological structures of aggregates, the form of minerals, their crystal structures, dimensions, arrangement, and degradation processes are observed at high magnification to determine their chemical compositions (Güleç, 1992; 2009; Uğur, 2011). The determination of the morphological structures of aggregates can significantly support information about their origins (Adriano et al., 2008).

The XRD (X-Ray Diffraction) analysis, primarily used for phase identification of materials in crystalline form, is employed for identifying the crystal structures of binders and aggregates in mortar-plaster samples

(Riccardi et al., 1998; Middendorf, 2005). This instrumental analysis method allows the identification of both major and minor mineral phases present in the samples, including salt minerals. However, the detection of substances with less than 5% content in the sample can be challenging with this method. For a more detailed investigation of all major and trace chemical contents in historical mortar-plaster samples, the ICP-ES/MS (Inductively Coupled Plasma Analysis - Emission Spectrometry/ Mass Spectrometry) instrumental analysis method can be employed. This method provides the percentage of major components as "element oxides" and the proportion of trace elements in milligrams per liter (ppm) as the "element" (Güleç, 1992; 2009).

BET (Brunauer, Emmett, Teller) advanced analysis can contribute to the interpretation of physical and mechanical analysis results of mortar samples. This instrumental analysis method allows the direct measurement of the surface area and pore size distribution of the historical mortar materials, providing detailed information about their physical properties (Silva et al., 2010; Uğur, 2011; 2019). In BET analysis, the surface area and pore size distribution of materials can be directly determined through gas and/or nitrogen adsorption. This method relies on correlating the adsorption measurements of the material with physical properties such as surface area, pore size distribution, micro-pore analysis, and porosity. The surface area of the samples is determined using the BET method, while their pore size distributions are calculated using the BJH (Borret, Joyner, Halenda) method, which is employed in the same device (Brame & Griggs, 2016).

3. Conclusion and Suggestions

Historical buildings and archaeological remains serve as tangible records of the historical process, encompassing a wealth of information and falling under the scope of cultural heritage. During the characterization studies of these construction materials, it is of utmost importance to conduct preliminary assessments and sample collection meticulously by qualified experts. This approach ensures a seamless examination of the uninterrupted historical evolution of the structures. This attention to detail becomes particularly crucial in archaeological sites and sites with various historical additions and repairs, where material culture patterns are preserved. Properly managing the characterization process, starting from field-based preliminary assessments, and interpreting the results holistically can yield valuable insights into the manufacturing techniques, material production technologies, artistic levels, stylistic developments, economic and cultural contexts, technological advancements, trade networks, and raw material origins of the plasters and mortars associated with different historical periods.

The significance of conducting characterization studies on historical plasters and mortars lies in their ability to uncover a wealth of information related to specific historical periods, as well as providing solutions for conservation and restoration practices by understanding degradation processes and developing repair materials. In this context, the fundamental objectives and goals of characterizing ancient plaster and mortar materials should be defined from the outset, and the experimental methods should be planned accordingly to achieve these objectives and goals. Depending

on the desired information, simple analytical techniques may be sufficient, especially for determining mortar mixtures used in restoration works and understanding degradation processes. However, in more complex cases, advanced analytical techniques should be employed for targeted research purposes. Analyzing ancient mortar samples using both simple and advanced analytical methods allows for the determination of their physical, mechanical, chemical, petrographic, and mineralogical properties. Furthermore, it enables the identification of their microstructures, changes and alterations undergone over time, as well as their raw material compositions and origins, ultimately leading to the identification of their characteristic features. The results of the characterization studies will be significantly more accurate when the field/building preliminary assessment, sample collection, and visual analysis are conducted thoughtfully, the experimental plan is designed in a way that addresses the specific research questions, and the experimental techniques are executed with great precision, allowing for careful interpretation and evaluation of the data collectively, which in turn minimizes the margin of error in the results.

It is highly important to systematically study historical mortars and plasters in different regions and periods (all cultural layers) and record their results in a database format. As the data reaches a certain level, comparisons can be made, and the characteristic features of mortars and plasters in different regions and periods can be identified. Based on their distinctive characteristics, mortars and plasters can play a decisive role in determining the chronological periods of the structures they belong to.

However, this may not always be possible. Therefore, in cases where construction techniques and material characteristics cannot be definitively linked to a specific time period, dating methods may be employed.

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

U.T. contributed to the literature review, drafted the manuscript; critically revised the manuscript; gave final approval; agrees to be accountable for all aspects of the work ensuring integrity and accuracy.

The author declares that there is no conflict of interest related to this study.

References

Adriano, P., Silva, A. S., Veiga, R., Mirão, J., & Candeias, A. E. (2009). Microscopic characterisation of old mortars from the Santa Maria Church in Évora. *Materials Characterization,* 60 (7), 610-620.

Ahunbay, Z. (2021). *Kültür Mirasını Koruma Ilke ve Teknikleri*. İstanbul: YEM Yayınevi.

ASTM D 5731-95. (1995). *Standard Test Method for Determination of the Point Load Strength Index of Rock.* American Society for Testing and Materials. ASTM D 5731-95.

Borelli, E. (1999). *ARC Laboratory Handbook: Conservation of Architectural Heritage, Historic Structures and Materials*. Rome: ICCROM.

Brame, J. A., & Griggs, C. S. (2016). *Surface Area Analysis Using the Brunauer-Emmett-Teller (BET) Method: Scientific Operating Procedure Series:* SOP-C. Environmental Laboratory. ERDC/EL SR-16-3.

Çizer, Ö. (2004). Investigation of lime mortar characteristics for the conservation of the Ottoman baths in Seferihisar-Urla region (Unpublished master thesis). İzmir Institute of Technology, Architectural Restoration, İzmir.

Ekşi Akbulut, D. (2006). Tarihi yapıların onarımında kullanılacak harçların seçimine yönelik bir öneri, (Unpublished doctorate thesis), Fen Bilimleri Enstitüsü, Mimarlık Anabilim Dalı, Yapı Programı, Yıldız Teknik Üniversitesi, İstanbul.

EN 1936. (2006). Natural stone test methods - Determination of real density and apparent density, and of total and open porosity.

Erder, C. (2020). *Tarihi Çevre Algısı*. İstanbul: YEM Yayınevi.

Ersen, A., & Güleç, A. (2009). Basit ve ileri analiz yöntemleri ile tarihi harçların analizi. *Restorasyon ve Konservasyon Çalışmaları Dergisi*, (3), 65-73.

Ersen, A. (2011). John Ruskin 1819-1900 ve konservasyon hareketi. *Restorasyon ve Konservasyon Çalışmaları Dergisi,* (6), 52-60.

Güleç, A. (1992). Bazı tarihi anıt harç ve sıvalarının incelenmesi (Unpublished doctorate thesis). Fen Bilimleri Enstitüsü, İstanbul Teknik Üniversitesi, İstanbul.

Güleç, A., & Ersen, A. (1998). Characterization of ancient mortars: Evaluation of simple and sophisticated methods. *Journal of Architectural Conservation*, 4(1), 56-67.

Güleç, A. (2009). Basit ve ileri analiz yöntemleri ile tarihi harçların analizi. *Koruma Sempozyumu, Taşınmaz Kültür Varlıklarını Tespit ve Belgeleme Yöntemleri,* Mersin Üniversitesi Restorasyon ve Koruma Merkezi (115-127). 1-3 Ekim, Mersin,

Günçe, K., & Mısırlısoy, D. (2019). Assessment of adaptive reuse practices through user experiences: traditional houses in the walled city of Nicosia. *Sustainability*, 11 (2), 540. https://doi.org/10.3390/su11020540

Günözü, H. (2014). Kapadokya bölgesi Bizans Dönemi duvar resmi sıvalarının korunmasında kullanılan enjeksiyon harçlarının araştırılması ve geliştirilmesi, (Unpublished doctorate thesis). Sosyal Bilimler Enstitüsü, Taşınabilir Kültür Varlıklarını Koruma ve Onarım Anabilim Dalı, Koruma -Yenileme ve Restorasyon Bilim Dalı. İstanbul Üniversitesi, İstanbul.

Groot, C. J. W. P., Bartos, P. J., & Hughes, J. J. (2000). Historic mortars: characteristics and tests -Concluding summary and state of the art. *In Proc. Of Int. RILEM workshop on Historic mortars: Characteristics and tests* (pp. 443-455). Rilem.

Hughes, J. J., & Callebaut, K. (2002). In-situ visual analysis and practical sampling of historic mortars. *Materials and Structures*, 35, (70-75). https://doi.org/10.1007/BF02482103

Kozlu, H. H. (2010). Kayseri yöresindeki tarihi harçların karakterizasyonu ve onarım harçlarının özellikleri (Unpublished doctorate thesis) Fen Bilimleri Enstitüsü, Mimarlık Anabilim Dalı, Restorasyon Programı, İstanbul Teknik Üniversitesi, İstanbul.

Kozlu H. Hale, Ersen R. A. (2011). Kayseri'de Roma Bizans Selçuklu ve Osmanlı Dönemi yapıları harçlarının özellikleri ve onarım harçları tasarımı. *İTÜ Dergisi/a,* 10 (1), 125-136.

Maravelaki-Kalaitzaki, P., Bakolas, A., & Moropoulou, A. (2003). Physico-chemical study of Cretan ancient mortars. *Cement and Concrete Research,* 33 (5), 651-661.

Mısırlısoy, D., & Günçe, K. (2016). Adaptive reuse strategies for heritage buildings: A holistic approach. *Sustainable Cities and Society*, 26, 91-98. https://doi.org/10.1016/j.scs.2016.05.017

Middendorf, B., Hughes, J. J., Callebaut, K., Baronio, G., & Papayianni, I. (2005). Investigative methods for the characterisation of historic mortars-part 2: chemical characterisation. *Materials and Structures*, 38, 771-780.

Pescari, S., Budău, L., & Vîlceanu, C. B. (2023). Rehabilitation and restauration of the main façade of historical masonry building–Romanian National Opera Timisoara. *Case Studies in Construction Materials*, 18, e01838.

Polat Pekmezci, I. (2012). Çukurova bölgesindeki (Kilikya) bazı tarihi yapılarda kullanılan harçların karakterizasyonu ve onarım harçları için öneriler (Unpublished doctorate thesis). Fen Bilimleri Enstitüsü, Mimarlık Anabilim Dalı, Restorasyon Programı, İstanbul Teknik Üniversitesi, İstanbul.

Riccardi, M. P., Duminuco, P., Tomasi, C., & Ferloni, P. (1998). Thermal, microscopic and X-ray diffraction studies on some ancient mortars. *Thermochimica Acta,* 321(1-2), 207-214.

Silva, A. S., Adriano, P., Magalhães, A., Pires, J., Carvalho, A., Cruz, A. J., & Candeias, A. (2010). Characterization of historical mortars from Alentejo's religious buildings. *International Journal of Architectural Heritage*, 4(2), 138-154.

Teutonico, J. M. (1988). *A Laboratory Manual for Architectural Conservators* (Vol. 168). Rome: ICCROM.

TS 699. (2009). *Doğal Yapı Taşları – İnceleme ve Laboratuvar Deney Yöntemleri,* Türk Standartları, ICS 91.100.01;91.100.15. Mart Ankara.

Tuncel, E. Y., Pekmezci, I. P., & Pekmezci, B. Y. (2016). Utilization of partially destructive test methods on mechanical properties of historical lime mortars. *SAHC 2016-Proc., of Structural Analysis of Historical Constructions,* 1415-1418.

Tunçoku, S. S. (2001). *Characterization of masonry mortars used in some Anatolian Seljuk monuments in Konya, Beyşehir and Akşehir* (Unpublished doctorate thesis). Natural and Applied Sciences, The Department of Architecture, The Middle East Technical University, Ankara.

Uğur, T. (2011). *Perge antik kentine ait mozaik harçlarının karakterizasyonu* (Yüksek Lisans tezi). Sosyal Bilimler Enstitüsü, Taşınabilir Kültür Varlıklarını Koruma ve Onarım Ana Bilim Dalı. İstanbul Üniversitesi, İstanbul.

Uğur, T. (2019). İstanbul'daki Bazı Erken Dönem Bizans Yapılarına Ait Harçların Karakterizasyonu ve Onarım Harcı Önerileri (Unpublished doctorate thesis). Lisansüstü Eğitim Enstitüsü, Mimarlık Ana Bilim Dalı, Restorasyon Bilim Dalı, Konya Teknik Üniversitesi, Konya.

Uğur, T. & Güleç, A. (2014). Harç, Sıva ve Diğer Kompozit Malzemelerde Kullanılan Bağlayıcılar ve Özellikleri. *Restorasyon Konservasyon Çalışmaları Dergisi,* (17), 77-91. 2014 Özel Sayısı, İstanbul.

Uğurlu, E. (2005). Characterization of Horasan plasters from some Ottoman baths in İzmir (Unpublished master thesis), Izmir Institute of Technology Architectural Restoration, İzmir.

Uğuryol, M. (2014). Arkeolojik kerpiç korumasında akrilik reçine, alkali silikat, etil silikat ve nano-kireç kullanımının değerlendirilmesi. (Unpublished doctorate thesis), İstanbul Üniversitesi, Sosyal

Bilimler Enstitüsü, Taşınabilir Kültür Varlıklarını Koruma ve Onarım Ana Bilim Dalı, Koruma-Yenileme ve Restorasyon Bilim Dalı. İstanbul.

Zacharopoulou, G. (2010). Characterization of mortars in historical modern monuments: a realistic and an analytical approach. *In 2nd Conference on Historic Mortars-HMC 2010 and RILEM TC 203-RHM final workshop* (pp. 405-414). RILEM Publications SARL.

Convention Concerning the Protection of the World Cultural and Natural Heritage -UNESCO. (1972). In 17th Session General Conference 16 November, Paris, Access Address https://whc.unesco.org/archive/convention-en.pdf (12.07.2023)

Assist. Prof. Dr. Tülay UĞUR

E-mail: tulayugur@selcuk.edu.tr

Educational Status:

Bachelor's Degree: Istanbul University, Faculty of Letters. Department of Conservation and Restoration of Movable Cultural Assets.

Bachelor's Degree: Istanbul University, Faculty of Letters. Department of Art History.

Master's Degree: Istanbul University, Institute of Social Sciences. Department of Conservation and Restoration of Movable Cultural Assets (Thesis Title: The Characterization of Mosaic Mortars of Perge Antique City).

Doctorate Degree: PhD. in Architecture (Restoration). Konya Technical University, Institute of Post-Graduate Education. Department of Architecture (Thesis Title: Characterization of Mortars of Some Early Byzantine Monuments in Istanbul and Proposal for Repair Mortars).

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-3

Using HBIM for Energy Efficiency Analysis of Historical Buildings: An Example as a Case Study from Ermenek / Karaman

Assoc. Dr. Mustafa KORUMAZ [1]

[1]Konya Technical University, Faculty of Architecture and Design, Department of Architecture, Konya/Türkiye.
ORCID: 0000-0001-6337-9087
E-mail: mkorumaz@ktun.edu.tr

Assist. Prof. Dr. Ömer ÖZEREN [2]

[2]Karabük University, Faculty of Architecture, Department of Architecture, Karabük/Türkiye
ORCID: 0000-0002-7930-1740
E-mail: omerozeren@karabuk.edu.tr

Citation: Korumaz, M. & Özeren Ö. (2023). Using HBIM for Energy Efficiency Analysis of Historical Buildings: An Example as a Case Study from Ermenek / Karaman. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 3, 55-75. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

In today's construction industry, Building Information Modeling (BIM) can be seen as the next step beyond computer-aided design (CAD) systems (Eastman et al., 2008). BIM platform emerged with the development of parametric modeling in computer-aided design. Unlike simple 3D representations, the models used in BIM are data-rich and constitute a graphical representation linked to a database (Federman, 2017). Within the BIM environment, a project can contain all the information related to a building's construction and usage. BIM offers a systematic approach for managing all the data of a structure, from its concept to its usage and fostering organized collaboration (Feriel et al. 2018). Consequently, BIM can be utilized as a different source of information at each stage of the building's life cycle, eliminating incorrect data flow and redundancies (Bynum et al., 2013; Arayici, 2008). The structure is represented in the virtual environment with its object components and properties, which are then separated and defined semantically (Osello et al., 2018).

In a BIM environment, constructional information about building elements can include geometry related to the project, geographic positioning coordinates, material quantities, cost estimates, material details, project schedules, energy, and structural information. The relationship between resources and properties of various elements related to the building can be observed even before its construction by allowing performance evaluation (Smith & Tardif, 2009). BIM facilitates swift and accurate updates to changes, reducing the effort required to create spatial programs (Linderoth,

2010). The advantages of BIM extend to designers, constructors, contractors, and subcontractors, including benefits such as automated assembly, improved design, controlled costs, environmental data, quality production, and enhanced customer service (Dossick & Neff, 2010; Alshawi & Faraj, 2002).

Applications in the construction sector for cultural heritage require interdisciplinary collaboration between spatial, geometrical, historical, thematic, and temporal disciplines. While architectural cultural heritage shares fundamental construction techniques, its historical construction stages are diverse due to the evolution of architectural typologies (Green & Dixon, 2016). Managing and storing this multi-input information is significantly facilitated by information systems. HBIM can be defined as a valuable information system to enrich data about an existing building and allow data management.

This study aims to develop an information management approach that encourages the preservation and evaluation of Traditional Turkish Houses through Historical Building Information Modeling (HBIM). A sustainable analysis of a traditional Turkish house has been conducted using HBIM as an illustrative case study. During its sustainability analysis, results from various local and international analysis methods have been compared. The analysis covers different assessments, such as sunlight exposure, location, orientation, heating and cooling loads, thermal properties of materials, ventilation, and daylight analysis. The study establishes an exemplary use of digital documentation techniques for the shared use of HBIM and introduces a novel approach to popularize this usage.

2. Material and Method

In the study, an innovative approach has been introduced through the comprehensive utilization of required analysis methods using modern documentation techniques within the HBIM platform. In the study's methodology, high accuracy building documentation was initially achieved using modern documentation techniques. Data obtained through the Terrestrial Laser Scanner (TLS) (Faro S120 Laser Scanner) were transferred to the HBIM platform (Revit 2020) after the post-processing stage using point-cloud processing software (Recap Pro). The UNDET Plugin in Revit 2020 platform was used to generate 2D images from the 3D point cloud, and the inputs were combined over different sheets based on raster images, resulting in the creation of the HBIM model (Figure 1).

I. Point Cloud II. 3D Model III. Analysis

Figure 1. Building workflow

Thanks to the plugin, the accuracy of the parametric model obtained from the point cloud data can be analyzed, and differences between the model and the point cloud can be observed, ensuring the achievement of a highly accurate model. Within this platform, the 3D model required for analysis is prepared at Level of Detail (LOD) 350 based on the point cloud.

Different sheets (plans, sections, elevations, and 3D perspectives) can be obtained from these 3D models as needed.

In the scope of the study, the parametric model obtained was used to conduct a building energy performance analysis based on parameters that can be modified within a single scenario, considering that historical buildings' locations remain fixed. In addition to this software, an energy performance simulation of the historical building was obtained through Autodesk Green Building Studio. The obtained simulations and results were compared with the online Building Energy Performance - Turkish Regulations (BEP-TR 2) software, which is mandatory for applications in Turkey and checks the building's energy requirements. The results from both platforms were compared, and recommendations for new conservation practices were obtained.

3. Importance of HBIM

HBIM system, in addition to being a part of the BIM platform, can be viewed as a repository focused on information management for special issues related to historical buildings, encompassing all information related to cultural heritage (Tapponi et al. 2015). Furthermore, it represents an effective tool for conservation and monitoring to prevent damage (Malinverni et al, 2019). HBIM applications can be described as new modeling systems that represent parametric object libraries representing architectural elements created from historical data and their mapping (Murphy et al., 2013). After the study by Murphy et al., research on building information modeling for cultural heritage modeling for cultural heritage has rapidly increased worldwide (Fai & Sydor, 2013; Oreni et al.,

2014; Boeykens et al., 2012; Baik et al. 2015; Bruno & Roncella, 2018). However, in Turkey, which is rich in cultural heritage, there are limited studies on HBIM (Saygi & Remondino, 2013). In these applications, the parametric components available in BIM tools can be used similarly, recording materials and details related to historical objects to create an accurate and easily accessible database for future similar projects. The HBIM model can be used for the maintenance and management of the building even after restoration (Wu et al. 2013).

Collaborating teams in the conservation process utilize the knowledge they gain for their design and implementation purposes. HBIM helps manage the preservation process, including rebuilding the building in case of damage or disappearance, as well as the end of the preservation life cycle during the operation and maintenance stages (Osello et al., 2018). The difference between BIM and HBIM mainly stems from their respective purposes. HBIM is expected to be an informative system that defines the conservation and planning status for future applications throughout the entire life cycle of architectural heritage. Thus, the conceptual framework and variables specific to cultural heritage differentiate HBIM from the general BIM platform. Overall, in terms of process content and conceptual schema, HBIM differs from the BIM platform (Valk et al., 2012).

4. Sustainability and Building Condition Improvement

Sustainable architecture refers to buildings that balance social, environmental, and economic concerns (Brown et al., 2009). BIM enables the estimation of energy consumption in the conceptual phase of sustainable building projects. It facilitates sustainable practices in the

planning, design, construction, operation, maintenance, and decommissioning of buildings (Khan & Ghandge, 2019; Alwan et al., 2015). BIM is crucial for sustainable designs as it allows building form analysis, energy cost analysis, structural deterioration analysis, energy management, sustainable material use, interdisciplinary communication, and management (Kriegel & Nies, 2008). When dealing with a historical building, it becomes essential to bring the building's comfort conditions up to contemporary standards within the context of reuse. Enhancing the existing features of historical structures is directly related to the concept of "retrofit." This term refers to any intervention that adjusts, reuses, or upgrades a building to fit new conditions or requirements (Wilkinson, 2011). These interventions can encompass a wide range of aspects, from structural reinforcement to efficient use of natural light, insulation properties, and reduction of energy expenses (Douglas, 2006).

Sustainability has been a prevalent concept worldwide since 1987 and is now considered an essential aspect in various aspects of life (Saieg et al., 2018). Increasing energy efficiency in the production and use of buildings is a crucial part of sustainable architecture, aiming to utilize natural resources efficiently (Li et al., 2012). Using the existing building stock through appropriate renovations is generally seen as a sustainable approach (Khodeir & Soliman, 2017; Krygiel & Nies, 2008). Regarding energy efficiency, improving the structural conditions of architectural heritage to continue their use is a technically and culturally sustainable approach (Ovali & Delibaş, 2016). Reducing the energy consumption of historical buildings to lower CO_2 emissions, enhancing indoor quality and

comfort, and managing economic expenses through qualified planning are all part of a sustainable approach (Khodeir et al., 2016). The HBIM platform provides the knowledge to manage this planning. Through the HBIM platform, the thermal performance of historical buildings can be optimized, various alternative solutions can be explored to question the economic gains throughout the building's life cycle, and alternative simulations can be prepared to achieve contemporary comfort conditions. Thanks to this knowledge, historical buildings continue to be active elements in sustainable urban development. Otherwise, Protection practices that fail to meet expectations cannot be efficiently and actively utilized over time due to their inability to deliver the expected performance.

5. Case Study- Energy Efficiency analysis of Historical Timber Structure, Traditional House

Traditional Turkish houses reflect the physical-functional needs, cultural-social structure, and family composition of the people living inside them. The Turks have created a housing culture that integrates local construction techniques with a nomadic lifestyle in Anatolia (Eldem, 1984). Traditional Turkish houses are examples of vernacular architecture that harmoniously blend with their environment and the people, incorporating experience-based logical solutions, efficient use of topography and local materials, and respect for natural values (Paköz, 2016). As such, they encompass a wealth of data relevant to contemporary applications (Aytis & Polatkan, 2010). Their open and semi-open spaces, microclimatic features, courtyard solutions, and passive ventilation systems serve as an inspiration for

modern architecture (Eyüce, 2005). Within the borders of Turkey, the Balkans, and the Middle East, a significant number of region-specific Turkish houses can be found.

In this study, analyses were conducted on strengthening the thermal performance of a traditional house in Ermenek, a settlement located in the high-altitude region of the Toros Mountains, which separates the Mediterranean and Central Anatolia (Figure 2). This region houses numerous well-preserved traditional architectural structures, especially dating back to the early 20th century (Figure 3). Traditional architecture typically features rubble stone on the ground floor and wooden-framed upper floors, often filled with stone materials. Thermal efficiency is of great importance in this region, particularly during the cold winter months. The subject of this study is a house constructed with rubble stone on the ground floor and wooden-framed stone material on the upper floor, following a "karnıyarık" plan type. The basement walls occasionally incorporate wooden lintels within the stone masonry system.

Figure 2. Location of Ermenek

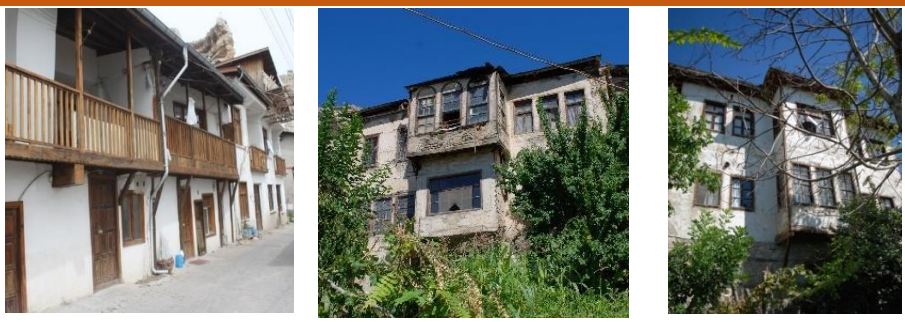


Figure 3. Some examples of Ermenek historical dwellings

The main objective of the field study is to strengthen the historical structure to adapt it to modern conditions, as it is one of the most crucial factors in preserving cultural heritage. The examined historical building in this study has been subjected to significant deformations over the years, with observed deteriorations and damages in its architectural details. There is peeling on the exterior plaster and considerable damage to the roof. Deteriorations in the window frames are also noticeable. The field study focuses on how to enhance the thermal performance of the building after restoration by improving insulation details and increasing the insulation value of the building materials. In this regard, the HBIM environment allowed for simulations of these thermal enhancements before implementation and observation of their results. Additionally, an analysis was conducted to understand how the building's location and orientation affect its required energy.

The field study started by documenting the building using modern techniques. The obtained data underwent alignment and cleaning in the point cloud post-processing software. Due to the cumbersome nature of very dense point clouds in existing software, decimation was applied to the

point cloud as per the intended purpose. The point cloud was then imported into the Revit 2020 platform, and thus the modeling process commenced. Creating a BIM model from the point cloud starts with recognizing parametric objects and architectural components. Through this software, HBIM point cloud-based building and building detail models were created, enabling the development of an essential digital, parametric, and highly accurate library specifically for Cultural Heritage. This library serves as a database, providing detail and building element alternatives for future works. This parametric library facilitates easy access to post-restoration building details and accelerates production during the implementation phase.

After creating precise architectural components and building details, a conceptual and parametric model of the historical structure was developed by the historical building factor, paying attention to the fact that unlimited strengthening and interventions cannot be performed, and the original facade character must be respected to preserve the values of the historical building. The restoration project prepared within this framework was submitted to the Conservation Board, and the following applications were approved by the board:

Plaster: All the deteriorated plaster covering of the historical building was removed, and high-insulation hydraulic lime plaster (Thermal Conductivity 0.73 W/m.k) will be used. The existing traditional plaster of the historical building is a 3 cm thick mixture of earth, straw, and water with very low resistance. This type of plaster is known for its low thermal insulation value of 0.73 W/m.k. It is not resistant to external weather

conditions and is typically renewed every two years in the local culture. Replacing this plaster with high-insulation, weather-resistant hydraulic lime plaster will enhance the building's insulation value while preserving its original facade character.

Insulation work in unusable attic spaces: There is currently no insulation material in the attic, and when necessary, removable Stone Wool (Thermal Conductivity range of 0.035 W/m.k) will be installed in the attic.

Renewal of the window glasses and frames: The existing window glasses and frames with a low insulation value have been replaced. The current thermal conductivity value for single glass and frame is 5.7 (W/m^2K), while the application uses wood material with a thermal conductivity value of 1.9 (W/m^2K) for double glazing.

For analyzing the energy efficiency of the prepared model, the Revit 2020 plugin called Insight 360, which allows for the modification of various parameters, was used. As on-site measurements and evaluations of the building's elements (plaster, glass, frames, etc.) were input into the conceptual model in Revit 2020, the complexity and accuracy of the analysis increased. The Revit 2020 Energy Analytical Model enabled automatic generation and integrated simulation of the model, allowing changes to be observed simultaneously.

In addition to energy conservation, the analysis was conducted for daylight levels, which also significantly affect energy consumption. Daylight analyses were performed in the same software by adding real material properties such as transparency and glass color to the windows. Illumination maps were automatically generated in the working plane.

Different time-based illumination and average illumination values were obtained, and the illuminations during the summer and winter periods were compared. This allowed for a more conscious selection of lighting elements to be used (Figure 4).

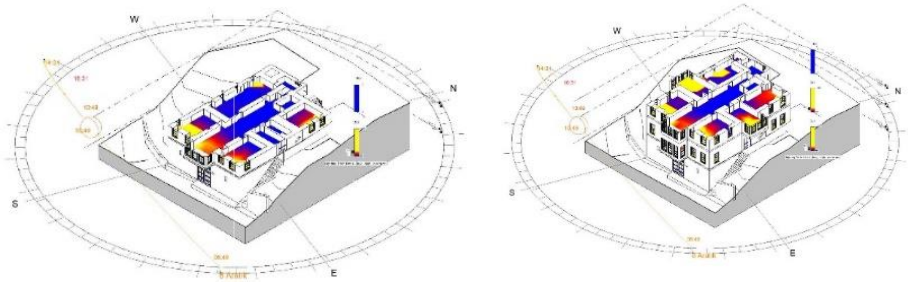


Figure 4. HBIM Model Daylight Analysis thematic maps

The annual energy requirements of the historical building were calculated based on the existing building details without insulation materials using Insight 360 software, and the HBIM Energy Use Intensity (EUI) was determined to be 246 kWh/m²/year. After the approved reinforcements were implemented, the Energy Use Intensity (EUI) was calculated to be 196 kWh/m²/year. These reinforcements included the changes in wall details, the improvements in window glass properties, renewal of plaster materials, and the modifications in interior lighting requirements (such as using high-power single lamps instead of multiple low-power lamps in areas that require lighter, selecting lamps based on the highest lumen/Watt ratio).

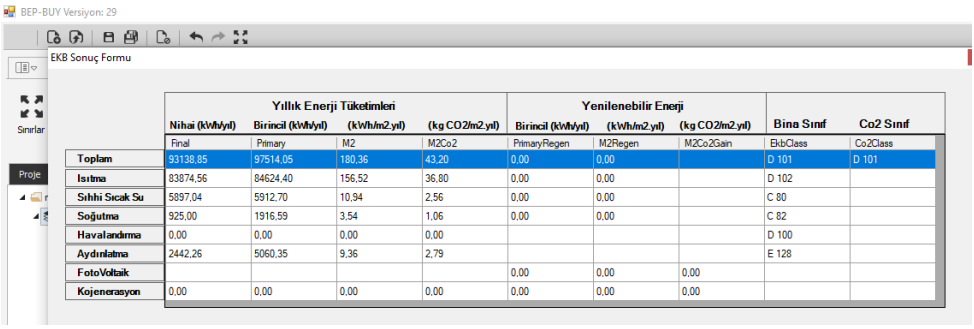
Alongside the internationally based calculations, local analyses were performed in accordance with local laws and regulations. For this purpose, the Beb-Buy software, provided by the Ministry of Environment and

Urbanization, was used to calculate the thermal performance of existing and new buildings. Similar building details were input into this software as well. Without any reinforcement, the total annual energy consumption was found to be 215 kWh/m²/year. After restoration, the total annual energy consumption was determined to be 181 kWh/m²/year based on the calculations from this software. The most significant energy consumption was for heating, hot water, lighting, and ventilation, respectively (Figure 5).

When comparing the two sets of data, it was observed that the results obtained from both national and international software were in close agreement with each other, showing an average correlation (Table 1). The findings from the used and similar software were deemed valid for historical buildings in terms of energy use intensity and quantity. Consequently, the results of the restoration application remained within acceptable national and international consumption limits, demonstrating energy efficiency. This restoration approach can be applicable to other similar houses as well (Figure 6).

Table 1. Benchmark table of different plugins for one-year energy consumption.

Beb-Buy Before Thermal Insulation	215 kWh /m2 / yıl
Beb-Buy-(Plaster+Roof Insulation+Changed Window's Glasses)	181 kWh/ m2 / yıl
Insight 360 Before Thermal Insulation	246 kWh/ m2 / yıl
Insıght 360 (Plaster+Roof Insulation+Changed Window's Glasses)	196 kWh/ m2 / yıl



	Yıllık Enerji Tüketimleri				Yenilenebilir Enerji			Bina Sınıf	Co2 Sınıf
	Nihai (kWh/yıl)	Birincil (kWh/yıl)	(kWh/m2.yıl)	(kg CO2/m2.yıl)	Birincil (kWh/yıl)	(kWh/m2.yıl)	(kg CO2/m2.yıl)		
	Final	Primary	M2	M2Co2	PrimaryRegen	M2Regen	M2Co2Gain	EkbClass	Co2Class
Toplam	93138,85	97514,05	180,36	43,20	0,00	0,00		D 101	D 101
Isıtma	83874,56	84624,40	156,52	36,80	0,00	0,00		D 102	
Sıhhi Sıcak Su	5897,04	5912,70	10,94	2,56	0,00	0,00		C 80	
Soğutma	925,00	1916,59	3,54	1,06	0,00	0,00		C 82	
Havalandırma	0,00	0,00	0,00	0,00				D 100	
Aydınlatma	2442,26	5060,35	9,36	2,79				E 128	
FotoVoltaik					0,00	0,00	0,00		
Kojenerasyon	0,00	0,00	0,00	0,00	0,00	0,00	0,00		

Figure 5. Beb-Buy result

Figure 6. Photos of historical building after the insulation retrofitting.

6. Conclusions

This study utilized different digital platforms with a semantic perspective to conduct energy analyses before restoring the building. By considering the obtained values during the building reinforcement process, the thermal performance of the buildings' thermal performance was improved. BIM-based software allows various energy calculations to during the field study on the historic building, 5 cm stone wool was added to suitable locations within the interior walls. In the result of the model simulation, the energy consumption was found to be 125 kWh/m²/year.

HBIM platforms provide opportunities for such analyses and scenarios, enabling historic buildings to achieve enhanced energy performance with minimal intervention. This ensures the sustainability of historic buildings and allows for more effective planning of the transformation of the existing building stock. The approach in this study serves as a significant example of semantic and planned design and implementation processes for historic buildings, emphasizing on-site solutions. Moreover, the integration of digital scanning and on-site measurements from the initial decision-making phase, along with pre-simulated digital environments for each decision stage, and interdisciplinary coordination, highlight the importance and ease of using HBIM models.

As a result of the thermal performance analyses, the selected building materials were changed to ones with higher thermal values within the limits allowed by the building physical properties. The choice of lighting analysis resulted in the selection of lighting elements that would not harm the building's texture, considering parameters such as the surface form, material, color, ultraviolet, infrared light components, and energy efficiency of the system.

The created smart object libraries can be used in different periodization studies and various projects, contributing to the formation of a local and national library that harmonizes with each other and compares energy performance values to ensure the building's presence at an urban scale. HBIM plays a significant role in raising awareness and increasing recognition at the national level.

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.

References

Alwan, Z., Jones, P., & Holgate, P. (2017). Strategic sustainable development in the UK construction industry, through the framework for strategic sustainable development, using Building Information Modelling. *Journal of cleaner production*, *140*, 349-358.

Arayici, Y. (2008). Towards building information modelling for existing structures. *Structural Survey*, *26*(3), 210-222.

Aytis, S., & Polatkan, I. (2010). Gelenekten geleceğe mimarlık. *Uluslarası Sinan Sempozyumu,* Edirne.

Boeykens, S., Himpe, C., & Martens, B. (2012). A case study of using BIM in historical reconstruction. *The Vinohrady Synagogue in Prague. eCAADe*, *30*(1), 729-738.

Brown, J., Azhar, S., & Farooqui, R. (2009). BIM-based sustainability analysis: an evaluation of building performance analysis software. *International Journal of Construction Education and Research*. Proceedings of the 45th ASC Annual Conference, Gainesville, 1-4 April 2009.

Bruno, N., & Roncella, R. (2018). A restoration oriented HBIM system for cultural heritage documentation: The case study of Parma Cathedral. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, *42*, 171-178.

Bynum, P., Issa, R. R., & Olbina, S. (2013). Building information modeling in support of sustainable design and construction. *Journal of construction engineering and management*, *139* (1), 24-34.

Dossick, C. S., & Neff, G. (2010). Organizational divisions in BIM-enabled commercial construction. *Journal of Construction Engineering and Management*, *136* (4), 459-467.

Douglas, J. (2006). *Building Retrofit*. Oxford: Butterworth Heinemann.

Eldem, S. H. (1984). *Osmanlı – Türk Evi 1*, İstanbul.

Eyüce, A. (2005). *Geleneksel Yapılar ve Mekanlar*, İstanbul: Birsen Yayınevi.

Fai, S., & Sydor, M. (2013). Building Information Modelling and the documentation of architectural heritage: Between the 'typical' and the 'specific'. In *2013 Digital Heritage International Congress (DigitalHeritage)*, Vol. 1, 731-734. IEEE.

Federman, A. (2017). Documentation for the conservation of built heritage: analysis of recording methodologies (Doctoral dissertation, Carleton University).

Feriel, B. B., Ilham, K., & Souad, S. B. (2018). Investigating the synergy of integrated project delivery and building information modeling in the conservation of the architectural heritage. *Journal of Contemporary Urban Affairs*, *2* (3), 67-77.

Green, A., & Dixon, J. (2016). Standing buildings and built heritage. *Post-Medieval Archaeology*, *50*(1), 121-133.

Khan, A., & Ghadg, A. N. (2019). Building Information Modelling (BIM) based sustainability analysis for a construction project. *Proceedings of Sustainable Infrastructure Development & Management (SIDM)*.

Khodeir L. M., Soliman H. H. (2017). Sustainable development of heritage areas: towards cyber-physical systems integration in extant heritage buildings and planning conservation, *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 5 (1), 40–53.doi:10.3991/ijes.v5i1.6623

Khodeir, L. M., Aly, D., & Tarek, S. (2016). Integrating HBIM (Heritage Building Information Modeling) tools in the application of sustainable retrofitting of heritage buildings in Egypt, *Procedia Environmental Sciences*, 34, 258-270.

Krygiel, E., & Nies, B. (2008). *Green BIM: Successful Sustainable Design with Building Information Modeling*. John Wiley & Sons.

Li, B., Fu, F. F., Zhong, H., & Luo, H. B. (2012). Research on the computational model for carbon emissions in building construction stage based on BIM. *Structural Survey*, *30*(5), 411-425.

Linderoth, H. C. (2010). Understanding adoption and use of BIM as the creation of actor networks. *Automation in Construction*, 19 (1), 66-72.

Malinverni, E. S., Mariano, F., Di Stefano, F., Petetta, L., & Onori, F. (2019). Modelling in hbim to document materials decay by a thematic mapping to manage the cultural heritage: The case of "chiesa della pietà" in fermo. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, *42*, 777-784.

Osello, A., Lucibello, G., & Morgagni, F. (2018). HBIM and virtual tools: A new chance to preserve architectural heritage. *Buildings*, *8*(1), 12.

Paköz, A. E. (2016). Bir standart yaratma aracı olarak Türkiye'de vernaküler mimarlık. *Art-Sanat Dergisi*, (5), 171-177.

Saieg, P., Sotelino, E. D., Nascimento, D., & Caiado, R. G. G. (2018). Interactions of building information modeling, lean and sustainability on the architectural, engineering and construction industry: a systematic review, *Journal of Cleaner Production*, *174*, 788-806.

Saygi, G., & Remondino, F. (2013). Management of architectural heritage information in BIM and GIS: State-of-the-art and future perspectives, *International Journal of Heritage in the Digital Era*, *2* (4), 695-713.

Smith, D. K., & Tardif, M. (2009). *Building Information Modeling: A Strategic Implementation Guide for Architects, Engineers, Constructors, And Real Estate Asset Managers*. John Wiley & Sons.

Wilkinson, S. (2011). Sustainable retrofit potential in lower quality office stock in the central business district. In *Management and Innovation for a Sustainable Built Environment MISBE 2011, Amsterdam, The Netherlands, June 20-23, 2011*. CIB, Working Commissions W55, W65, W89, W112; ENHR and AESP.

Wu, T. C., Lin, Y. C., Hsu, M. F., Zheng, N. W., & Chen, W. L. (2013). Improving traditional building repair construction quality using historic building information modeling concept. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, *40*, 691-694.

Assoc. Prof. Dr. Mustafa KORUMAZ

E-mail: mkorumaz@ktun.edu.tr
Educational Status: PhD in Architecture
License: Selcuk University/Konya/Turkey
Degree: Selcuk University/Konya/Turkey
Doctorate: Selcuk University/Konya/Turkey
Professional experience: Architectural Conservation

Assist. Prof. Dr. Ömer ÖZEREN

E-mail: omerozeren@karaduk.edu.tr
Educational Status: PhD in Architecture
License: Hasan Kalyoncu University/Gaziantep/Turkey
Degree: Selcuk University/Konya/Turkey
Doctorate: Konya Technical University/Konya/Turkey
Professional experience: Paramatric Design in Architecture

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-4

Analysis of Functional Systems and their Contribution to Energy-Efficiency in a Historic House in Akşehir

MSc. Architect, Aynur DUYSAK MANKIR [1]

[1] Necmettin Erbakan University, Faculty of Architecture, West Campus. Konya/Türkiye
ORCID: 0000-0001-7480-2063
E-mail: mim.aynurmankir@gmail.com

Assoc. Prof. Dr. Gülşen DİŞLİ[2]

[2] Necmettin Erbakan University, Faculty of Architecture, Department of Restoration Architecture, West Campus. Konya/Türkiye
ORCID: 0000-0003-2620-0492
E-mail: disli001@umn.edu

Citation: Duysak Mankır, A., Dişli, G. (2023). Analysis of Functional Systems and their Contribution to Energy-Efficiency in a Historic House in Akşehir. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 4, 76-113. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Historic houses in Akşehir are important in terms of their cultural, architectural, social, technical and documentary values. In this study, among the registered historic houses in the traditional urban structure of Akşehir city center, the house with 137 blocks and 32 lots, which has largely preserved its originality, was examined for functional systems consisting of the original heating, cooling, ventilation, lighting, roof drainage, clean and waste water systems.

As part of the street façade rehabilitation project, the historic houses in Akşehir were surveyed and documented in detail. Konyalı (1945) and Küçüktop (1998) provide general information about the historical, social and economic situation and the historical structures of Akşehir, while Ereş (1992) focuses on them in his study that examines the folk culture of the region. He also mentions the customs and traditions as well as the historical residential structure. While Özcan (2005, 93-98) discusses the spatial organization of the district settlement of Akşehir in the Seljuk period, Akandere (1998, 99-130) focuses his study on the social, economic, administrative, and civil situation in Akşehir in the 19th century. Demiralp (1996) and Bayar (2014) provided general information about Akşehir's cultural life and historical artifacts, as well as historical, administrative and geographical information.

The "Immovable Cultural Heritage Inventory" project (2012), prepared with the support of Akşehir Municipality, was prepared by studying the

registered immovable objects in the district in relation to art history and architecture. Anılır (1986) provided general information by grouping historical artefacts according to building types in his work "Akşehir History and Historical Artefacts" Gençer (1995) "examined the floor plan, facade, material and construction features of the examples of traditional houses of Akşehir in his study "Akşehir Old Houses". Bektaş (1992) in his study titled "Akşehir Houses"" examined the floor plan, form, function and aesthetics of the houses of the neighbourhood and supported them with his drawings. Disli, Orhan & Duysak (2019), one of the most important studies on functional systems in the traditional Anatolian housing structure, investigated the heating, cooling, ventilation, lighting, clean and waste water systems of the sample house selected from the historical Ilgın houses, as well as the roof drainage system and the maintenance, continuance and protection of the systems, and aimed to adapt and modify them to the contemporary comfort conditions. In the article by Dişli & Duysak Mankır, the functional system elements of Akşehir houses were determined and ecological design criteria were studied in the sub-items.

The study by Ankaralıgil & Dişli examined circular economy and sustainability criteria in relation to functional systems and using the example of a historic residential building that has now been converted into a museum. Küçükerman & Güner (1995, 163-171) addressed the heating and cooling of the Turkish house in their study, as well as the spatial analysis and factors affecting its construction. Oğuz (2001, 413-476) also

addressed issues of heating, cleaning, and lighting in Anatolian village houses in his study. İmamoğlu (1992, 83-87) studied the heating system, cleaning and sewage systems, and lighting systems in historical houses in Kayseri, Şenol (2007, 92-102), examined sewage drainage and water resources in historical Divriği houses, Kültür (2011, 39-47) studied in detail the Toyhane room and the origin of the tandoor, which is the element of the heating system in Divriği houses.

In the literature, there are also studies on how the possibilities of passive air conditioning are used to ensure sustainability in traditional houses. In his study, Manioğlu (2007, 79-92) compares new buildings and traditional homes based on the "Energy Saving Regulation in Buildings" in Mardin and discusses its impact on contemporary architecture and, in this context, on the preservation of historic buildings. Karahan (2017, 497-510) mentioned in his study that historic Osmaneli houses provide a more sustainable life for users compared to contemporary houses, the importance of material and system details, and the potential to be transferred to future generations. Türkmenoğlu-Bayraktar (2011, 19-22) examined sustainable construction in his study titled "Ecological Approaches in Traditional Architecture in the Context of Sustainable Architecture." Büyükmıhçı & Salgın (2015, 163-171) investigated the sustainability of contemporary houses with green roof solutions under suitable climatic conditions. Çetin (2010, 1-9) studied the ecological solutions applied to the buildings of the historical Burdur residences.

Gündoğdu (2014) studied the ecological aspects of traditional residential architecture in Mersin. Özer (2014) investigated the ecological criteria of historical houses in Harput that were re-functionalized after restoration. Büte (2014) investigated the historic houses in Kale district in Muş for the criteria of ecological construction and design. Olcay (2020) conducted an investigation using Midyat district in Mardin as an example. Also, Kısa Ovalı (2009) studied Kayaköy settlement in the example area to systematically establish ecological design criteria in the context of climate zones in Turkey.

Different from the above mentioned literature, in particular, in this research, the registered residential structure in Konya, Akşehir, 137 blocks and 32 lots, which has largely preserved its originality, was studied in detail. The main reasons for selections of the case study buildings have been explained below:

- It is a historic building registered by the Regional Conservation Boards,
- It was among the houses in the district mostly preserved its architectural and construction details and still used in its original function,
- Its traditional heating, cooling, ventilation, lighting, waste and clean water, and drainage systems are still in good condition and most of them have been used in their original function,

- So it is a good representative of energy efficient design for historic houses in Akşehir district.

2. Material and Method

The Akşehir district, where important registered examples of civil architecture are located, largely preserves the functional system elements created according to the passive climatic conditions and sheds light on contemporary architecture and technology. In this research, a historic building, a non-Muslim house, which has largely preserved its originality in terms of its functional systems and is located in block 137 and lot 32 in the center of Akşehir district, was selected as a sample. This sample was evaluated by studying the unique functional systems in the residential structure in terms of passive air conditioning conditions.

The main methods used in the investigation are observation and field investigation, literature review, research in the archives of the relevant institutions, research in the cultural inventory of the province and detailed survey drawings. In addition, traditional measurement methods and analytical survey studies using laser scanning were conducted in the historic sample house. For the analysis of the current situation in the buildings, the standard UNI EN 16096 (2012) was used as a basis for the observation of the protection status. According to this standard, the symptoms, current state of damage, urgency, sequence of precautionary measures, risks, and recommendations are identified in detail. The current condition analysis was conducted specifically for the building's functional

systems and focused on identifying damage, symptoms, and protection recommendations for these systems. Investigations into the restitution of these systems are also presented in tables by reliability level specific to the example building. Oral historical data and interviews with local residents were other methods used in the investigation.

3. Ecological and Energy Efficient Design Criteria

Ecological architecture encompasses all architectural approaches that respect human beings, that address the biological, cultural and psychological dimensions of the physical environment as a whole, that aims to ensure that the building, with all its features, fits into the ecological cycle, i.e. from the design phase through the phases of construction - use - functionalization - demolition or re-evaluation, aiming to use the existing materials and energies through transformation and aiming to transfer environmentally sustainable waste and pass on natural resources to the next generations without harming them. Although it is a new idea, it is etymologically fused with the structures and cultures of the generations that lived in the past (Oktay, 2011).

Ecological architecture include; creation of habitats that respect the environment and people, active use of sustainable resources, designs that are compatible with environmental data, climate and topography, creation of self-sufficient buildings thanks to technology, reduction of energy consumption, protecting natural resources at risk of depletion by choosing recyclable building materials, reduction of negative impact on the

environment by minimizing waste products, designing historical buildings according to ecological rules and requirements, use of existing building stock and building fewer new buildings.

The design criteria for green buildings on the other hand consist of two main parts: the use of physical environment data and the design of the building. The use of physical environment data is analyzed in two separate subsections: site data and climate data; building design, building form design, building envelope design, space organization, material selection, landscape design, use of renewable energy resources, and plumbing and transportation systems.

4. General Characteristics and Evaluation of Akşehir Houses

In the district of Akşehir, there are streets where the historic buildings are so dense that they form a texture, and the ground structure in these areas is slightly uneven. It is assumed that the historical residential buildings in these streets were placed parallel to the natural slope (Dişli & Duysak Mankır, 2021).

When the arrangement of the buildings on the plot are examined, it is found that they are placed in the same direction as the plot, mostly next to each other, with a dense structure and with an inner courtyard. In the case of corner buildings, the arrangement side by side is not very pronounced. The courtyards are usually high-walled and vary in height between 1.50-2.00 meters. Mud brick, stone, and wood are the preferred building materials in the traditional historic houses of the neighborhood. There are also walls

built using the Baghdadi technique. Stone walls are found in the basement and on the first floor, while mud brick and straw walls are found on the upper floors. On these exterior walls of mud and wood there is a mud plaster enriched with straw. The interior walls are also plastered and the top layer is whitewashed (Kocataş 2011, 48-49). It is believed that some of the houses in the center of Akşehir were covered with tiles in the 1945s, most of them had mud roofs, and a very small part was covered with zinc. Since the eaves of the buildings were damaged by the strong winds, especially from the direction of Sultandağları, earth roofs were preferred (Konyalı, 222, 1945). Today, the original earth roofs have been renovated as hipped roofs and mostly as gable roofs, and the original use of earth roofs can be observed only in very few buildings. The first floors of the buildings are usually barns, cellars, woodsheds, servants' quarters, and warehouses (Bayar, 2014, 470-471).

4.1. Example of a Traditional House in the City Center of Akşehir, Block 137, Plot 32: Functional Systems and Evaluation of the Systems in the Context of the Ecological Design Criteria

The registered property is located in Konya province, Akşehir district, Anıt district, Hacı Hamza Street, on block 137, plot 32. The main walls of the building were built in rubble stone masonry with wooden beams and plastered with clay plaster on the outside. A wooden skeleton system filled with adobe was attached to the internal partition walls and covered with laths. Due to its architectural and technical features, it is considered one of

the examples of civil architecture of the late Ottoman period. The house registered as block 137, lot 32, has a two-story appearance as ground floor+1 and has three floors with the basement (Figure 2-3). The basement of the house consists of rooms arranged around an L-shaped sofa. The ground floor and first floor, which are entered from different directions, were built according to a floor plan scheme with an interior sofa. The house, located in a garden that extends in an east-west direction, is located on a plot that slopes from east to west. There is a garden in the northeastern part of the house and a wooden shed in the garden. The building has a wooden gable roof and is covered with Turkish tiles.

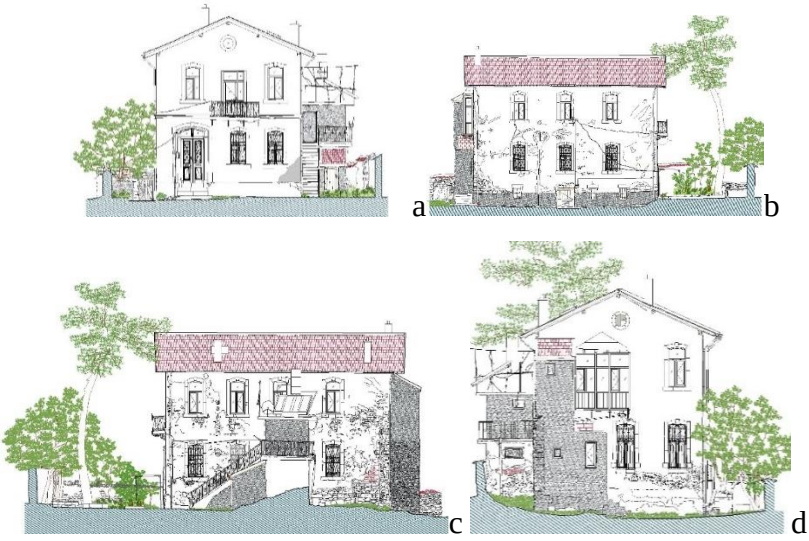


Figure 3. Facade views of the front (west) (a), left (north) (b), right (south) (c) rear (east) (d) of the registered house on block 137, lot 32 (drawn by Aynur Duysak Mankır, Mostar Architecture, 2018)

The basement of the house, built into a wide courtyard, is entered through a single-leaf door on the northwest facade. The rooms, which open onto the sofa, are lit by crenellated windows. The basement, where no additions or alterations have been made, has been preserved to this day. (Figure 4).

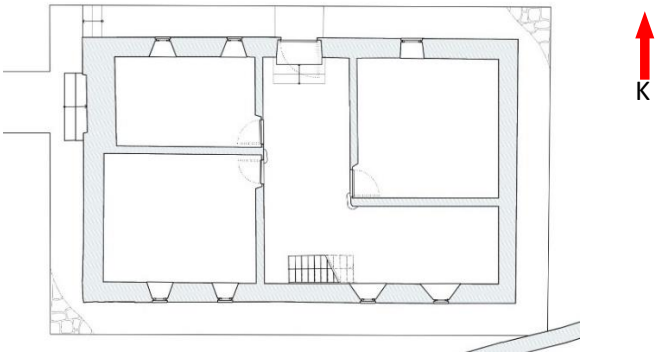


Figure 4. Floor plan of the basement of the house with 137 block, 32 lots (drawn by Aynur Duysak Mankır, Mostar Architecture, 2018)

The ground floor of the registered house, located on block 137, lot 32, is reached by three stone steps and entered through a wooden door with a low arch, which has preserved its originality. On both sides of the interior sofa, separated from the entrance hall by an arched opening, three rooms are lined up. All the doors and windows in the basement are made of wood and have survived until today. All windows on the ground floor and first floor have been replaced with PVC joinery. The iron grilles have preserved their originality. The entrance on the first floor of the house was changed and opened from the north. The door to this entrance is made of iron (Fig. 5).

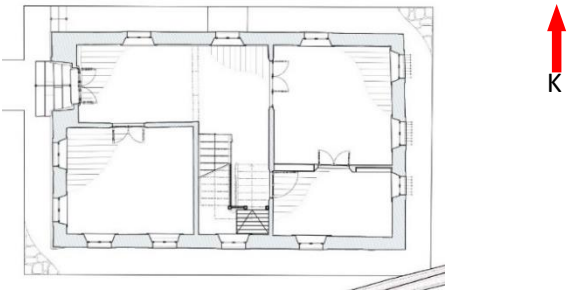


Figure 5. Ground floor plan of the registered house with block 137, lot 32 (drawn by Aynur Duysak Mankır, Mostar Architecture, 2018)

The first floor of the building is accessible via a reinforced concrete stair on the south facade. A narrow corridor extends between the rooms on the east, leading to the toilets in the southeast corner. The landing on which the reinforced concrete stairs rise, located on the south facade of the house, were also widened, and a bathroom area was created between the first floor and the ground floor (Figure 6).

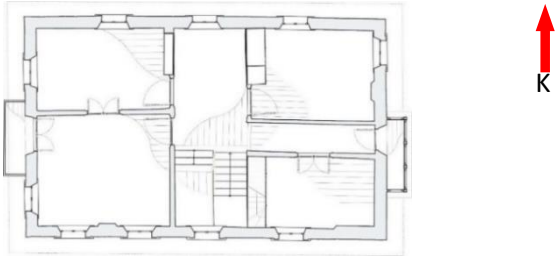


Figure 6. Drawing of the restitution of the first floor plan of the house with 137 blocks and 32 lots (drawn by Aynur Duysak Mankır, Mostar Architecture, 2018)

In the study of the 137 blocks and 32 lots of the registered house in terms of functional systems, the heating system was determined to be natural and

direct. In the historic house, the sun is used by arranging the rooms around the sofa (Figures 7, 8, 9).

Figure 7. The interior view from the hall and the room of the registered house on block 137, lot 32 (From the author's archive, 2018)

Figure 8. General view from the room (a)- (b) of the registered house block 137, lot 32 (From the author's archive, 2018)

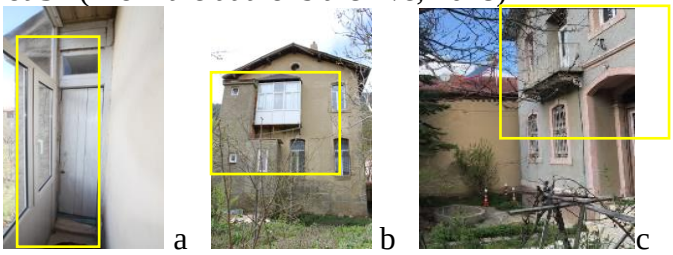


Figure 9. Facade view of the toilet area of the registered block 137, lot 32, and the balcony of the additional toilet area (From the author's archive, 2018)

A cast iron stove and a chimney stove were used as a direct heating system. There are a total of 3 chimneys on the gable roof, which is believed to be the original roof form of the house. There are chimney holes on the walls

of the second floor. The windows in the basement are used as chimney holes.

In the kitchen on the ground floor of the building, there are terek, cupboards with shelves and doors, and on the south wall, there is an area that was originally thought to be a stove due to the chimney coming out of the roof (Figure 10).

Figure 10. General view of the interior of the kitchen (a) of the registered house block 137, lot 32 - view of the interior to the south (right side) (b) chimney of the kitchen room (From the author's archive, 2018)

The remains of the chimney stoves can still be seen on the garden walls in the garden of the house. The chimney of the stove, which provides the smoke extraction, is hidden inside the wall. The roof of the building, which is in a state of disrepair and is common with the wall of the fireplace, built in the form of a semicircular niche of made of clay, is covered with tiles (Figure 11).

Figure 11. The fireplace in the adobe wall in the south of the garden of the registered house on block 137, plot 32 (From the author's archive, 2018)

The tandoor/chambar/lectern and/or portable grill mechanism believed to be used for heating purposes was not observed in the building. It is believed that the rooms in the basement of the house registered in block 137, lot 32, lit by crenellated windows sloping inward from the rubble stone walls, are covered with mud plaster, and that the rooms of the rooms may be used for storage/warehouse/pantry/storage (Figure 12).


a


b

Figure 12. The basement of the house registered on block 137, lot 32, interior view of the rooms that were probably used for storage (a-b), earthen floor (b), wooden wattle and daub ceiling (a-b) and embrasure windows (a-b) (From the author's archive, 2018)

It is believed that the jars and wicker baskets observed in the basement of the house were used in the past to store food and drink (Figure 13).


a

b

c

Figure 13. Wicker baskets (a-b) in the basement hallway of the registered house on block 137, lot 32, and the jars in the basement room room-B-04 (From the author's archive, 2018)

In the registered sample structure of block 137, lot 32, the kitchen under the main floor should be solved and kept cool on the north side (Figure 14).


a

b

Figure 14. Stairs (a-b) on the ground floor of the registered house with block 137, lot 32 (From the author's archive, 2018)

Since the building is a twin structure and stands in a separate order, there are window openings on all facades, including the basement. When natural lighting was insufficient, gas lamps and candles, artificial means of

lighting, were used in the places, but today there are electric lighting elements.

The kerosene lamp/candle holder niche/shelf/stand, which is made of metal in the form of a hanger on the wall surface and is called a hanging lamp in the traditional Anatolian house (Oğuz, 2001, 410), is still in the sample structure today. Above the balcony doors and on the roof, there are skylights that provide ventilation and lighting for the building.

The three compartments inside the house, one of them with a separate cover, are larger than the cabinets in the other rooms of the house and it is assumed that the separate built-in cabinet is a gusulhane. It is believed that the floor of the original room gusulhane was covered with sheet material to the base or plastered with waterproof mortar to provide waterproofing, as in other traditional residential buildings in the area. It is believed that there is contemporary stone under the cement mortar and sheet material for systemic reasons. The dirty water in the gusulhanes must be drained through the pipe/drain. Today there is a place that was built as muhdes on the south facade in the basement as gusulhane place. In the building, the necessary things such as food, laundry and dishes were prepared in the kitchen in the courtyard or in the garden with transport water.

The traces of the Turkish-style toilet stone, which is located directly opposite the wooden exclusion door in the basement on the north side of the garden, suggest that the toilet room was originally located there (Figure 15).


a

b

Figure 15. Room-ZK-03(a) toilet area and Room-1K-01(b) toilet balcony of registered house on Block 137, Parcel 32 (From author's archive, 2018)

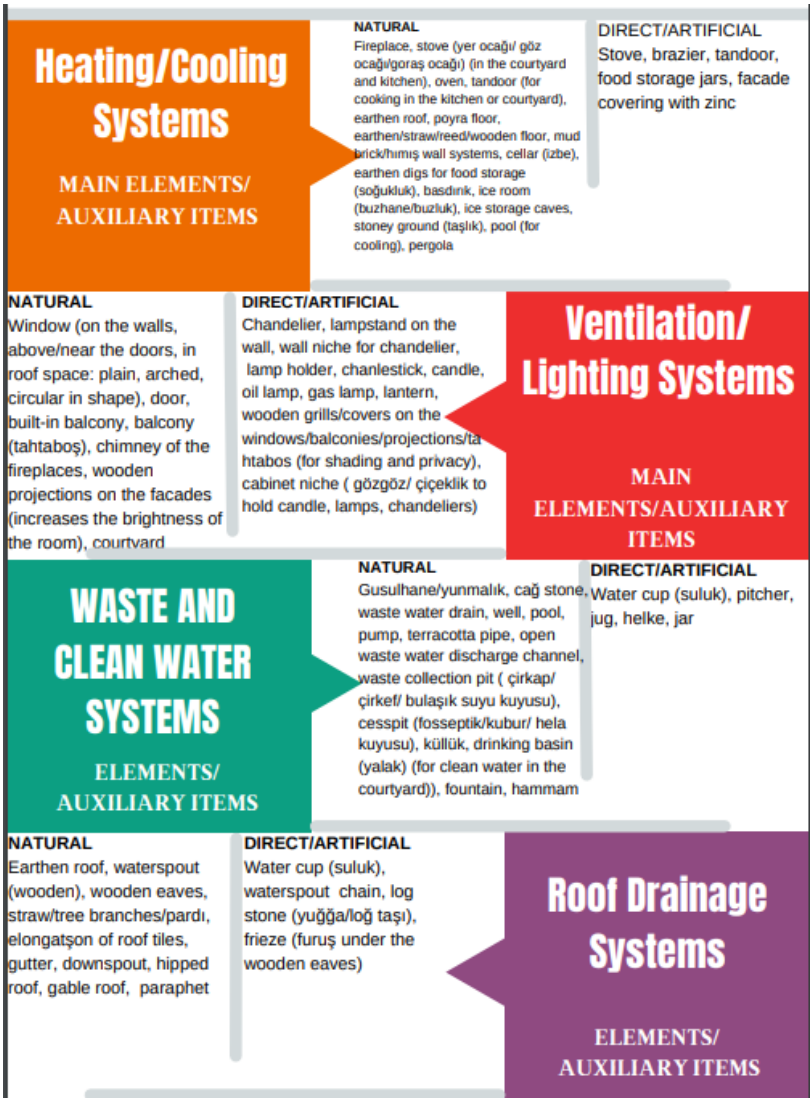
The area where the historic house under study is located is at the foot of Sultan Mountain, and the need for fresh water is met by transferring the mountain water, which is piped from here to the wells in the neighborhood. In addition to the gusulhanes in the house, which were used by the people for purification, the Meydan, Yukarı (Gavur) and Orta baths, which are located near the ancient settlements in Akşehir, were also used for purification/laundry. The roof of the registered house on block 137, lot 32 is a gable roof sloping in two directions and may have originally been covered with Turkish tiles (Figure 16). Rainwater is drained from the roof surface via the existing slope, and rainwater is directed away from the building with wooden water spouts attached to the eaves. The wooden gutters enclose the four facades of the house with an internal sofa that has

a rectangular plan, so that the water is directed from the north and south slopes to the garden. The existing systems that can be detected in the studied traditional house in block 137, lot 32, are listed in Table 1.

 a  b

Figure 16. Roof of the house registered on block 137, parcel 32

Table 1. Natural and direct functional systems applied to 137 plot, 32 parcel registered house



The ecological design criteria for the functional systems of the house on block 137, lot 32 were studied in detail and are listed in the following subsections.

Energy Saving: In the use of renewable energy sources in 137 blocks and 32 lots in terms of heating and cooling main findings are; it has a south-facing sofa and living areas, the application of rooms and floors in summer (with high ceilings, ventilated) and winter (with low ceilings), secluded, thick stone walls with high thermal mass (in the basement), castellated windows, earthen floor, cool basement floor, the use of in-wall stove, barbecue, tandoor for heating in winter rooms. The building has a simple square/rectangular shape with a gable roof and a high walled courtyard. Also in the settlement, near the fountains in the neighborhood, in the courtyard of the mosque in the neighborhood, on the street wall, and so on wells were used in places of gathering and centers.

In the passive natural heating and cooling systems, a linear orientation is maintained in the east and west axes, and energy-saving spatial organization (sofa, barn, hut, exit, balcony) is applied in terms of heating and cooling. The use of ice storage caves at the foothills of the Sultandağı for shading, by keeping the walls surrounding the courtyard high to obtain ice and cool the food, also contributed to passive cooling technology in the past.

For air conditioning with natural methods when using renewable energy sources in the building, fireplaces embedded in the wall are used to heat

the rooms in winter as well as for ventilation in summer, balconies that open to the sofa, and recirculation systems with controlled air supply. In addition, the reduction of the heating load by reducing the snow load thanks to the gable roof in the roof drainage system has contributed to the use of renewable energy sources.

Thanks to the balconies located on both sides of the sofa in the building, cross ventilation of the sofa is ensured. The approach of naturally ventilated building envelope and volume organization, especially the fact that the building is open to the prevailing wind direction on the edge of the Sultandağı Mountains, has helped to bring the buildings in line with the topography. In the volume organizations in the building, the gusulhanes are solved in the room, in the closet, or under the stairs.

Breathable thick stone walls were used for the structural system and envelope of the building. Ventilation, lighting, and cooling are provided by the original gable roof, doors and windows, and the pool in the courtyard. Placement of the sofa in the center of the rooms and balcony, overhangs, and use of the attic created a cool, airy space.

In the context of the use of local, recyclable materials and the use of durable materials, the use of masonry and cut stone, clay plaster, hub floors, gable roof, wood and earth materials are important applications.

***Conservation of resources/materials*:** In the sample structure, designs with compact/simple form and collectively nested spatial organization that ensure material savings are observed in the use of renewable energy

resources. Thanks to the spaces opening to the building's hall, the existing building could be used for a long time without maintenance, simple repairs or major repairs with a design concept that makes efficient use of the interior space.

Recycled materials such as stone and wood were used for the building. As another example of material conservation, the building used a terra cotta pipe for the fresh water supply, tree branches on the top cover, and a tile cover on the thatched roof. The stone pool for cooling, the old stones for washing, the wooden grates on the floors of the gusulhane, the wooden floors and the stone wells in the neighborhood also show that durable recycled materials are used.

Conservation of water: As part of the water conservation in the building, the stony space at the entrances of the building is humidified in summer and the cooling effect of this space is used. Water reuse, especially in the courtyard and canopies, was also ensured through the use of permeable surfaces that allow water to remix with the subsoil and protect the water table.

As part of waste management, the presence of a septic tank and a stone toilet in the courtyard and inside the house was observed. In the context of energy-efficient design, while the locals prefer plants that do not require much water in the landscape, jugs, basins, etc. were used in the context of reducing water consumption. Water supply was ensured by using

controlled water. It allowed the reuse of water by directing the rainwater on the roof through metal gutters to the water bowl or pool in the courtyard.

Conservation of the ecosystem: In the framework of the protection of the ecosystem stone and wood were used as building materials that produce less waste. The fact that the city center is known to be within walking distance and that transportation is on foot, reducing traffic pollution caused by vehicles, and the use of healthy materials such as stone and wood were important factors in the design for human health. Stone walls, lime mortar, clay plaster, gable roofs, wood and stone floors also helped to balance the humidity inside. In addition, the presence of appropriate indoor comfort conditions and the natural ventilation/lighting of Lake Akşehir provided microclimatic comfort in the area where the building is located and in the building's interior spaces. As part of reducing and controlling all types of waste, solid waste is recycled, there is a septic tank and toilet in the courtyard area, and animal manure in the barn is used as fuel. To protect human health, earth roofs, soil, reeds, tree branches, tiles and other healthy materials are used.

4.2. Evaluation of Functional Systems in Sample Akşehir Houses in Terms of Conservation Status and in the Context of Energy Efficient Design Criteria

The functional systems in the registered structure in Akşehir, block 137, lot 32 were studied in detail. The analysis of the state of preservation of the functional systems in the sample building was carried out according to

the standard "UNI EN 16096 (2012). According to this standard, the current condition class of each functional system/element/item in the example structure was determined as shown in Table 2 below. Then, each functional system element was evaluated in the context of energy-efficient design. For the risk priority level of each functional system in the example structure, the risk priority level of the same standard was used, as shown in Table 2.

Table 2. Current condition - Risk urgency class analysis (UNI EN 16096 (2012), 10-11.)

Condition class (CC)	Symptoms
CC 0	No symptoms
CC 1	Minor symptoms
CC 2	Moderately strong symptoms
CC 3	Major symptoms

Urgency class (UC)	Urgency
UC 0	Long term
UC 1	Intermediate term
UC 2	Short term
UC 3	Urgent and immediate

The data in Table 3 are based on the classification of precautions/interventions and recommendations to be taken against these risks. These data are also compatible with the intervention scales given in Resolution 660 (Ministry of Culture and Tourism, 1999).

Table 3. General recommendation classes (UNI EN 16096 (2012), 12.)

Recommendation class (RC)	Possible measures
RC 0	No measures
RC 1	Maintenance/Preventive conservation
RC 2	Moderate repair and/or further investigation
RC 3	Major intervention based on diagnosis

In determining the functional system elements of the traditional house of Akşehir, the main goal was to reveal the restitutions as concrete data and identify them in light of tangible information. In order to develop reliable restitution proposals for the functional system elements of the building, comparative studies were conducted according to their architectural characteristics through field research. The studied elements in terms of classification of current condition (CC), urgency class of risk (UC), and recommendation (RC) set in the scale of European Union standards are based on concrete documents and sources to propose reliable restitution solutions. In addition to the above standard, in the determination of the original functional systems in the Akşehir sample house, findings were made according to the reliability assessment given in Table 4 below developed by Aylı (2018). After determining and evaluating the original functional systems of the Akşehir sample house using the above methods, the location, shape, size, material, detailed data of each system/element, and reliability data used in their identification were determined using the data given in Table 5.

Table 4. Restitution reliability degree analyses (Aylı, 2018, 218).

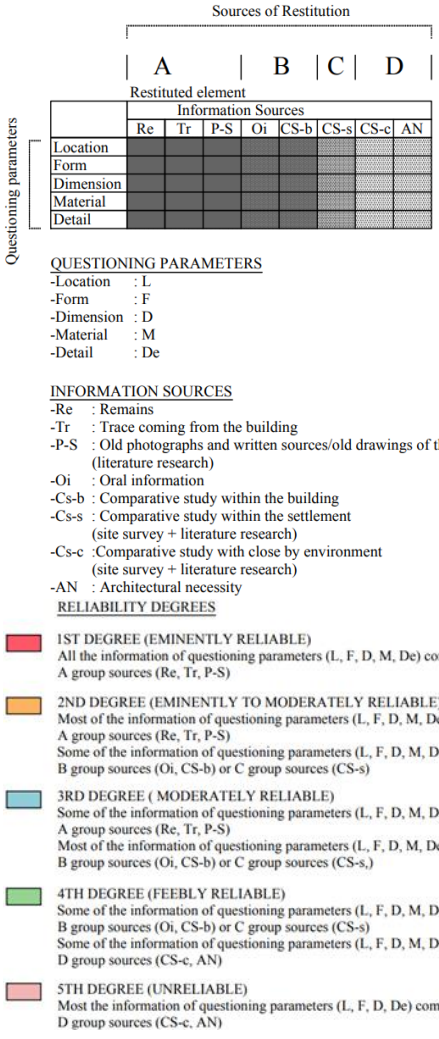
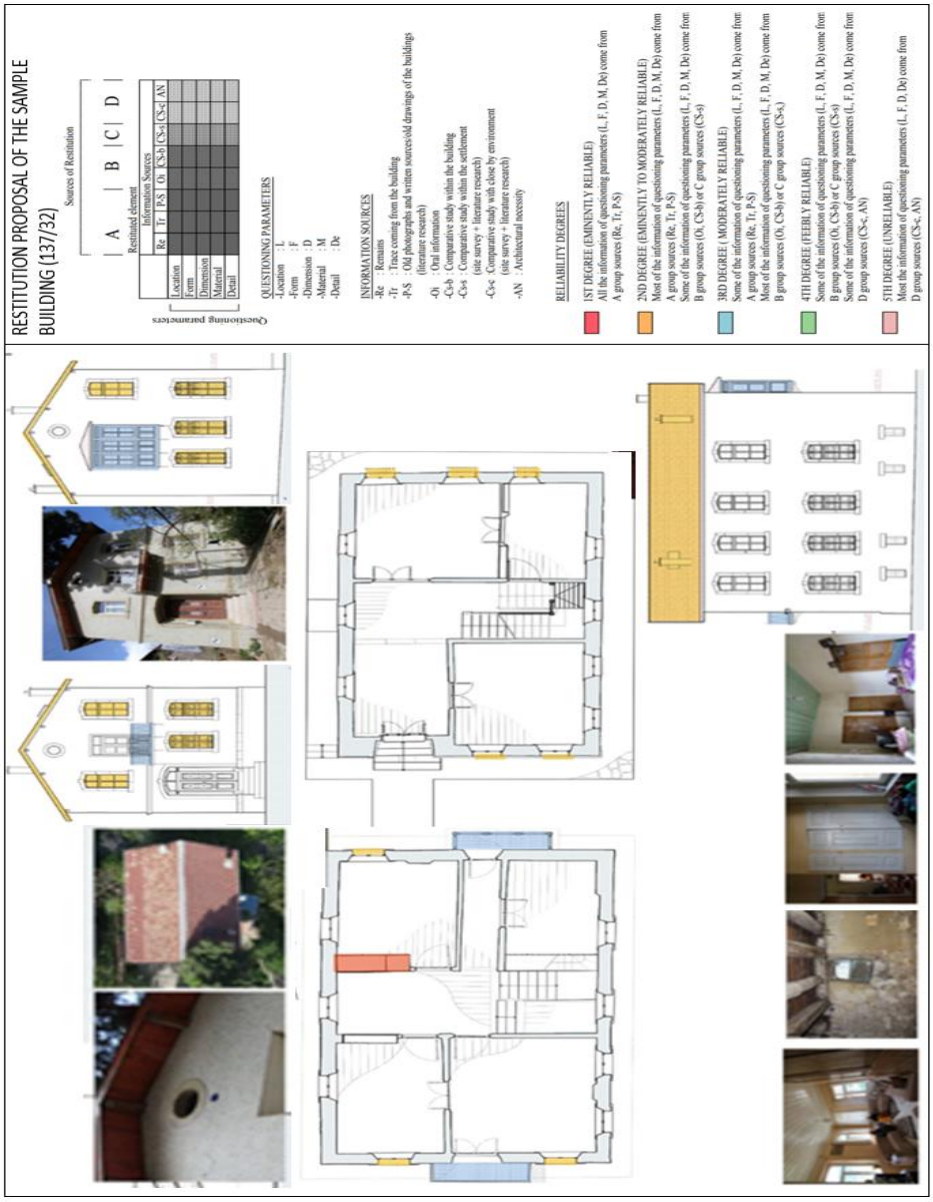


Table 5. Restitution reliability degree assessment of the sample house



The system about which the most reliable data is obtained in the historical house is the gusulhane, which is an example of a system for clean water and sewage. In the study of the functional systems, the least reliable data belong to the balcony element at the front of the historic house. During the study of the restitution of the balcony, it was found that it has changed in shape, size and material. Consequently, the balconies were classified as 3rd degree reliable. Since the windows in the sample building were changed from wood to PVC material and their dimensions were different from the original ones, comparative studies with the houses in the surrounding area and in the literature were conducted, and the restitution experiment was classified as 2nd degree reliable. Considering the restitution study and the current condition of the roof, the reliability grade of 2nd degree was used because the material was changed in the restitution experiment and in the comparison study, as it was kept in its original form and marseille tiles were used in the renovation or repair works instead of Turkish tiles, which were common at that time. The analysis of the state of preservation of the systems was carried out according to the standard "UNI EN 16096 (2012), and the current condition class of each functional system/element in the sample building was determined according to the standard. Then, each functional system element is evaluated in the context of energy efficient design and listed in Table 6.

Table 6. Evaluation of functional systems in 137/32 registered house

137/32	SYSTEM ELEMENTS	CONDITION CLASS (CC)	RECOMMENDATION CLASS (RC)	URGENCY CLASS (UC)	RELIABILITY DEGREE
HEATING/COOLING SYSTEM ELEMENTS	Natural Heating: Sun	CC3	RC0	UC0	
	Fireplace with chimney	CC2	RC2	UC2	
	Stove	CC1	RC3	UC3	
	Cast iron stove	CC3	RC0	UC0	
	Tandoor (for cooking)	CC0	RC3	UC3	
	Tandoor /İskembi (for heating the body/space)	CC0	RC3	UC3	
	Oven	CC0	RC3	UC3	
	Brazier	CC0	RC3	UC3	
	Earthen digs for food storage	CC0	RC3	UC3	
	Poyra	CC2	RC1	UC1	
	Construction materials (stone, mudbrick, clay plaster)	CC3	RC0	UC0	
	Facade covering with zinc	CC0	RC3	UC3	
	Terracotta pipe	CC3	RC0	UC0	
	Cellar (izbe)	CC3	RC0	UC0	
	Window	CC2	RC2	UC2	
	Door	CC3	RC1	UC1	
	Terracotta jars/jugs	CC3	RC1	UC1	
	Basdırık	CC1	RC3	UC3	
	Ice rooms	CC0	RC3	UC3	
	Ice storage caves	CC0	RC3	UC3	
	Stoney ground (Taşlık)	CC2	RC1	UC1	
	Pools in the courtyard (for cooling)	CC3	RC1	UC1	
	Pergola	CC1	RC3	UC3	
VENTILATION/LIGHTING SYSTEM ELEMENTS	Window	CC2	RC2	UC2	
	Door	CC3	RC1	UC1	
	Chimney of the fireplace	CC2	RC0	UC0	
	Balcony, projection	CC3	RC2	UC2	
	Balcony (tahtaboş)	CC0	RC3	UC3	
	Natural lighting: Sun	CC3	RC0	UC0	
	Chandelier or stand for oil lamps	CC1	RC3	UC3	
	Gas lamp	CC3	RC0	UC0	
	Overhead window openings	CC3	RC0	UC0	
	Courtyard	CC3	RC1	UC1	
	Wooden grills/covers	CC1	RC3	UC3	
	Cabinet niche (gözgözü/çiçeklik)	CC3	RC0	UC0	
WASTE AND CLEAN WATER SYSTEM ELEMENTS	Waste water drain	CC1	RC3	UC3	
	Waste water discharge pipe (savacak)	CC1	RC3	UC3	
	Waste collection pit (kubur kuyusu)	CC2	RC1	UC1	
	Pump (tulumba)	CC0	RC3	UC3	
	water well	CC0	RC3	UC3	
	Pitcher, jug, helke, jar	CC3	RC0	UC0	
	Fountain	CC3	RC0	UC0	
	Gusulhane	CC3	RC0	UC0	
	Cağ stone	CC1	RC3	UC3	
	Cesspit (çirkap/çirkef kuyusu)	CC0	RC3	UC3	
	Terracotta pipe	CC0	RC3	UC3	
	Pools	CC3	RC1	UC1	
	Küllük	CC0	RC3	UC3	
	Drinking basin (yalak(for celan water)	CC1	RC3	UC3	
	Hammam	CC2	RC2	UC2	
ROOF DRAINAGE SYSTEM ELEMENTS	Earthen roof	CC0	RC3	UC3	
	Waterspout	CC2	RC3	UC3	
	Gable roof covered with tile	CC1	RC3	UC3	
	Gutter	CC3	RC1	UC1	
	Downspout	CC3	RC1	UC1	
	Hipped roof covered with tile	CC3	RC1	UC1	
	Wooden eaves	CC3	RC1	UC1	
	Wooden coping (hardama)	CC1	RC3	UC3	
	Paraphet	CC2	RC2	UC2	
	Log stone (yuğga/loğ taşı)	CC0	RC3	UC3	
	Prieze (furuş under the wooden eaves)	CC2	RC3	UC3	

Condition Class (CC)	Symptoms
CC 0	No symptoms
CC 1	Minor symptoms
CC 2	Moderately strong symptoms
CC 3	Major symptoms
Risk Urgency Class (UC)	**Risk urgency class**
UC 0	Long term
UC 1	Intermediate term
UC 2	Short term
UC 3	Urgent and immediate
Recommendation Class (RC)	**Possible measures**
RC 0	No measures
RC 1	Maintnance/preventive conservation
RC 2	Moderrate measure and/or further investigation
RC 3	Major intervention based on diagnosis

	1. DEGREE- FULLY RELAIBLE
	2. DEGREE- HIGH RELABILITY DEGREE
	3. DEGREE- MODERATE RELABILITY DEGREE
	4. DEGREE- LESS RELAIBLE
	5. DEGREE- NOT RELAIBLE

Of the heating and cooling systems, natural heaters, cast-iron stoves, stone as a building material, and wall chimneys were identified as the most reliable system elements. The window, the door, the earthen pot, and the pool in the garden can be protected with small interventions, even if there are changes. The fireplaces, while mostly unchanged, are a moderately (3rd degree) reliable system element.

Among the ventilation and lighting system elements, natural lighting, gas lamps, window openings above the door and, and closet niches were identified as the most reliable system elements. Because data on the door and patio can be largely determined despite material alterations and interventions, they are highly reliable and should be restored as part of maintenance and repair. Data on these elements are moderately reliable to Level 3 because windows, chimneys, balconies, and overhangs require long-term intervention and are subject to change. Since the data on the lampholder and wood cage are only from literature review, they are rated as Level 4 and are less reliable.

Neighborhood well, ewer, pitcher, jug and gusulhane in the closet, which are part of the elements of the purification and wastewater system, were identified as the most reliable system elements on site. The data about the pool is very reliable at the 2nd level, considering that material changes may occur in the garden. Since the data on the kubur well was obtained according to the literature review, it is in the category of Level 3, and is

moderately reliable. Because the data on the sewer, cistern, and drainage pipes were predicted by literature review and comparative studies of the surrounding structures, they are categorized in level 4, less reliable.

Because the hipped roof covered with tiles is one of the elements of the roof drainage system and the materials of the gutter, downspout, wooden eaves and parapet were modified, hence they are categorized in level 2, rather reliable. Since the waterspouts are located in the surrounding structures, it is in level 3, and is moderately reliable. Hartama and fuurş are in level 4, and data on them is less reliable because it comes from the literature review

Excavations should be carried out in the courtyard spaces and gardens of the buildings, the location of the original toilet should be determined, and possible pottery, ambrosia, water wells, pumps, pond site, terracotta water pipes, and in the remote site, the traces of pressed water and food vessels should be examined. Based on the traces on the wall surfaces, you should examine rasps and expose the places of the ovens that were later closed and the holes of the chimneys that led to the roof.

5. Conclusion

Determining the original functional systems and auxiliary elements that respond to the user's comfort conditions in traditional Anatolian houses due to the demands of time is of great importance to increase the survival of the houses and to protect these systems and elements. Specifically, among the traditional historical houses in Akşehir district, the house in 137

block, 32 lot, whose original functional systems are preserved to a great extent and whose first users are non-Muslims, was chosen as the sample structure. As a result of the investigations in the building that is the subject of the research, it was found that the functional system elements are directly present in the buildings, but most of them are unusable, abandoned, destroyed, or do not meet the comfort standards according to the current conditions. Therefore, new solutions were developed. For the analysis of the current situation in the buildings, the symptoms, damage condition, urgency, order of precautions, risks and recommendations based on the standard UNI EN 16096 (2012) have been identified in detail in condition analysis. Current condition analysis are conducted in the building's functional systems, and damage, symptom determinations, and protection recommendations for the systems are developed. Interventions in the original functional systems: historical, cultural, character, structural, material, are determined in detail. It is found that in cases where it is not possible to use original functional system elements, functional systems with documentary and cultural value are preserved in place, while newly emerging functional systems are attached to the surface.

Efforts should be made to preserve the originality of solutions. It is expected that the research topic will be useful to the fields of restoration, art history, mechanical engineering, and sociology. In addition, there is a need to preserve the original functional system elements identified in the restoration of traditional houses and to create as-built projects. In order to

evaluate the neglected functional systems in traditional houses, engineers, architects, etc. should be appointed as experts who can study these systems in detail in the Conservation Boards and take measures to protect them. The results can be supported with numerical data by using energy-efficient design calculation programs that can confirm the observational studies conducted with standards in traditional Anatolian houses. For the traditional houses of similar period and typology in Turkey, the analysis of the general situation and priorities of precaution (UNI EN 16096 (2012) and the tables developed in this research might be used for the typology and the analysis of the reliability of restitution in the repairs to be made and the development of holistic protection criteria in traditional houses considering the architectural features of the building as well as the sanitary systems.

Thanks and Information Note

The e-book section is part of a thesis study at Necmettin Erbakan University, Faculty of Fine Arts and Architecture, Graduate School of Science, Master's Degree, completed in the Department of Architecture.

The e-book section 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 e-book section. There is no conflict of interest.

References

Akandere, O. (1998), Konya vilayeti salnamelerine göre 1864-1904 yılları arasında Konya sancağının idari yapısı, *İpek Yolu Konya Ticaret Odası Dergisi,* Özel Sayı I: 99-130.

Ankaralıgil, B. & Dişli, G. (2021). Whe construction was linear. analysis of the energy sustainability of social housing in Spain (1939-1989)', *Vıtruvıo - International Journal of Architectural Technology and Sustainability,* 6(1), Pp. 92-109. Https://Doi.Org /10.4995/Vitruvio-İjats.2021.15452.

Anılır Y. (1986). *Akşehir Tarihi ve Tarihi Eserleri,* Konya.

Aylı C., (2018). Restitution proposals for ruined traditional houses in Ildırı, Yüksek Lisans Tezi, İYTE, İzmir.

Bayar, M. (2014). *Akşehir Tarihi*. Akşehir: Akşehir Büyükşehir B.Y.

Bektaş, C. (1992). *Akşehir Evleri.* İstanbul: Yem Yayın.

Büte, E. (2014). Ekolojik yapı tasarım kriterleri bağlamında Muş Kale Mahallesi geleneksel evlerinin incelenmesi, Yüksek Lisans Tezi, Maltepe Üniversitesi, 2014).

Büyükmıhçı, G., Salgın, B. & Özkan, A. (2015). Yeşil çatı çözümlerinin tarihi dokularda geleneksel çatı örtüsü olarak uygulanabilirliği üzerine bir inceleme. *Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, 31(2), 163-171.

Çetin, S. (2010). Geleneksel konut mimarisinin ekolojik yansımaları: Burdur örneği. 5. Ulusal Çatı & Cephe Sempozyumu, 15 -16 Nisan 2010, Dokuz Eylül Üniversitesi Mimarlık Fakültesi Tınaztepe Yerleşkesi Buca, İzmir, 1-9.

Demiralp, Y. (1996). *Akşehir ve Köylerindeki Türk Anıtları,* Ankara: Kültür Bakanlığı Yayınları.

Dişli, G., Orhan, Ş. B., & Duysak, A. (2019). Tarihî konut yapılarında işlevsel sistemler; Konya- Ilgın'da tarihi bir konut örneği. *Sanat*

Tarihi Dergisi, XXVIII/2, 407-435. https://doi.org/10.29135/std.589052.

Dişli, G., & Duysak Mankır. A., (2021). Geleneksel Akşehir evlerinde işlevsel sistemlerin ekolojik ve enerji etkin tasarım ölçütleri açısından incelenmesi; *Türk İslam Medeniyeti Akademik Araştırmalar Dergisi*, 16/32,257-286.

Ereş B., (1992). *Akşehir Yöresi Halk Kültürü Araştırması*, Ankara: Başbakanlık Gençlik ve Spor Genel Müdürlüğü.

Gençer N., (1995). *Akşehir Eski Evleri,* Ankara.

Gündoğdu, E. (2014). Mersin geleneksel konut mimarisinin ekolojik yönden incelenmesi, Y. Lisans Tezi, İstanbul Kültür Üniversitesi.

İmamoğlu, V. (1992). *Geleneksel Kayseri Evleri*. Ankara: Halkbank Kültür Yayını.

Karahan, E. (2017) Geleneksel ve günümüz konutunda sürdürülebilirlik Ve yaşam alışkanlıkları: Osmaneli örneği. *Megaron,* 12(3), 97-510. Doi: 10.5505/megaron.2017.27037.

Kısa Ovalı, P. (2009). Türkiye iklim bölgeleri bağlamında ekolojik tasarım ölçütleri sistematiğinin oluşturulması, "Kayaköy Yerleşmesinde Örneklenmesi", Doktora Tezi, Trakya Üniversitesi, 2009.

Konyalı, İ.H., (1945). Nasrettin Hoca'nın Şehri Akşehir Tarihi Turistik Kılavuz, İstanbul.

Kocataş, M., (2011). Akşehir'de Bulunan Tarihi Yapıların Tipolojisi Üzerine Bir Araştırma, Yüksek Lisans Tezi Yapı Eğitimi Anabilim Dalı, Isparta.

Küçükerman, Ö., Güner, Ş. (1995). *Anadolu Mirasında Türk Evleri*. İstanbul: Kültür Bakanlığı Yayınları.

Küçüktop, A. (1978). *Her Yönüyle Akşehir*, Akşehir: Nareddin Matbaası.

Kültür, S. (2011). Spatial analysis of toyhane in traditional Divriği Houses, *Intercultural Understanding*, 1, 39-47.

Manioğlu, G. (2007). Geleneksel mimaride iklimle uyumlu binalar: Mardin'de bir öğrenci atölyesi. VIII. Ulusal Tesisat Mühendisliği Kongresi, 25-28 Ekim 2007, İzmir, 79-92.

Ministry of Culture and Tourism (1999). (660 nolu İlke Kararı) Taşınmaz Kültür Varlıklarının Gruplandırılması, Bakım ve Onarımları. https://korumakurullari.ktb.gov.tr/Eklenti/18338,660-nolu-ilke-kararipdf.pdf?0.

Oğuz, B. (2001). *Türkiye Halkının Kültür Kökenleri 3, İnşa, Isıtma ve Aydınlatma Teknikleri, Anadolu*, İstanbul: Aydınlanma Vakfı Yayınları.

Oktay, D., (2011). Mimarlık ve sürdürülebilirlik: güncel bir değerlendirme ve öneriler, *Güney Mimarlık Dergisi*, Aralık 2011, Sayı 6, sf: 14-16, Adana.

Olcay, A. (2020). Geleneksel yerleşmelerin ekolojik tasarım kapsamında değerlendirilmesi: Mardin, Midyat örneği (Yüksek Lisans Tezi, Ankara Üniversitesi, 2020).

Özcan, K., (2005). Anadolu Türk Kent Tarihinden Bir Kesit: Selçuklu döneminde Anadolu- Türk Kent Model(ler)i, Yüksek Lisans Tezi, Selçuk Üniversitesi, Konya.

Özer, G. (2014). Restorasyon sonrası yeniden işlevlendirilmiş geleneksel Harput evlerinde ekolojik değerlendirme, Yüksek Lisans Tezi, Selçuk Üniversitesi.

Şenol, S. (2007). *Anadolu Türk Konut Mimarisinde Divriği Evleri*. Sivas: Sivas Valiliği İl Kültür ve Turizm Müdürlüğü Yayınları.

Türkmenoğlu Bayraktar, N. 2011, Sürdürülebilir Mimarlık Bağlamında geleneksel mimaride ekolojik yaklaşımlar, *Güney Mimarlık,* Dosya, 6, 19-22, Adana.

Akşehir Belediyesi, (2012). *Akşehir Belediyesi Taşınmaz Kültür Varlıkları Envanteri.* Mevlana Kalkınma Ajansı.

UNI EN 16096 -European Standard on Conservation of cultural property - Condition survey and report of built cultural heritage, 2012.

Authors' Photo Archive, Konya, 2018-2021.

MSc. Architect Aynur DUYSAK MANKIR

E-mail: mim.aynurmankir@gmail.com
Educational Status: MSc Architect
License:
Degree: MSc Architect
Doctorate:
Professional experience: Historic Preservation

Assoc. Prof. Dr. Gülşen DİŞLİ

E-mail: disli001@umn.edu
Educational Status: Assoc. Prof. Dr.
License:
Degree: PhD
Doctorate:
Professional experience: Historic Preservation

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-5

Conservation and Reuse of Lighthouses: An Example of the İğneada Lighthouse

Assoc. Prof. Dr. Gül YÜCEL [1]

[1]Istanbul Rumeli University, Faculty of Architecture, Department of Architecture, Haliç Campus, İstanbul/Türkiye.
ORCID: 0000-0003-3722-6479
E-mail:gul.yucel@rumeli.edu.tr

Citation: Yücel, G. (2023). Conservation and Reuse of Lighthouses: An Example of the İğneada Lighthouse. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 5, 114-136. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Lighthouses are one of the important parts of maritime transportation. Some of the lighthouses, once an important navigational aid, are being reused with different functions. Although the history of lighthouses is quite old, the first lighthouses along the Turkish coast were established in 1856. A concession agreement was signed between the Ottoman Empire and the French to operate the lighthouses (KEGM, 2023; Nemlioğlu Koca, 2018; Zağra, 2016; Toroslu, 2008; Ay, 2000). This process, which continued under the "Directorate of Lighthouses Administration General Directorate," was completed in 1938 (KEGM, 2023). The service has continued under different institutions under the General Directorate of Coastal Safety since 2007. A total of 613 aids to navigation, including 487 light towers and 126 floating aids to navigation, are in service throughout Turkey (KEGM, 2022). In 2020, maintenance, repair and strengthening works were initiated for 98 lighthouses, five of which are historical (KEGM, 2022). A few examples of lighthouses, which have important landscape features in terms of their location in connection with their function, are historical. The lighthouses, which were initially powered by kerosene and later by acetylene gas, are now powered by electricity and the use of renewable energy has reached 80% (KEGM, 2022).

Lighthouses are grouped as directional, breakwater, directional offshore and coastal lighthouses according to location (Zağra, 2016, Toroslu, 2008). The most important distinguishing feature of the lighthouses is the

flash, the dark phase of the lighthouse, in some cases, the color of the light and the different forms of this arrangement (Zağra, 2016). According to the architectural features, lighthouses are built in two types: with and without lodging (Ay, 2000). The arrangement with lodging is determined by the type of lighthouse and the characteristics of the area where it will be installed. In most lighthouses with lodging, the lodging is integrated with the lighthouse tower and can be accessed from the lodging directly.

The historical lighthouses, operated by concession for a period on the Turkish coast and built in the mid-19th century, were constructed of masonry. In some of them, the lighthouse was built of steel. Kepez, Hoşköy and Bafra lighthouses are examples of steel lighthouses. Hoşköy lighthouse was specially brought from France as steel prefabricated construction and installed on site (KEGM, 2023).

The Directorate General of Coastal Safety, to which it is affiliated, has classified 28 lighthouses as historic in this context (KEGM, 2023). But according to literature there are more historical lighthouses (Table 1). Today, 102 original lighthouses (mostly guard houses) need to be registered (Başağaç & Bilgin Altınöz, 2018). A significant part of the historic lighthouses in Turkey were built in the second half of the 19th century. Antalya Taşlıkburnu Lighthouse is the highest example (227 m) above the sea. In some historic lighthouses, the lighthouse tower is made of steel. Most of The lighthouse towers are masonry with stone masonry, mostly 9-12 meters high. The examples built of steel are 20 meters high on average.

Table 1. The historical lighthouses in Turkey coasts (The table is prepared by the author (KEGM, 2023; Kalafat, 2022; Zağra, 2016; Ulutaş&Yurtseven, 2015; Uzun İrgin, 2015;Yerlikaya, 2011; Toroslu, 2008; Ay, 2000; Türk Ekonomi Bakanlığı, 1935).

	Lighthouse Name and Location	**Construction date**	**Height from sea level (m)**	**Lighthouse Height (m)**	**Construction Mat./ type**	**Reusing**
1	Bafra Lighthouse, Samsun	1880	25	22	Steel	
2	Sinop İnceburun Lighthouse	1863	26	9	Masonry	
3	Kerempe Lighthouse, Kastamonu	1885	82	8	Masonry	
4	Zonguldak Lighthouse	1908	53	9	Masonry	Cafe
5	Rumeli Karaburun Lighthouse, Istanbul		54	12	Concrete	
6	İğneada Lighthouse, Kırklareli	1866	44	8	Masonry	Cafe
7	Türkeli (Rumeli) Lighthouse, Istanbul (Tomb inside of it.)	1856	58	30	Masonry	
8	Anadolu Lighthouse, Istanbul	1856	75	20	Masonry	
9	Ahırkapı Lighthouse, Istanbul	1857	36	26	Stone masonry	
10	Fenerbahçe Lighthouse, Istanbul	1857	25	20	Masonry	
11	Yeşilköy Lighthouse (Ayastafonas) Istanbul	1856	23	16	Stone Masonry	Museum& restaurant
12	Yelkenkaya Lighthouse, İzmit	1896	20	8	Masonry	
13	Kababurnu Lighthouse, İzmit	1896-2007	15	12	Reconstruction	
14	Bozburun Lighthouse (Armutlu, Gardiyan Binali) Yalova	1902	76	9		
15	Marmara Ereğlisi Lighthouse Tekirdağ	1861	52	26	Steel	
16	Hoşköy Lighthouse (Hora Lighthouse) Tekirdağ	1861	50	20	Steel	
17	Gelibolu Lighthouse, Çanakkale	1856	34	9	Masonry	Park area
18	Kepez (Kanlıdere) Lighthouse Çanakkale	1936	10	10	Steel	

19	Mehmetçik Lighthouse, Eceabat Çanakkale	1856	50	25	Masonry	
20	Batıburnu (Bozcaada) Lighthouse Çanakkale	1861	32	20	Masonry	
21	Sivrice Lighthouse, Çanakkale,Ayvacık	1865	18	12		Library
22	Deveboynu Lighthouse Muğla, Datça	1931	104	9	Masonry	
23	Kızılada Lighthouse Fethiye,Muğla	1910	32	10	Masonry	Restaurant
24	Bodrum Batı Mendirek Lighthouse, Muğla	1880	9	6		Cafeteria
25	Taşlıkburnu Lighthouse (Gelidonya) Antalya-Kumluca	1936	227	9		
26	Alanya Lighthouse, Antalya	1880	209	6	Masonry	
27	Anamur Lighthouse, Mersin	1911	68	10	Masonry	
28	Mersin Lighthouse	1865	14	12	Masonry	
29	Karataş Lighthouse, Adana		38	10		
30	Akıncı Burnu Lighthouse, İskenderun,Arsuz	1933	109	5	Stone Masonry	
31	Şile Lighthouse (Kilya) İstanbul	1859	60	19	Stone Masonry	
32	Hopa Lighthouse	1935	23	12	Concrete	
33	Işıklı (Çarşıbaşı) Yoroz Burnu Lighthouse, Trabzon	1886	25	8	Masonry	
34	Çamburnu Vona Lighthouse, Ordu	1880	39	8	Masonry	Social center
35	İnebolu Lighthouse, Kastamonu	1863	38	9	Masonry	

1.1. Old Lighthouses and New Functions

Some of the lighthouses, which have an important place in maritime history, are nowadays being re-functionalized as other than a navigational aid. Lighthouses, which have an important potential, especially in terms of tourism, are in integrity with their surroundings due to their location. Besides their function in maritime transportation, in many countries of the world, historical lighthouses are opened for use

with different functions such as accommodation, museums and libraries. Many historical lighthouses in North America, Africa and New Zealand, especially in European countries, are used in tourism for accommodation purposes (Bookalighthouse, 2023; AIRBNB, 2023). There are examples where many lighthouses that continue to function actively or remain idle are re-functionalized as museums. In Turkey, historical lighthouses and their land are also rented for public use. Zonguldak lighthouse (1908) is protected as a national heritage site and used as a café (KGEM, 2023; Deniz Haber Ajansı, 2014). The lighthouse tower is surrounded by a transparent roof covering made of steel and glass. In general, the added glazed partition affects the perception of the lighthouse. In Turkey, the Hersek Dilburnu Lighthouse in Yalova and the Altınova lighthouses museum in Altınova are still in progress as museums for lighthouses dating back to different periods (Altınova Belediyesi, 2022). The preservation of lighthouses should be developed together with the lighthouse and its surroundings, the sea routes to which it is connected and the cultural heritage around it (Başağaç & Bilgin Altınöz, 2018). Although it is very important to reuse historical buildings by giving them a different function with structural reinforcement, spatial intervention decisions should be approached carefully during the restoration process (Ciritci, 2020). The additional structure or intervention that may be required within the scope of reuse during the conservation process should aim to use contemporary techniques and materials that are compatible with the historical texture and, at the same time, distinguishable in terms of design and materials, avoiding imitation (Zağra Öz & Taş, 2022).

Intervention in the historic environment requires joint work with related disciplines (Zağra Öz & Taş, 2022).

Each lighthouse is a unique building in its own right with its surrounding, its relationship to geography and historical events (Stovanovic, Seric & Perisic, 2019). The historical lighthouses may reuse as cultural institutions such as library, museum, art gallery or art activities such as biennale, and workshops for the preservation. The reusing type may increase service needs and therefore interventions on historical buildings during reusing for preservation.

2. Material and Method

In this study, the reuse of historical lighthouses within the scope of conservation is discussed through İğneada Lighthouse. In the conservation process, the effects of the new function on the building, its original function and its surroundings were evaluated. A qualitative research method was used in the study, and the data obtained from the literature review and the survey, restitution and restoration projects and reports of İğneada Lighthouse prepared by Zağra (2016) were evaluated. İğneada Lighthouse, which is located in Limanköy in the Demirköy District of Kırklareli Province, was evaluated together with its location and its immediate surroundings and evaluated within the scope of conservation. The evaluation discusses the location and history of the lighthouse, architectural features, structural status and the proposed use within the restoration project's scope.

2.1. İğneada Historical Lighthouse Location and History

İğneada Lighthouse is located in Limanköy, Demirköy, Kırklareli. It was built in 1886. It is the last lighthouse in the west along the Black Sea coast of Turkey. İğneada lighthouse is established on an area of 7200 m² with the lighthouse, lodging and outbuildings (Figure 1, 2).

Figure 1. İğneada Lighthouse location map (Location map prepared on Google Earth by Gül Yücel)

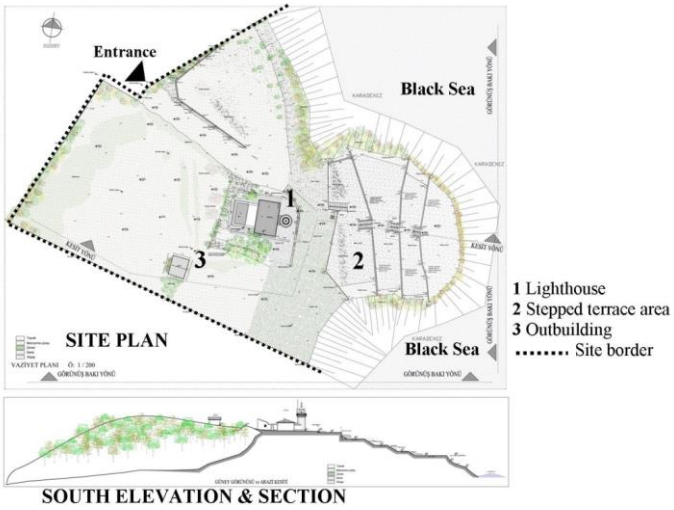


Figure 2. İğneada Lighthouse site plan and section (survey drawing) (Zağra, 2016).

The land slopes relatively little towards the Black Sea. Due to the lighthouse's location, it also serves as a border lighthouse for sailors from Bulgaria. It has two separate functions as a border and route lighthouse. The lighthouse is 44 meters high from the sea and 10 meters high. The same family has operated the lighthouse for four generations (Zağra, 2016). It is a tradition to pass lighthouse operations from father to son or woman (Zağra, 2016). The İğneada Lighthouse is registered as a monumental building with the decision dated 20.10.1993 and numbered 175 by Edirne Cultural and Natural Heritage Preservation Board.

There is a masonry construction system, single-story lodging, and a lighthouse. During the Balkan War, the lighthouse was damaged by a shell from the sea. For this reason, the upper part of the lighthouse with marble stairs in the damaged part was demolished.

It has a similar plan typology with Gelibolu lighthouse, Bozcaada Batıburnu lighthouse, Mehmetçik lighthouse, Hoşköy lighthouse, Kerempe lighthouse and İğneada lighthouse (Zağra, 2016).

2.2. İğneada Historical Lighthouse Architectural Features

İğneada Lighthouse is built on an area of approximately 19x11m. The open rectangular courtyard consists of a toilet, kitchen and storage room (31m²) on the western side and a two-room lodging (75m²) on the eastern side with a corridor leading directly to the lighthouse (Figure 3, 4).

The entrance to the lantern and the lodging is through the door on the south side of the courtyard. Rainwater is directed to the water well located on the right side of the kitchen entrance with a device made from

the roof gutter system on the exterior of the kitchen, and excess water is discharged from the diverter to the outside.

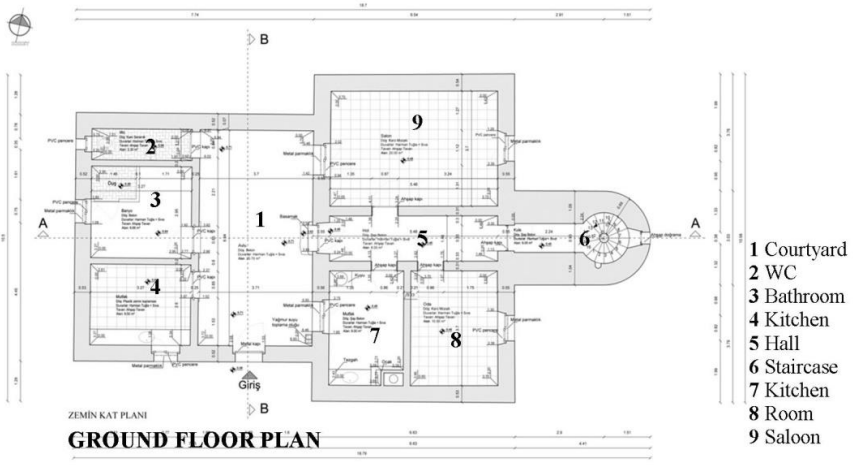


Figure 3. İğneada Lighthouse ground plan (survey drawing) (courtesy of H. Çiğdem Zağra Öz), (Zağra, 2016).

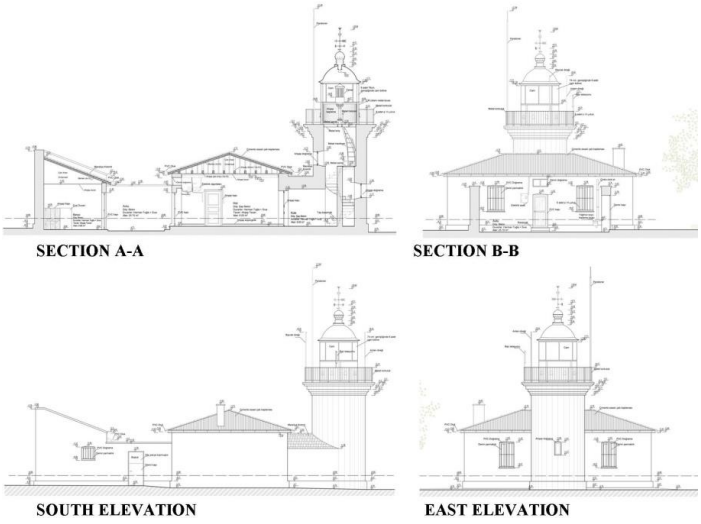


Figure 4. İğneada Lighthouse section and elevation (survey drawing) (courtesy of H. Çiğdem Zağra Öz) (Zağra, 2016)

In the lodging section, there is an entrance to the lantern at the end of the center hall. On the corridor, various devices are used to light the lantern and spare electric batteries. At the end of the corridor, the tower is climbed by a round staircase whose steps rise counterclockwise. The height of the lighthouse tower from the ground is approximately 10 meters. The marble staircase in the tower continues with a steel staircase after a certain point. The steps have a triangular cross-section, 71cm long, fan-shaped and 19cm high, emerging from a round center with a 15cm radius and a hole in the middle. The platform where the lantern lamp is located is also made of marble and consists of sliced pieces. During the Balkan Wars, the marble steps and the upper platform of the tower were destroyed. They were replaced with a sailor-type metal staircase and a metal upper platform.

At the top, the platform with the lantern lamp is also metal, about 2.5m². In the center is a new technology lantern lamp powered by an electric bulb. The dome-shaped upper cover and cylindrical-shaped double-walled walls are completely formed by joining iron plates with rivets.

The exterior of the building is plastered and painted white (Figure 5). All windows have original iron-fixed bars. The body wall of the building is stepped forward at a height of 30-40cm from the ground, and this smooth line runs around the entire building without interruption.

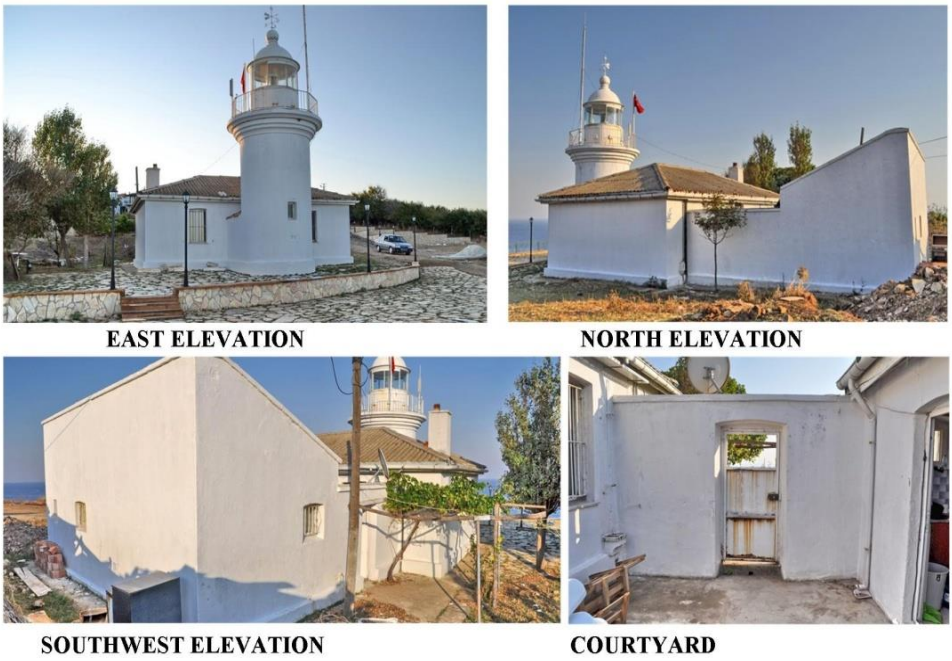


Figure 5. İğneada Lighthouse general exterior views (courtesy of H. Çiğdem Zağra Öz), (Zağra, 2016).

All exterior walls are 50 cm thick, and the interior partition walls are 30 cm thick. Threshing bricks were used on the walls of the masonry building. The section, including the service areas forming the eastern border of the courtyard, has a shed roof, while the lodging section has a hipped roof type. The top part of the lighthouse is metal and covered with a dome made of metal material. The connecting corridor between the tower and the lodging house has a vaulted ceiling and a gable roof.

An outbuilding within the lighthouse garden is approximately 18 m southwest of the main building. The building used as a stable for the horses allocated to the lighthouse keepers was later used as a warehouse.

The entrance to the single-story 5m x 4m warehouse is from the sea direction. The warehouse has a window in the sea direction (east facade). The top of the building has a gable roof, and no ceiling covering material is underneath. Marseille-type tiles were used on the roof like the other building. The walls of the masonry building are 25 cm thick. The walls are unpainted inside and outside and plastered.

After the lighthouse keeper responsible for the operation and maintenance of the lighthouse moved out of the lighthouse lodging, the lighthouse and its land were rented by the General Directorate of Coastal Safety to a tourism operator operating in the region. During this process, the ground around the lighthouse was covered with natural slate stone with grass. The steep slope descending towards the sea in front of the lighthouse was terraced by filling. The surfaces of the terraces prepared with reinforced concrete retaining walls were partially covered with natural slate, but the construction still needed to be completed. The eastern part of the land bordering the Black Sea is a cliff with an average height of 40-50 meters and is a rocky area gradually descending towards the sea. Recently, new neighborhood has developed around the lighthouse, and the western border of the lighthouse land has been opened for housing.

2.3. İğneada Lighthouse Restoration Project

The restoration of İğneada Lighthouse was evaluated based on the restoration application project and report prepared by Zağra (2016). It is envisaged that İğneada lighthouse, owned by the General Directorate of Coastal Safety, will be opened to tourism by leasing and organized as a

day facility. In the restoration project, the lighthouse structures, its garden and the sloping hillside area facing the sea are envisaged to be used differently. The lighthouse, its garden, and the sloping area on the Black Sea coast, which borders the lighthouse, are organized for public use within the project's scope (Figure 6).

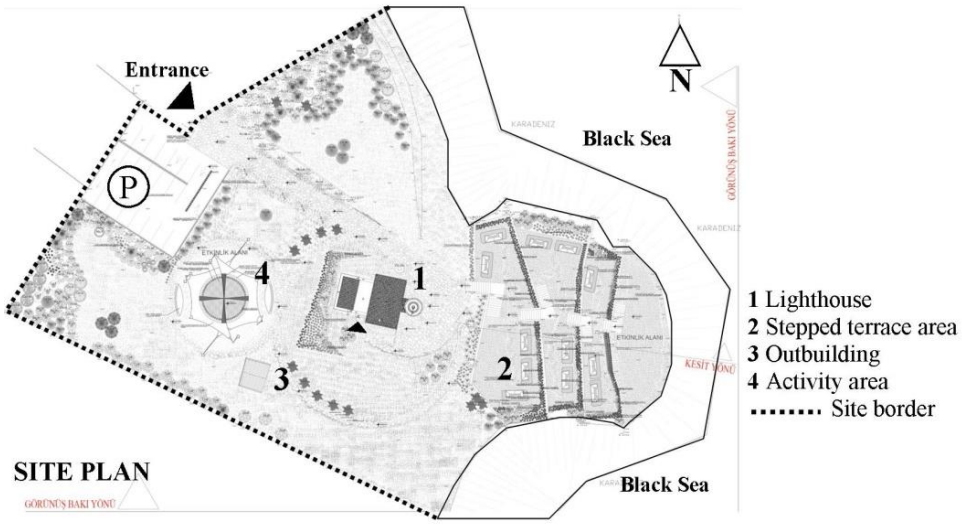


Figure 6. İğneada Lighthouse site plan (restoration Project) (courtesy of H. Çiğdem Zağra Öz) (Zağra, 2016)

The restoration project report states that the ownership and cadastral structure have been preserved. At the same time, since the lighthouse continues to be in active use, it is aimed to preserve its original physical structure and to use materials compatible with the environment.

Located on the Black Sea coast, the lighthouse is situated close to the sea at the end of a rectangular-shaped land with its narrow side bordering the sea. The arrangements on the land include temporary structural

arrangements. An activity area with a steel structure and suspended tensioning system was designed on the land behind the lighthouse. On the steep purpose section between the lighthouse and the Black Sea, terraces with pergolas and terraces stepping towards the sea are designed with wooden materials. But to preserve the natural form of the steep slopes, the open terrace arrangement is removed in revised restoration project (Figure 7).

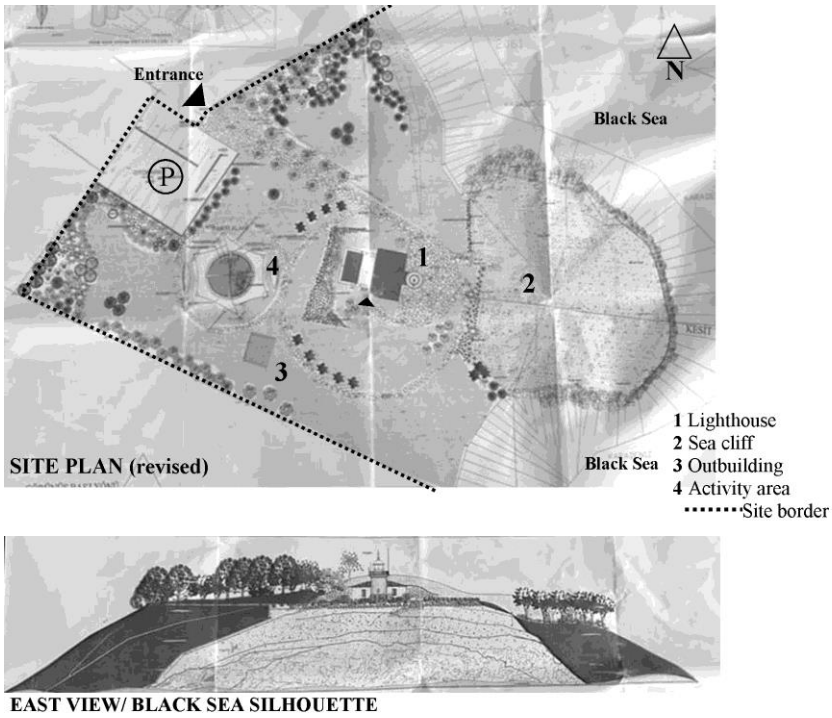


Figure 7. İğneada Lighthouse site plan and Black Sea silhouette (revised restoration Project) (courtesy of H. Çiğdem Zağra Öz) (Zağra, 2016)

The lighthouse lodging structure includes a café-like indoor lounge and service areas. It is aimed to preserve the existing green texture of the land where the lighthouse is located, and slate stone paved hard floors with

grass joints are planned at the necessary points. The parking lot area arranged at the entrance of the lighthouse land is foreseen as stone parquet. A suspended-tension system multi-purpose activity area will be built with a temporary structure within the lighthouse land.

3. Findings and Discussion

Due to its location, İğneada lighthouse forms a characteristic environment with its landscape. It is the last lighthouse in the Black Sea on the western border of Turkey. It has an important function as a border and route lighthouse.

The architecture of the lighthouse and lodging is in the same typology, with some examples built in other regions during the period it was built. Therefore, it is in integrity with other lighthouses reflecting the same period in different geographies. In the conservation process, the understanding of reuse should be in integrity.

The lighthouse and its land will be reused as a tourism business by leasing. A multi-purpose activity area to be constructed with a temporary structure on its land and gradual open terraces on the steep slope descending to the Black Sea coast in front of the lighthouse are revised in restoration project as natural form. The lighthouse lodging is reserved for a café and service area. The immediate surroundings of İğneada Lighthouse are under construction. This situation differs from the lighthouse's location when it was built and its relationship with the environment. As a cultural asset to be protected, its original building should be preserved in integrity with the environment.

The approach to preserve the existing topography and plant structure of the land in the restoration project is appropriate. The removal of the terracing of the steep slope towards the sea, protect the continuity of the Black Sea coastal form in integrity. The active operation of the lighthouse may also pose a problem regarding the additional lighting that the use will bring.

The lighthouse and the related guard building (lodging) are limited in terms of its planning and volumetric characteristics in terms of its use as a closed area open to the public. For this reason, the user capacity can be reduced with an arrangement where the interior of the building can be walked around in place of the seating areas in the foreseen closed areas.

Due to the location of İğneada lighthouse, it is in integrity with the surrounding Floodplain Forests, İğneada Beach, Demirciköy foundry and rich natural and cultural assets. It is important to protect this integrity.

Although it is positive that lighthouses are open to the public with their unique geography, uses that prioritize the recognition of lighthouses as cultural heritage should be envisaged. The types of use that bring intensity or require service may lead to an increase in interventions to the physical structure of the lighthouse. Intensive use may increase wear and tear on the structure and its surroundings.

The minimum service area requirement should be selected for cultural heritage marine buildings that integrate with their location, such as lighthouses. Programs that prioritize the experience of the lighthouse and its relationship with the natural texture and the sea should be prioritized.

4. Conclusion and Suggestions

Throughout history, lighthouses have been important landmarks for maritime transportation and landmarks on land. The number of historical lighthouses is quite small among the hundreds of lighthouses along the Turkish coast. Each of them is an important landscape element in its location and surroundings. Aside from their original function, they should be open to new uses that will make them feel their maritime importance if opened to the public. Heavy service and user burdens accelerate physical wear and tear and have a negative impact on their memorial value.

Historical lighthouses are important symbolic structures for the maritime history of the country. They are important symbols of the building and operation culture of the period in which they were built. It should be aimed to transfer its original structure to future generations. In the process of new use, the building and its surroundings should be preserved as they are, and the necessary service areas should be designed separately from the lighthouse and with a temporary structure in size and material that will not affect the lighthouse and its surroundings.

The relationship of historical lighthouses with the surrounding texture should be planned, and their immediate surroundings should be protected with green areas. Especially the area around the lighthouses away from the settlements should be planned comprehensively, and the construction that may be brought by tourism should be controlled.

Acknowledgements and Information Note

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

Ethics Committee approval was not required for the study.

“Liman Feneri” (İğneada Lighthouse) restoration project which is accepted Edirne Cultural Heritage Preservation Regional Board dated 29.03.2016 and with its decision no 3053 was prepared by restorator Dr. architect Hatice Çiğdem Zağra with her team.

The author wish to thank Assistant Prof. Dr. H. Çiğdem Zağra Öz, for offering her İğneada Lighthouse Project Archive.

Author Contribution and Conflict of Interest Declaration Information

There is no conflict of interest.

.

References

Ay R. (2000). İstanbul Boğazındaki deniz fenerleri ve tahlisiye yapılarının koruma ve değerlendirilmesi (Master's thesis). Yıldız Teknik Üniversitesi, Fen Bilimleri Enstitüsü, İstanbul.Ulusal Tez Merkezi Accessed from database, Access Address (20.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

AIRBNB. (2023). Rental lighthose. Access Address (20.07.2023): https://www.airbnb.com.tr/rooms/3242609?source_impression_id=p3_1689244946_Pc17r1M8CzuWey0I

Altınova Belediyesi. (2022) Deniz Fenerlerinde dünyada ilk, (10. 10.2022). Access Address (20.07.2023): https://altinova.bel.tr/haberler/deniz-fenerlerinde-dunyada-ilk

Başağaç, Ö. & Bilgin Altınöz, G. (2018). An important maritime heritage: Lighthouses on the Aegean coast of Turkey, *TÜBA-KED Türkiye Bilimler Akademisi Kültür Envanteri Dergisi*, (17), 141-159. DOI: 10.22520/tubaked.2018.17.008

Bookalighthouse. (2023). Book a lighthouse. Access Address (20.07.2023): https://www.bookalighthouse.com/

Ciritci, İ. (2020). İstanbul 19. yüzyıl konut yapılarını koruma ve yeniden kullanım kararları: Fatih ilçesi, Emin Sinan Mahallesi'nde otel örneği, *Mimarlık ve Yaşam*, 5 (2), 335-359. DOI: 10.26835/my.743893

Deniz Haber Ajansı. (2014). Zonguldak'taki tarihi deniz feneri restorant oldu. 29.07.2014. Access Address (20.07.2023): https://www.denizhaber.net/zonguldaktaki-tarihi-deniz-feneri-restorant-oldu-haber-56815.htm

Kalafat, A. (2022). Çamburnu Feneri Turizm'de Vona'yı Aydınlatacak. Ordu Olay Gazetesi, 12.05.2022. Access Address (20.07.2023): https://www.orduolay.com/haber/14654092/cam-burnu-feneri-turizmde-vonayi-aydinlatacak

Kıyı Emniyeti Genel Müdürlüğü, KEGM. (2022). Kıyı Emniyeti Genel Müdürlüğü. 2022 Yılı Sektör raporu. Access Address (20.07.2023):

https://www.kiyiemniyeti.gov.tr//Data/1/Files/Document/Documents/Nk/9D/x7/Vb/Sekt%C3%B6r%20Raporu%202022.pdf

Kıyı Emniyeti Genel Müdürlüğü, KEGM. (2023). Tarihi Fenerler. Access Address (20.07.2023): https://www.kiyiemniyeti.gov.tr/seyir_yardimcilari

Nemlioğlu Koca, Y. (2018). Denizlerimizi Aydınlatanlar: Türkiye'de Fenerlerin Kuruluşu ve Gelişimi. Journal of ETA Maritime Science, 6(2), 103-117.

Stovanovic, A. J., Seric, N.& Perisic, M. (2019). Marketing management of the lighthouse heritage in the function of strengthening the national identity on the global tourism market: stone lights (Croatia) and the art of the lighthouses (Montenegro). Proceedings of the Faculty of Economics in East Sarajevo. Year 2019, Issue 19, pp. 83-98. DOI: 10.7251/ZREFIS1919083J

Toroslu, M.V. (2008). *Denizciye Gözkırpan Sevdalar, Deniz Fenerleri*. İzmir: Dev Yayıncılık.

Türk Ekonomi Bakanlığı. (1935). *Türk Kıyılarında Deniz Fenerleri Radyofarlar Sis Düdükleri*. Ankara: Ekonomi Bakanlığı Neşriyatı. Access Address (20.07.2023): https://archives.saltresearch.org/handle/123456789/206672

Ulutaş, S. & Yurtseven, E. (2015). Denizlerin sessiz tanıkları fenerler: Mersin deniz feneri. *Dokuz Eylül Üniversitesi Denizcilik Fakültesi Dergisi*, 7 (1). DOI: 10.18613/deudfd.04176

Uzun, İrgin,T. (2015). "Sinop Boztepe Feneri sis düdüğü ve memur evi", Poster Sunuşu, Docomomo2015, Türkiye, Bolu Abant İzzet Baysal Üniversitesi, Özet Kitapçığı, s.145. Access Address (15.08.2023): http://www.docomomo-tr.org/etkinlikler/poster-sunuslari/turkiye-mimarliginda-modernizmin-yerel-acilimlari-xi-2015-bolu

Yerlikaya, O. (2011). İzmit Körfez'indeki tarihi deniz fenerlerinin mimari analizi ve koruma önerileri (Master's thesis). Gebze İleri teknoloji Enstitüsü Mühendislik ve Fen Bilimleri Enstitüsü, Gebze.Ulusal Tez Merkezi Accessed from database, Access

Address (20.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Zağra, H. Ç. (2016). İğneada Deniz Feneri rölöve, restitüsyon ve restorasyon projeleri, Zağra Mimarlık Arşivi. TC Kültür ve Turizm Bakanlığı, Edirne Kültür Varlıklarını Koruma Bölge Kurulu'nun 29.03.2016 tarih/ 3053 sayılı kararıyla kabul edilmiştir.

Zağra Öz, H. Ç. & Taş, Ş. (2022). Tarihi çevrede yeni yapı tasarımı ve uygulama projesi. *Mimarlık, Planlama ve Tasarım Alanında Yeni Trendler*. Ed. Alper Çabuk, Hüseyin Samet Aşıkkutlu. İzmir: Duvar Yayınları.,247-263.

Assoc. Prof. Dr. Gül YÜCEL

E-mail: glyucel@gmail.com

Educational Status

Bachelor of Architecture: Istanbul Technical University, Architectural Faculty, Department of Architecture, 1985

MSc: Istanbul Technical University, Institute of Science and Technology, Department of Architecture, Building Technology, 1988

Doctorate: Yıldız Technical University, Institute of Science and Technology, Department of Architecture, İstanbul 2009

Professional experience:

Assist. Prof. Dr., Tekirdağ Namık Kemal University, (2013)

Assist. Prof. Dr., İstanbul Gelişim University, (2015-2021)

Assoc. Prof. Dr., İstanbul Rumeli University, (2022-)

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-6

Sustainability of Erzurum Cultural Heritage Values: Transformation from Madrasah to Museum

Assoc. Prof. Dr. Funda KURAK AÇICI[1]

[1] Karadeniz Technical University, Faculty of Architecture, Interior Design Department, Kanuni Campus, Trabzon/Türkiye.
ORCID 1: 0000-0003-2592-2266
E-mail: fundaacici@gmail.com

Interior Architecture Beyza TEMUR[2]

[2] Karadeniz Technical University, Faculty of Architecture, Interior Design Department, Kanuni Campus, Trabzon/Türkiye.
ORCID 2: 0000-0003-0030-9465
E-mail: beyzaatemurr@gmail.com

Citation: Kurak Açıcı, F. & Temur, B. (2023). **S**ustainability of Erzurum Cultural Heritage Values: Transformation from Madrasah to Museum. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 6, 137-174. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

It is known that the geography where cities are located, the people living in this geography, and the traditions that make up their way of life are all effective in the development of cities into what they are today. The identity of the city is formed by the cultural heritage values that bring all these components together. The buildings that constitute the city, which are cultural heritage values, provide information about the history of the city and convey information about the city to future generations. Having information about the past of the city and its inhabitants depends on the survival and sustainability of cultural heritage values.

Turkey, which is considered to be the center of civilizations and connects Anatolia and Europe, is home to many works of cultural heritage. Erzurum, which is one of these cities located in the east of Turkey, was deemed worthy to be included in the scope of the study in terms of cultural heritage values that formed its historical texture. The fact that the madrasahs in the city have survived to the present day and are still in use constitutes the main fiction of the study.

On the sustainability of cultural heritage and re-functioning, the city of Erzurum with its madrasas is discussed.

2. Cultural Heritage and Sustainability

Cultural heritage reflects the way of life of the country and the creativity of its people. Cultural uniqueness, artistic and scientific achievements are part of the common heritage of people and contribute to cultural accumulation (Avcı & Memişoğlu, 2016; Kurak Açıcı & Konakoğlu,

2018). Our cultural heritage, which includes many fields from art to science where cultural diversity is ensured, is divided into two tangible and intangible cultural heritages, while tangible cultural heritage is divided into two immovable and movable cultural heritages (Kurak Açıcı & Konakoğlu, 2018). Cultural heritage, which is handled more comprehensively and accepted worldwide, has been categorized by conventions and legal texts determined by UNESCO, ICOMOS, and similar international heritage protection institutions (ISMEP, 2014; Negiz, 2017; Temur & Kurak Açıcı, 2022, p. 600) (Table 1).

Table 1. Types of cultural heritage (Negiz, 2017; Temur & Kurak Açıcı, 2022, s. 600)

Cultural Heritage	**Tangible Cultural Heritage**		**Intangible Cultural Heritage**	**Underwater Cultural Heritage**	**Natural Heritage**
	Movable Cultural Heritage	**Immovable Cultural Heritage**			
	Paintings, sculptures, Coins, Manuscripts, Archaeological Artefacts	Monuments, Archaeological Sites, Historic Urban Textures	Oral Traditions, Performing Arts, Rituals, etc.	Shipwrecks, Underwater Ruins, and Cities	Physical, Biological, and Geological Formations such as Natural Sites, Cultural Landscapes

Cultural heritage within the historical texture contributes to deep-rooted cultural accumulation despite its diversity. Immovable cultural heritages that resist time, especially in the architectural environment and on the stage of history, have an important place in the memory of cities. By serving historical perceptions, they bear witness to the historical environment. Those that resist time and manage to survive provide

integrity through their interaction with nature. Architecture interacting with nature needs change, transformation, and renewal over time. The historical environment, which is located within the architectural environment and constitutes the city's identity, is the most important memory store that provides details from the past to the present. It is necessary to fill the structural and spatial gaps in order to ensure sustainability in the historical environment that shows the roots of the city. Urban continuity and sustainability are ensured through re-functionalization for various reasons (Yalçınkaya, 2021).

Sustainability is a concept that aims to eliminate or minimize the negative effects of growth and development on the environment during development by establishing a balance (Sarkım, 2007; Üçer, 2011; Kurak Açıcı, 2021). It is usual for some values to change in the life process. Change is a process that cannot be prevented, but when the conditions, dimensions, and consequences of change are analyzed, it is necessary to protect and sustain some values at the point of change (Beyhan & Ünügür, 2005; Kurak Açıcı & Köse, 2017). When sustainable architectural approaches are examined in a general framework, it is observed that they are addressed from many perspectives. It is necessary to obtain a sustainable texture to protect the values that take place in the history of cities and form their essence. Especially many values representing cultural heritage are damaged or even destroyed due to physical destruction (Kurak Açıcı, 2020). For this reason, architecture, which has existed for centuries in the historical texture and the region where it is located, and which is a means of transferring the cultural

values of the people and the city to future generations, should be handled with a sustainable approach. For civilizations, cities, and people, the traces of the places where they live ensure the continuity of cultural heritage (Kurak Açıcı, 2021). In the continuity of the historical environment, the proper re-functioning, especially in immovable cultural heritage, carries the cultural heritage to the future by giving meaning to the environment in which it exists. The cultural accumulation it contains is transferred from the past to the future with the concepts of conservation and preservation.

3. Re-functionalization in Historic Buildings

Historical buildings stand out as one of the most important values of cultural heritage. They need to be restructured due to changing cultural, physical, and social conditions over time. Evaluating the current state of these heritages and loading them with a function suitable for the conditions of age increases the importance of the value they carry (Sezgin, 2020). New functions undertaken in accordance with the current conditions of historical buildings carry the cultural values of the region to the future. In this way, the sustainability of these heritage values, which offer sections from history and shape cultural perceptions in human-space interaction, is ensured in terms of their protection and survival. Cultural heritage values included in this scope, especially historical buildings, should be approached with care and the original value of the building should be preserved with conscious interventions. At this point, the concept of restoration comes to the fore. Restoration is carried out in order to preserve the historical document and aesthetic value with the

least intervention to a historical building. There are several types of restoration. These are Reintegration, Transportation, Cleaning, Reconstruction, Renovation, and Rehabilitation (Kocabıyık, 2014; Kurak Açıcı & Konakoğlu, 2019). Refunctioning is one of them, and the identity value added to the historical building through re-functioning allows the building to preserve its symbolic and artistic value as well as its physical texture (Kurak Açıcı & Konakoğlu, 2019). The new identity given to the heritage value through re-functioning enhances the attractiveness of cultural heritage (Chen et al., 2016; Karapınar & Barakazı, 2017).

The museum function stands out as the most effective function in cases of re-functionalization in historical buildings. The fact that the historical building is an artistic work in itself and that exhibition objects are emphasized in spatial fiction increases the building-space interaction. In contemporary uses brought about by the conditions of the day, the museum function is especially recommended in madrasah buildings. Madrasahs, which establish a cultural link between the past and the future and are a cultural heritage that should be preserved, are religious and living immovable monumental buildings that have lost their function over time. Since madrasas are monuments, they belong to the first-degree building group and should be preserved exactly as they are (Yaldız, 2003; Ertaş, 2017). Within the scope of conservation and preservation, impressive functional solutions and spatial organizations seen in the transformations from madrasah to museum are of great importance in

terms of transferring the building to the future and ensuring its sustainability.

4. Material and Method

The study consists of three stages. In the first stage, a comprehensive literature review on the subject was conducted. By compiling the information in the literature, the issues of cultural heritage, sustainability, and re-functioning in historical buildings were addressed. In the second stage, Erzurum, which has a rich cultural heritage due to being home to many different civilizations, was selected as a sample. The "Çifte Minareli Madrasa" and "Yakutiye Madrasa", which have a long history and were identified as immovable registered assets in Erzurum, were selected as the study field. The historical buildings were observed on-site and analyzed by photography method. In the third stage, inferences were made based on all the data obtained and documented. Within the scope of the re-functionalization of cultural heritage, evaluations were made and recommendations were developed for the transformation from madrasah to museum (Figure 1).

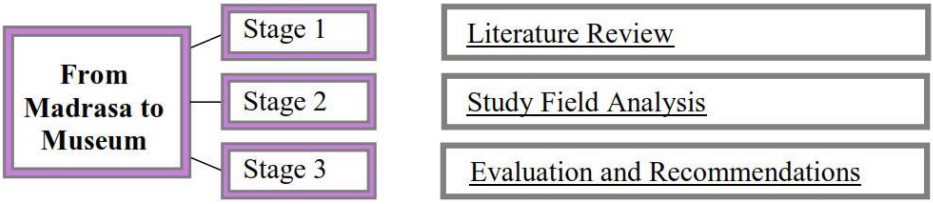


Figure 1. General structure of the study

5. Findings and Discussion

Cultural heritages, “Çifte Minareli Madrasa” and “Yakutiye Madrasa”, which are registered immovable assets located in the city of Erzurum, were analysed. The re-functionalization of historical buildings, which have an important place in the historical texture and urban memory, in the transformation from madrasah to the museum was examined. The sustainability of the cultural heritages that have been re-functionalized as museums has been evaluated within the scope of conservation and preservation.

5.1. Cultural Heritage Values of Erzurum

Buildings with cultural heritage value are important living memory spaces in the context of the city, which are a tool that carries the traces of history to the present day. These buildings come to the fore in terms of keeping the history of the city alive and providing continuity (Yalçınkaya et al. 2019; Kurak Açıcı & Konakoğlu, 2019). Erzurum, which is called the pearl of the East, has rich cultural heritage values due to its location. The city plays an important role in the identity of the country with the different civilizations it hosts. The attractiveness of the city's history brings the city to the forefront of cultural tourism and makes it an important destination (Temur & Kurak Açıcı, 2022). The city has been home to twenty-four different civilizations in history as it is a transit route of Eastern and Western civilizations and one of the important junctions of the historical Silk Road (Coşkun, 2008; Kayserili, 2016). The fact that the city has served as a bridge between different

civilizations throughout history allows its rich cultural accumulation to have a deep-rooted historical past (Figure 2).

1890s 1900s 1940s

Figure 2. Old Erzurum photographs

Historical buildings are among the cultural heritage values that shape the urban texture. In the city; there is a variety of historical cultural heritage such as barns, monumental tombs, bedesten, mosques, fountains, khans, baths, castles, gates, caravanserais, churches, mansions, bridges, pavilions, large tombs, madrasahs, and redoubts. Most of the historical buildings have survived to the present day and their sustainability is ensured within the scope of protection and preservation. In addition to their original functions, they are brought into cultural tourism with new functions such as museums, exhibitions, and commercial centers. In Erzurum, madrasahs are particularly prominent in terms of re-functioning. With their structural features, madrasahs attract attention in the urban texture thanks to their different functions and arranged space structures. As witnesses of history, they carry the traces of the past to the future with both the building itself and its spatial arrangements. "Çifte Minareli Madrasa" and "Yakutiye Madrasa", which have an important place in the historical fabric of Anatolia, are registered immovable cultural assets of Erzurum (Figure 3-b).

(a) (b)

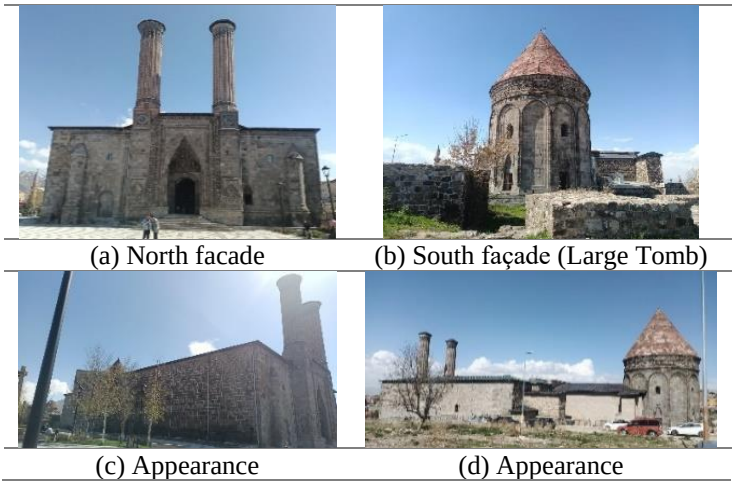
Figure 3. Sections from Erzurum culture and tourism map

The purpose of keeping historical buildings alive is to bring them back to today's conditions and society and make them useful to society and ensure the benefit of the environment (Engin, 2009; Zorlu et al. 2018; Temur & Kurak Açıcı, 2022). In line with this purpose, "Çifte Minareli Madrasah" and "Yakutiye Madrasah", which are important heritage values in the memory of the city, have assumed the function of a museum, which is one of the most effective methods of conservation and preservation today. Historical madrasahs are one of the most important cultural heritage values of the city and an important destination within the scope of cultural tourism.

5.1.1. Çifte Minareli Madrasa

Erzurum Çifte Minareli Madrasa, also known as "Hatuniye Madrasa" because of its two minarets. The historical building, which is the largest madrasa with iwan type from the Seljuks in Anatolia, is located in the city center. Since the madrasah, which reflects the Seljuk architectural style, has not been completed, there are no inscriptions or deeds of foundation on it. As a common consensus on the date of construction, it is suggested that it was built by Hundi Hatun, the daughter of the Seljuk

sultan Alaeddin Keykubat, on Hijri 651 (Miladi 1253) (Beygu, 1936; Yetkin, 1952, p. 46). The architectural structure built towards the end of the XIIIth century is a masterpiece of cultural heritage value with its relief decoration, stone engravings, and tile decorations (Figure 4).



(a) North facade (b) South façade (Large Tomb)

(c) Appearance (d) Appearance

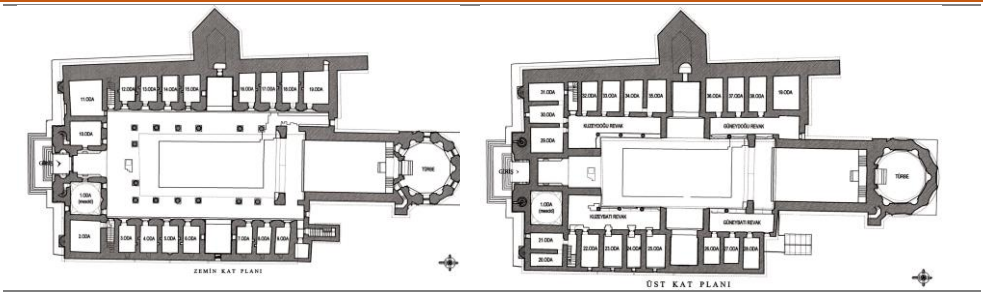
Figure 4. Erzurum Çifte Minareli Madrasa façade views (Temur, 2023)

The madrasah, which has two floors, four iwans, and an open courtyard, is approximately 35x46 m. in dimensions. The courtyard measures 26x10 m. and is surrounded by porticoes on four sides. The square space west of the entrance of the madrasah, which has 19 rooms on the ground floor and 18 rooms on the top floor, is thought to have been used as a masjid in its time. The porticoes of the ground floor rest on thick columns, most of the columns are cylindrical and four of them have octagonal bodies. The rooms inside are covered with barrel vaults (Aydın, 2012, p. 102). Herbal motifs are predominant in the adornments. Palmette and Rumi motifs are in harmony. On the western part of the crown gate, there is a double-headed eagle, the symbol of the Central Asian Turks, two snakes with

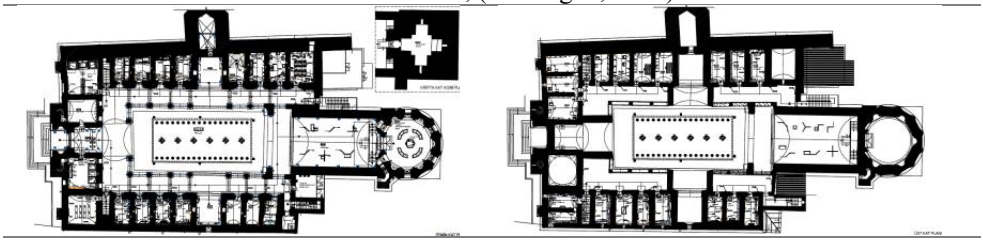
open mouths, and a tree of life with sliced leaves (Yakutiye District Governorship, 2023). The minarets on both sides of the crown gate of the historical building made of cut stone are made of bricks. The body of the minarets rising on a stone pedestal up to the level of the crown gate has sixteen slices and is decorated with tiles (Bakırer, 1981; Ayduslu, 2013, p. 61) (Figure 5).

Figure 5. Çifte minareler-taç gate (Temur, 2023)

Çifte Minareli Madrasa (Hatuniye Madrasa), one of the symbols of Erzurum, is known to have undergone some repairs in the 1930s, was turned into a museum in 1943, and underwent a restoration in 1976. It underwent a comprehensive restoration between 2011 and 2014. The madrasa was re-functionalized within the scope of the protection and preservation of cultural heritage (Figure 6).



Madrasa Plans, (Gündoğdu, 2015)



Foundation Works Museum Plans, (Tetrazon Yapı Tasarım, 2019)

Ground Floor Top Floor

Figure 6. Plans of the Çifte Minareli Madrasa

When the courtyard is crossed from the portal in the madrasah, which is decorated with rich ornaments, it is seen that it is surrounded by porticoes on three sides. One side extends towards the tomb with a long and wide vault. There are rooms between the porticoes (Yörükoğlu, 1978) (Figure 7).

(a) South façade courtyard

(b) North façade courtyard

(c) West façade rooms

(d) East façade rooms

Figure 7. Madrasa courtyard (Temur, 2023)

The sustainability of the historical madrasah, which functions as a museum and exhibition hall, is ensured. The historical building, which is an important cultural heritage, was repaired by Murad IV, one of the Ottoman sultans. The madrasah was used as an " armoury" for a short time and was used as the "Erzurum Museum" between 1942 and 1967. Today it is used as a museum and exhibition hall (Yakutiye District Governorship, 2023). In the rooms where madrasah education used to be given, artefacts from Seljuk and Ottoman times are exhibited. The exhibition areas, where artefacts are preserved from the past to the present and information about old lives are presented to local and foreign visitors within the scope of cultural tourism.

In the rooms in Figure 8, there is information about the madrasa masjids of the Seljuk period and how life in the madrasa was like in the Seljuk and Ottoman periods (Figure 8).


Room-1 Seljuk Madrasa masjids


Room-3 Education and life in a Madrasa

Figure 8. Room (1-3) exhibition areas (Temur, 2023)

In Room 4, the visuals of which can be found in Figure 9, there is information on musical treatment methods and medical scholars in Darussifa. It is explained which instruments were used during musical treatment and which methods were used. In the exhibition areas in Room 5, information about the almshouses in Anatolia is presented, and in the exhibition area where information on how food services were provided, the items used in food services are exhibited (Figure 9).

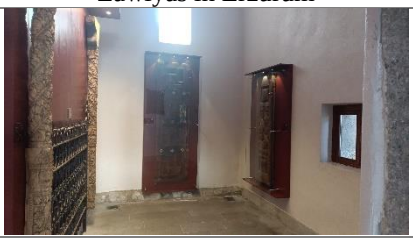

Room-4 Darussifa- Medical Scholars

Oda-5	Almshouses in Anatolia food service

Figure 9. Room (4-5) exhibition areas (Temur, 2023)

Room 6 in Figure 10 provides information about the zawiyas (small rooms) in Erzurum, which are places where collective religious worship is held. Historical door samples are exhibited in Room 7 (Figure 10).

Room-6	Zawiyas in Erzurum



Room-7	Gate-Guardrail Examples

Figure 10. Room (6-7) exhibition areas (Temur, 2023)

In the exhibition areas in Figure 11, there are old written artifacts in room 9. The artifacts in specially protected exhibition stands are presented to visitors. In Room 10, Erzurum Tepsi Minare-Historical Clock Tower is introduced and examples of old wall clocks and pedestal clocks are presented (Figure 11).



Room-9	Manuscripts


Room-10	Clock Tower introduction-Clock works

Figure 11. Room (9-10) exhibition areas (Temur, 2023)

Room 11 in Figure 12 introduces İbrahim Hakkı Hz. of Erzurumlu, a Turkish Sufi, sociologist, scholar, and author of Marifetname. Room 12 contains religious written works (Figure 12).


Room-11	Ibrahim Hakki of Erzurum



Room-12	Religious Written Works

Figure 12. Room (11-12) exhibition areas (Temur, 2023)

In Room 13 in Figure 13, Ottoman-period prayer rugs and candlesticks are displayed in glass-sheltered exhibitions. Woven carpets and rugs are exhibited in Room 14 (Figure 13).

Figure 13. Room (13-14) exhibition areas (Temur, 2023)

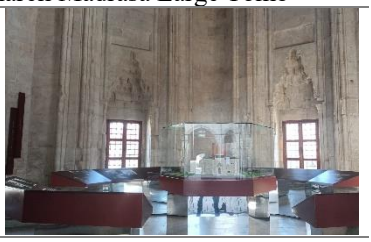
In Room 15 in Figure 14, the Ottoman period woven rugs, carpets, prayer rugs, and paintings are exhibited. Room 16 contains information on Ottoman sanjaks (Figure 14).

Room-16 Ottoman sanjaks

Figure 14. Room (15-16) exhibition areas (Temur, 2023)

There is a crypt in the large tomb located on the south façade of the historical madrasah. On the top floor (first floor) of the crypt located on the ground floor, there are exhibition stands where information about the process of the historical madrasah from the past to the present is presented. While the model of the historic madrasah is located in the exhibition area, the exhibition stands also include historical photographs of the madrasah in the archive of the General Directorate of Foundations and overview information about the construction history of the madrasah (Figure 15).

Çifte Minareli Madrasa Large Tomb



First floor Madrasa introduction

Ground Floor | Crypt

Figure 15. Çifte Minareli Madrasa tomb area (Temur, 2023)

The top floor of the madrasa consists of four sections. The stairs leading to the four separate sections lead to the exhibition areas. There are 6 rooms in the first section located on the right side (west façade) at the entrance. From the circulation area surrounded by open porticoes, the courtyard of the building can be observed from the gallery. The rooms with exhibitions are accessed through small doors (Figure 16).

Figure 16. First section circulation area (Temur, 2023)

In the rooms in the first section, there are exhibition areas on "Ottoman Period and Before, Republican Period, Erzurum through the Eyes of Travelers, Foundation Mapping, Foundation Culture Expression, Simultaneity in History" (Figure 17).

Figure 17. Exhibition areas (Temur, 2023)

There are 3 rooms in the second section on the west façade. The stands in the rooms contain information about the display works on the subject. The exhibition sections in the second section are accessible from the stone stairs inside the building separately from the first section (Figure 18).

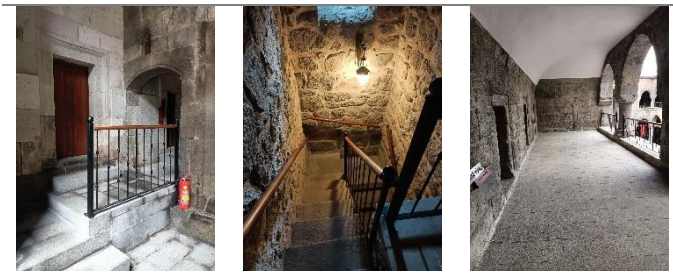


Figure 18. Second section circulation area (Temur, 2023)

In the second section, there are exhibition areas themed “Mosque Documentary, Mosque Architecture, Erzurum Mosques” (Figure 19).

Figure 19. Exhibition areas (Temur, 2023)

There are 3 rooms in the third section located on the eastern façade of the building. These areas are accessed by glass stairs added later outside the building (Figure 20).

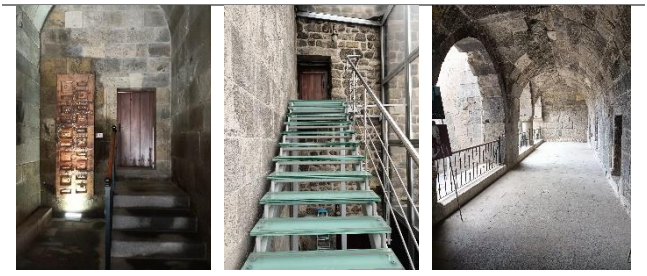


Figure 20. Third section circulation area (Temur, 2023)

In this section, there are exhibition areas themed “Bedesten, Water Structures” (Figure 21).

Figure 21. Exhibition areas (Temur, 2023)

The fourth section on the top floor is the administration area. There are 7 rooms in this area. These rooms include offices, workshops, and storage.

5.1.2. Yakutiye Madrasah

Yakutiye Madrasa was built in 710 AH (1310-1311 AD), during the reign of the Ilkhanid ruler Olcaytu Hüdabende by Emir Cemaleddin Yakut, and the Yakutiye Madrasa was built in the 14th century. It is a single-story and iwan type in Anatolia. The plan of the madrasah, which is one of the largest, is rectangular with a domed courtyard and four iwans (Akçay, 1966; Temur & Kurak Açıcı, 2022). The main dimensions of the madrasa are 33. 4 x 24. 4 m. The main dome is 7. 75 m square and 12. 9 m high. The large tomb on the east façade is about 12 x 6 m. There are minarets 21. 2 m tall in the northwest and 8. 25 m tall in the southwest (Kocaman, Kazaz, & Okuyucu, 2018, p. 38). The structure has been debated by many researchers, and it has been discussed whether it has double minarets or not. A. Ş Beygu stated that the section on the north façade of the building is not a minaret but a tomb, while İ. K Konyalı and many other researchers have concluded that the round body in this section may have collapsed for some reason and that it remains from the minaret (Çam, 1988) (Figure 22).

(a) Western façade (c) East façade (Large Tomb)

(b) Appearance (d) Appearance

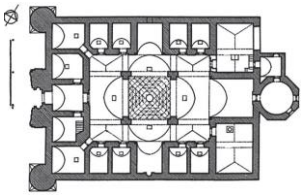
Figure 22. Yakutiye Madrasah Façade views (Temur, 2022)

The entrance gate of the historical madrasah is protruding from the building. There are Seljuk figures on the entrance door (Figure 23).

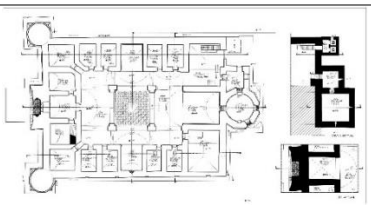
Figure 23. Yakutiye Madrasah entrance gate (Temur, 2023)

The historical building was used as a madrasah, military warehouse, and foundry, and has been serving as a museum since 1994 with the restorations it has undergone. Various repair works were carried out by the General Directorate of Foundations in 1967 and 1973, and by the Ministry of Culture in 1991 (Eskici, Akyol & Kadıoğlu, 2006, p.167). In 1995 and finally in 2005, the restoration project was realized and today it

welcomes its visitors as “Erzurum Yakutiye Madrasah Turkish Islamic Arts and Ethnography Museum” (Figure 24).



Plan of Yakutiye Madrasah, (Kuran, 1969; Şaman Doğan, 2021)



Plan of Erzurum Yakutiye Madrasa Turkish Islamic Art and Ethnography Museum, (A Proje, 2005)

Figure 24. Plans of Yakutiye Madrasah (Temur & Kurak Açıcı, 2022)

The entrance door leads to a vaulted vestibule. Inside the building, the vault at the entrance combines with a higher vault and there are columns with carved bodies (Akçay, 1966) (Figure 25). The courtyard has a dome and iwan. It is the largest monumental example with a closed courtyard among the madrasas of its period (Şaman Doğan, 2019).

Figure 25. Yakutiye Madrasah Courtyard (Temur, 2022)

In the rooms where madrasah education was given in the past, artefacts that have been preserved until today and have a place in the history of the city are exhibited. The areas where women's clothing, coins, Seljuk ceramics, and traditional Erzurum house life are exhibited are shown in Figure 26.

Room-2/Women's Clothing Section

Room-3/Coin Section

Room-4/Seljuk Ceramics

Iwan /Traditional Erzurum House Life

Figure 26. Exhibition Areas (Temur, 2022)

Figure 27 shows the exhibition areas where the instruments of the religious order and weighing used in the past, writing instruments and seals, madrasa education, and weaving looms are exhibited (Figure 27).

Room-6/ Religious order and weighing instruments section

Room-7/ Writing instruments and seal section

Room-10/Madrasa education section

Room-11/Weaving loom section

Figure 27. Exhibition areas (Temur, 2022)

Figure 28 shows the areas where metal objects, masjids, men's jewellery and accessories, and Ottoman war tools are exhibited (Figure 28).

Room-12/Metal objects section

Iwan-13/Masjid section

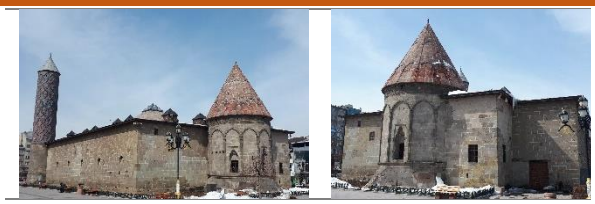
Room-14/ Men's jewellery and accessories section

Room-15/ Ottoman war instruments section

Room-16/ Women's jewellery section

Figure 28. Exhibition areas (Temur, 2022)

The mausoleum, located on the eastern façade in the area with a dodecagonal body, is shaped like a conical cone and decorated with stone border elements. While the madrasa has characteristics of the Ilkhanid period and the 14th century, the mausoleum has characteristics of 13th-century Seljuk art. Therefore, it is thought that the large tomb was built by Seljuk artisans (Akçay, 1966; Temur & Kurak Açıcı, 2022) (Figure 29).



Yakutiye Madrasa Large Tomb

Figure 29. Yakutiye Madrasah tomb area (Temur, 2022)

5.2. Evaluation of the Transformation from Madrasa to Museum

Erzurum Çifte Minareli Madrasa and Yakutiye Madrasa are being evaluated within the scope of re-functionalization. These buildings, which were used as madrasas in the past, are now used as museums where special artifacts are exhibited. Interventions were tried to be made while preserving the authenticity of the historical buildings. The crypt areas were not intervened and were protected. With minimal intervention to the buildings, the areas that were used as rooms in madrasah education in the past are now equipped with exhibition areas. The exhibition areas are made of transparent materials and the special artifacts exhibited are protected. Wood and glass materials were generally used in the exhibition areas, and areas with information about the exhibitions were formed. In addition to the circulation areas, wood, glass, and metal materials were used in contrast to the stone materials used throughout the buildings.

6. Conclusion and Suggestions

Within the scope of the re-functionalization of historical buildings, it is generally accepted that the madrasahs are suitable for the museum function both in terms of the textures they are located in the urban

memory and their current plan analysis. These heritages, which bear witness to the historical process of the city, are works that exhibit the cultures and architectural styles of the periods in which they were built with their locations. Ensuring the sustainability of historical buildings from the past to the future without harming them is possible by keeping these values alive. With small interventions in the existing spatial organization of such buildings, their suitability for museum function can be enabled.

“Erzurum Çifte Minareli Madrasah and Yakutiye Madrasah” are good examples of the transformation from madrasah to museum. These two historical buildings, which have been assigned the function of museums at the point of protection, preservation, and re-functioning, are centrally located in the city of Erzurum and carry the traces of the civilizations that existed in the city to the present day. They reflect the traces of past cultures, urban identities, lifestyles, handicrafts, and architectural styles.

In the overall context, “Erzurum Çifte Minareli Madrasa and Yakutiye Madrasa”, which are preferred in accordance with their building function, are important destinations in sustainable cultural tourism. These buildings, which have been transformed from madrasahs into museums, attract the attention of the people of the city and many local and foreign tourists.

Acknowledgments and Information Note

In this book chapter, the Erzurum Provincial Directorate of Culture and Tourism, Erzurum Directorate of Survey and Monuments, which

provided access to the restoration projects of “Yakutiye Madrasah”, and A PROJE Engineering Architecture Müş. Construction. San. and Tic. A.Ş. are thanked for their contributions.

The General Directorate of Foundations, which provided access to the “Çifte Minareli Madrasah” restoration projects, and Tetrazon Yapı Tasarım ve Prodüksiyon Tic. Ltd. Şti. are thanked for their contributions.

Author Contribution and Conflict of Interest Declaration Information

The e-book section complies with national and international research and publication ethics. Ethics Committee approval was not required for the study. All authors contributed equally to the e-book section. There is no conflict of interest.

References

A PROJE Mühendislik Mimarlık Ofisi Arşivi. (2022). Ankara.

Akçay, İ. (1966). Yakutiye Medresesi, *Vakıflar Dergisi*, 6 (1966): 146-152.

Avcı, M. & Memişoğlu, H. (2016). Kültürel miras eğitimine ilişkin sosyal bilgiler öğretmenlerinin görüşleri. *İlköğretim Online*, 15(1). doi: 10.17051/io.2016.58630. Access Address (10.07.2023): https://dergipark.org.tr/tr/pub/ilkonline/issue/25780/271858

Aydın, T. (2012). Erzurum Çifte Minareli Medrese taş süsleme örnekleri, *Karamanoğlu Mehmetbey Üniversitesi Sosyal ve Ekonomik Araştırmalar Dergisi*, 2012 (2) , 101-107. ISSN: 1309-9132. Access Address (12.07.2023): https://dergipark.org.tr/tr/pub/kmusekad/issue/10213/125514

Ayduslu, N. (2013). Erzurum Çifte Minareli Medrese'nin çinileri ve özellikleri / The tiles of Erzurum Double Minaret Madrasah and their characteristics. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 17 (2), 59-76. Access Address (12.07.2023): https://dergipark.org.tr/en/pub/ataunisosbil/issue/2833/38543

Bakırer, Ö. (1981). *Selçuklu Öncesi ve Selçuklu Dönemi Anadolu'da Tuğla Kullanımı*, Ankara: Cilt I: Metin.

Beygu, A. Ş. (1936). (Defteri mufassal, Erzurum C. 1 S. 83-86). *Erzurum Tarihi Anıtları, Kitabeleri*. İstanbul: Bozkurt Basım Evi.

Beyhan, Ş. G. & Ünügür, S. M. (2005). Çağdaş gereksinmeler bağlamında sürdürülebilir turizm ve kimlik modeli, *İtü Dergisi,* Cilt:4, Sayı:2, 79-87. Access Address (12.07.2023): https://core.ac.uk/reader/230193650

Chen, C. C., Lai, Y. H. R., Petrick, J. F. & Lin, Y. H. (2016). Tourism between divided nations: An examination of stereotyping on destinationimage. *Tourism Management*, 55, 25-36.

Coşkun, O. (2008). İç göçler açısından Erzurum ilinin analizi*, Doğu Coğrafya Dergisi*, 20, 239-266. Access Address (10.07.2023): https://dergipark.org.tr/tr/pub/ataunidcd/issue/2444/30994

Çam, N. (1988). Erzurum'da Yakutiye Medresesi ile ilgili bazı mülahazalar, *Vakıflar Dergisi*, XX, 289-310. Access Address (13.07.2023):https://acikerisim.fsm.edu.tr/xmlui/bitstream/handle/11352/262/%c3%87am.pdf?sequence=1&isAllowed=y

Engin, E. (2009). Tarihi yapıların yeniden kullanımında iç mekâna etkilerin incelenmesi için bir yöntem önerisi; İstanbul endüstri yapıları örneği (Doktora Tezi), Karadeniz Teknik Üniversitesi, Mimarlık Fakültesi, Trabzon. Access Address (13.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=mwA33FeIcZnbgwr_5Y9Pwg&no=tW2gbejnGXd34vVd0_aNZA

Ertaş, Ş. (2017). Konya Akşehir Taş Medresesinin taş eserler müzesine dönüşümü. *Journal of Architectural Sciences and Applications*, 2(2), 1-17. Online ISSN: 2548-0170. doi: 10.30785/mbud.332873. Access Address (14.07.2023): https://dergipark.org.tr/tr/download/article-file/390740

Erzurum Vakıflar Bölge Müdürlüğü, Erzurum Çifte Minareli Medrese Vakıf Eserleri Müzesi, teşhir tanzim projesi (2019), Tetrazon Yapı Tasarım Prod. Tic. Ltd. Şti. Ofis Arşivi. (2023). İstanbul.

Eskici, B., Akyol, A, A & Kadıoğlu, Y, K. (2006). Erzurum Yakutiye Medresesi yapı malzemeleri, bozulmalar ve koruma problemleri, *Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi,* 46, 1, 165-188. Access Address (14.07.2023): https://dergipark.org.tr/tr/pub/dtcfdergisi/issue/66773/1044278

Gündoğdu, H. (2015). Erzurum Çifte Minareli Medrese'nin son restorasyonunda ortaya çıkan yeni bulgular, *Vakıf Yıllığı Restorasyon Dergisi*, Sayı.10, 36-44. ISSN: 2146-3166. Access Address (09.06.2023): https://isamveri.org/pdfdrg/D03505/2015_10/2015_10_GUNDOGDUH.pdf

Ismep, (2014). Kültürel mirasın korunması. Access Address (10.07.2023): https://www.ipkb.gov.tr/wp content/uploads/2018/10/ISMEP6_KC3BCltC3BCrelMirasC4B1nKorunmasC4B1.pdf

Karapınar, E. & Barakazi, M. (2017). Kültürel miras turizminin sürdürülebilir turizm açısından değerlendirilmesi: Göbeklitepe Ören Yeri. *Güncel Turizm Araştırmaları Dergisi,* 1 (1), 5-18. Access Address (10.07.2023): https://dergipark.org.tr/tr/pub/guntad/issue/30023/324121

Kayserili, A. (2016). *Kültürel Miras Turizmi Açısından Bir Değerlendirme: Bir İpekyolu Şehri Erzurum*, Uluslararası İpekyolu Kültür Diyaloğu Sempozyumu, 5-6 Mayıs 2016, Erzurum-Türkiye, (s. 265-269). Access Address (11.07.2023): https://www.researchgate.net/publication/309311134_KULTUREL_MIRAS_TURIZMI_ACISINDAN_BIR_DEGERLENDIRME_BIR_IPEKYOLU_SEHRI_ERZURUM

Kocabıyık, Y. (2014). Yeniden işlevlendirme kavramı ve bu kapsamda itü taşkışla binasının incelenmesi (Yüksek Lisans Tezi), Maltepe Üniversitesi, Fen Bilimleri Enstitüsü, İstanbul. Access Address (13.07.2023): https://openaccess.maltepe.edu.tr/xmlui/bitstream/handle/20.500.12415/4144/373768.pdf?sequence=1&isAllowed=y

Kocaman, İ., Kazaz, İ. & Okuyucu, D. (2018). Tarihi Erzurum Yakutiye Medresesi'nin yapısal davranışının incelenmesi, *Dokuz Eylül Üniversitesi-Mühendislik Fakültesi, Fen ve Mühendislik Dergisi,* Cilt 20, Sayı 58, doi: 10.21205/deufmd. 2018205804. Access Address (10.06.2023): https://dergipark.org.tr/tr/download/article-file/587382

Kurak Açıcı, F. (2020). From power plant to museum: a sustainable transformation. *Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering*. 21(1): 147-154. Access Address (10.06.2023): https://doi.org/10.18038/estubtda.581994.

Kurak Açıcı, F. (2021). Tarihi kent dokusunun sürdürülebilirliği, b1-koruma-kimlik, *Doğu Karadeniz Yapılı Çevre Tartışmaları*, Bölüm II, Editör: Prof. Dr. Dilek Beyazlı, Lıvre De Lyon, Mimarlık Bilimleri, Lyon, 2021, (25-48). ISBN: 978-2-38236-220-4. Access Address (10.06.2023): https://www.researchgate.net/

publication/357269239_Tarihi_Kent_Dokusunun_Surdurulebilirligi

Kurak Açıcı, F., & Konakoğlu, Z. (2018). Kültürel mirasın izlerini kent müzelerinde sürmek: Trabzon müzeleri. *Journal of History Culture and Art Research*, 7(3), 668-682. doi:http://dx.doi.org/10.7596/taksad.v7i3.1524. Access Address (13.06.2023):http://kutaksam.karabuk.edu.tr/index.php/ilk/article/view/1524

Kurak Açıcı, F. & Konakoğlu, Z. N. (2019). Tarihi yapıların yeniden işlevlendirilmesi: Trabzon mimarlar odası örneği. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 28 (2), 214-224. doi: 10.35379/cusosbil.587899. Access Address (14.06.2023):https://dergipark.org.tr/tr/pub/cusosbil/issue/48591/587899#article_cite

Kurak Açıcı, F. & Köse, O. (2017). Trabzon/Ortahisar Fatih Büyük Camii'nin bölgedeki turizm bağlamında yarattığı sürdürülebilir gelişim, *Yalvaç Akademi Dergisi*, 2 (1), 33-44. Access Address (14.06.2023):https://dergipark.org.tr/en/pub/yalvac/issue/32621/334851

Kuran, A. (1969). *Anadolu Medreseleri*, Ankara: Cilt 1.

Negiz, N. (2017). Kentlerin tarihsel sürdürülebilirliğinde kültürel miras: önemi ve değeri üzerine düşünmek, *Akademia Sosyal Bilimler Dergisi*, 2017 Cilt 1, Sayı 3, 159-172. Access Address (14.06.2023):https://dergipark.org.tr/tr/pub/adibd/issue/56413/787570

Sarkım, M. (2007). Sürdürülebilir turizm kapsamında turistik ürün çeşitlendirme politikaları ve Antalya örneği (Doktora Tezi), Dokuz Eylül Üniversitesi, Sosyal Bilimleri Enstitüsü, İzmir. Access Address (15.06.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=_t89nGTXJc5ygQVndo1W-Q&no=MT-cTuSdaQbyfZv-ECbMVA

Sezgin, A. (2020). Tarihi yapılara müze işlevinin verilmesi kapsamında Tokat (Arastalı Bedesten) Müzesi örneği. *Unımuseum*, 3 (2), 87-95.

Online ISSN: 2651-3714. Access Address (10.06.2023): https://dergipark.org.tr/tr/download/article-file/1333536

Şaman Doğan, N. (2019). Anadolu Selçuklu Medreseleri ve Darüşşifalarında türbe. *Belleten*, 83(297), 519-554. doi: 10.37879/belleten.2019.519. Access Address (12.07.2023): https://dergipark.org.tr/tr/pub/ttkbelleten/issue/52435/687622#article_cite

Şaman Doğan, N. (2021). Erzurum'un Sembolü İki Medrese: Çifte Minareli/ Hatuniye ve Yakutiye Medreseleri, Cengiz Han ve mirası, Hacettepe Üniversitesi, doi: 10.53478/TUBA.2021.035. Access Address (13.07.2023): https://www.tuba.gov.tr/files/yayinlar/bilim-ve-dusun/Cengiz%20Han%20ve%20Mirasi/TUBA-978-605-2249-76-5_Ch16.pdf

Şekil 2 (a): Erzurum 1890'lar. Access Address (09.05.2023): http://www.eskiturkiye.net/1845/erzurum-1890lar#lg=0&slide=0

Şekil 2 (b): Eski Erzurum 1906. Access Address (09.05.2023):

http://www.eskiturkiye.net/3165/eski-erzurum-1906#lg=0&slide=0

Şekil 2 (c): 1940 'larda Erzurum. Access Address (09.05.2023): http://www.eskiturkiye.net/3481/1940larda-erzurum#lg=0&slide=0

Şekil 3 (a-b): Erzurum Kültür ve Turizm Haritası. Access Address (09.05.2023): https://erzurum.ktb.gov.tr/Resim/418730,sehir-haritasijpg.png?0

Temur, B. & Kurak Açıcı, F. (2022). Bir kültürel miras değeri: Erzurum Yakutiye Medresesi Türk İslam Eserleri ve Etnografya Müzesi. *Journal of Architectural Sciences and Applications*, 7(2), 598-614. Online ISSN: 2548-0170. doi: 10.30785/mbud.1143226. Access Address (08.05.2023): https://dergipark.org.tr/tr/pub/mbud/issue/73692/1143226

Temur, B. (2022). Kişisel Fotoğraf Arşivi.

Temur, B. (2023). Kişisel Fotoğraf Arşivi.

Üçer, N. (2011). Tarihi dokuların sürdürülebilirliğinde turizm kaynaklı değişimlerin etkileri: Kuşadası Dağ ve Camii-Kebir mahalleleri

örneği. (Yüksek Lisans Tezi), Dokuz Eylül Üniversitesi, Fen Bilimleri Enstitüsü, İzmir. Access Address (11.07.2023): https://acikerisim.deu.edu.tr/xmlui/handle/20.500.12397/7989

Yakutiye Kaymakamlığı, Çifte Minareli Medrese. Access Address (09.05.2023): http://www.yakutiye.gov.tr/cifte-minareli-medrese

Yalçınkaya, Ş. (2021). Tarihi çevrede "yeni": Cephanelik ek binası, B1-koruma-kimlik, *Doğu Karadeniz Yapılı Çevre Tartışmaları*, Bölüm III, Editör: Prof. Dr. Dilek Beyazlı, Lıvre De Lyon, Mimarlık Bilimleri) Lyon, 2021, (s. 49-71). ISBN: 978-2-38236-220-4. Access Address (09.06.2023): https://www.ktu.edu.tr/dosyalar/cevreuam_6d124.pdf

Yalçınkaya, Ş., Kurak Açıcı, F. & Faiz Büyükçam, S. (2019). Tarihi çevrede yeni yapı tasarımı ve Daniel Libeskind. *Uluslararası Karadeniz Kıyı Şeridi Ülkeleri Sempozyumu – II*, Samsun, 2019, 189-200. Access Address (09.06.2023): https://www.researchgate.net/publication/335224218_Tarihi_Cevrede_Yeni_Yapi_Tasarimi_ve_Daniel_Libeskind

Yaldız, E. (2003). Konya'daki medrese yapılarının yeniden kullanım koşullarına göre değerlendirilmesi (Yüksek Lisans Tezi), Selçuk Üniversitesi, Fen Bilimleri Enstitüsü, Konya. Access Address (09.04.2023):http://acikerisimarsiv.selcuk.edu.tr:8080/xmlui/handle/123456789/4444?locale-attribute=en

Yetkin, S. K. (1952). Çifte Minare. *Ankara Üniversitesi İlahiyat Fakültesi Dergisi*, *1*(2-3), 46-57. Access Address (06.06.2023): https://dergipark.org.tr/tr/pub/auifd/issue/60837/901076

Yörükoğlu, Ö. (1978). Çifte Minareli Medrese (Hatuniye) hafriyatı. *Vakıflar Dergisi*, 12, 235-245. Access Address (06.07.2023): https://acikerisim.fsm.edu.tr/xmlui/handle/11352/1255

Zorlu, T., Engin, H. E., İslamoğlu, Ö., Aras, A., Büyükçam, S., Küçük, P. B., Lüleci, S. (2018). Trabzon Sürmene Aksu Köyü kırsal mimari mirasının korunması ve turizm odaklı yeniden kullanımı, *Dicle Üniversitesi 1. Uluslararası Mimarlık Sempozyumu,* Çevreden Mekâna, Diyarbakır-Türkiye 4-6 Ekim, 841-865. Access Address

(06.05.2023):
https://www.researchgate.net/publication/350515448_Trabzon-Surmene_Aksu_Koyu_Kirsal_Mimari_Mirasinin_Korunmasi_ve_Turizm_Odakli_Yeniden_Kullanilmasi

Assoc. Prof. Dr. Funda KURAK AÇICI

E-mail: fundaacici@gmail.com

Educational Status:

License: Karadeniz Technical University, Faculty of Architecture, Department of Interior Architecture (1998-2002)

Degree: Karadeniz Technical University, Faculty of Architecture, Department of Interior Architecture (2002-2006)

Doctorate: Karadeniz Technical University, Faculty of Architecture, Department of Architecture (2006-2013)

Professional experience:

Lecturer: Karadeniz Technical University, Faculty of Architecture, Department of Architecture (2006-2013)

Lecturer Doctor: Karadeniz Technical University, Faculty of Architecture, Department of Architecture (2013-2015)

Assistant Professor: Karadeniz Technical University, Faculty of Architecture, Department of Architecture (2015-2018)

Associate Professor: Karadeniz Technical University, Faculty of Architecture, Department of Architecture (2018-).

Interior Architect Beyza TEMUR

E-mail: beyzaatemurr@gmail.com

Educational Status:

License: Karadeniz Technical University, Faculty of Architecture, Department of Interior Architecture (2015-2019)

Degree: Karadeniz Technical University, Faculty of Architecture, Department of Interior Architecture (2020-)

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-7

Evaluation of the Adaptive Reuse of Ottoman Hans in the Walled City of Nicosia: Büyük Han and Kumarcılar Han

Dr. Aliye MENTEŞ[1]

[1]Arkın University of Creative Arts and Design, Faculty of Design,
Department of Architecture, Girne, North Cyprus.
ORCID: 0000-0001-8747-8135
E-mail: aliye.yardimci@arucad.edu.tr

Citation: Menteş, A. (2023). Evaluation of the Adaptive Reuse of Ottoman Hans in the Walled City of Nicosia: Büyük Han and Kumarcılar Han. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 7, 175-215. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Safeguarding both tangible and intangible heritage is important. For those buildings that are no longer being used for their original function, accommodating new uses is a sustainable option. Within the context of cultural heritage conservation, adaptive reuse means altering historic buildings for new functions (Bullen & Love, 2011). It is a management method that is frequently used to enable the protection of historic structures that carry the value and character of the period they belong to, reflecting the social, cultural and economic growth of society (Orbaşlı, 2008; Feilden, 2003). Functional change is seen as a contemporary conservation approach for historical buildings (Ahunbay, 2009). An effective and sustainable conservation approach is made possible by keeping the structures that have lost their original functions alive with a function suitable for today's conditions (Latham, 2000).

In recent literature, the management of the continuity of the assets of a historic building and compatible change are issues which are often debated (Khalaf, 2020; Elsorady, 2015). Even though these issues are discussed in relation to the concept of integrity (Khalaf, 2020), related aspects also include heritage values, significance and authenticity (ICOMOS, 1999; Orbaşlı, 2008; Mason, 2002; Stovel, 2008). The literature provides a vast number of criteria for selecting appropriate/compatible new uses for heritage places and also for assessing these buildings after their adaptive reuses have been completed. Common criteria that many studies include are physical, environmental, social, cultural (or socio-cultural) and economic aspects that contribute to sustainable development goals (Yung

& Chan, 2012; Polat, Çahantimur, Atanur & Yıldız, 2019; Vehbi, Günçe & Iranmanesh, 2021).

Tourism is an important economic sector in the development of North Cyprus. The Walled City of Nicosia has a unique urban character and offers diverse heritage attractions both for local and foreign tourists who visit the area. Authorities and private investors have carried out a considerable number of restoration and adaptive projects, reusing important historic buildings within the traditional district of Selimiye Quarter. The restored buildings in Selimiye Quarter, where the Ottoman hans are located, are mainly reused for cultural, commercial and recreational purposes. Unfortunately, only three of 19 (two from the northern part and one from the southern part) could be preserved due to their long periods of disuse as well as the economic and political conditions of the country.

The historic Ottoman hans (caravanserais, traveling inns) in The Walled City of Nicosia area have significant architectural and historical merit and are worthy of protection. For many years, the key problem was finding funding sources as well as economically viable new uses for the hans which had lost their original functions (Menteş, 2006). However, two Ottoman Han buildings have experienced restoration and adaptive reuse: at Asmaaltı street, Büyük Han (in 2002) and Kumarcılar Han (in 2016). Although similar type of functions was given to both buildings, there seems to have been different results from their adaptive reuse evaluations. The aim of this chapter is to evaluate the adaptive reuse of the two hans

based on continuity and compatible change through the evaluation method explained in section 2.

1.1. The Significance and Decline of Ottoman Han Buildings in Nicosia

For the Middle and Near East, the Ottoman period marks an important style in architecture as well as in people's social lives. It introduced a different lifestyle and a new urban structure. Most people earned their living by being travellers. The merchants and the tradesmen travelled to different cities in Muslim countries to buy goods and sell products. This mobile style of living was encouraged by the silk routes that passed through the Ottoman provinces. This is how the han type of buildings developed (Bianca, 2000; Goodwin, 2003; Bağışkan, 2005; Bağışkan, 2009). Hans were designed to combine the functions of a hostel and trading centre, accommodate shopkeepers and merchants, provide storage for products, provide stables for the animals and provide a small mosque to practice religious rituals (Goodwin, 2003; Bağışkan, 2005; Bağışkan, 2009). Although there are private ones, hans are usually evkaf foundation (an Ottoman institution) buildings. Evkaf properties create a source of income for these pious foundations, which were established mainly for religious and social purposes (Yıldız, 2009; Bakshi, 2012; Sabri, 2013).

Cyprus is located at an important crossing point for the Mediterranean trade, and therefore a lot of merchants traveled to Cyprus to buy and sell products. The value of Cyprus to the Ottoman trade is evident as the very first Ottoman building in Nicosia is a han. All together at least 19 hans were built in Nicosia during the Ottoman reign (Bağışkan, 2009). As a common building type of Anatolia city centers, although they are of

different sizes, they mostly share similar architectural characteristics (Bağışkan, 2005; Bağışkan, 2009; Yıldız, 2009).

The city character and the lifestyle of people in Nicosia led to hans being very lively shopping and commercial centers, having social and economic significance both to the city and to the local people (Bağışkan, 2005; Bağışkan, 2009; Bakshi, 2012; Ertuğ, 2016). Different social groups of people ranging from villagers to foreign businessmen used these hans as their place of accommodation during their stay in the city (Bakshi, 2012; Yıldız, 2009).

Due to the requirements for modern living standards in terms of infrastructure, different kinds of buildings started to appear even in the traditional towns and cities. European style hotels appeared in the 19th century. At the end of the Ottoman period in 1878, the first European style hotel 'Locanda della Speranza' opened in Nicosia (Bağışkan, 2005; Bağışkan, 2009). In the British period similar types of hotels followed and subsequently the hans in the city started to lose their importance. Another important reason for the decline is the increasing motorisation between towns and villages in the first half of the 20th Century (Markides, 2012; Kiessel, Kurt & Mesda, 2016).

Over time, due to disuse and neglect, many of these buildings were either demolished or started being used for different purposes. Some of these historic Ottoman inns started to serve villagers coming to town, often with their animals. These people needed somewhere to leave their pack animals and load vehicles. The large open courtyards of the hans provided an appropriate space for these purposes. Besides this, the hans had another

new function, which was to accommodate bachelors or poor people living in the city (Bağışkan, 2005; Bağışkan, 2009). From 1955 onwards, the condition of the hans became more drastic due to unpleasant political environment in Cyprus. The division of Nicosia in 1974 has negatively impacted the value and physical conditions of these buildings (Bakshi, 2012).

1.2. Adaptive Reuse as a Method to Safeguard Cultural Heritage

According to Orbaşlı and Vellinga (2020) 'The reuse and regeneration of the existing built environment is simultaneously shaped by architectural, spatial, environmental, economic, and social contexts, while itself being part of a continuous cultural process' (p. xxii). When a building is no longer in use for its original function, it is possible to save it from abandonment or demolition by adapting it to a new use. Adaptive reuse is a management method to safeguard cultural heritage (Orbaşlı, 2008). There are economic, environmental and socio-cultural benefits that can make this option attractive to different parties. Within the context of the historic environment, new architectural interventions to a heritage building will bring it new life, while rediscovering its economic and social values (Fisher-Gewirtzman, 2016).

In order to select the most appropriate use for a historic building there are certain issues in the adaptation and decision-making processes to follow and be sensitive of. When evaluating the completed adaptive reuse projects, these issues also become benchmarks to check. Different scholars highlight the importance of the compatibility of the new use in terms of architectural qualities and key features of the building. These are usually

categorised as ‘physical aspects’ (Wang & Zeng, 2010; Fisher-Gewirtzman, 2016). Besides the physical considerations, adaptive reuse needs to consider the intangible values such as the social, cultural aspects and values of the historic fabric (Yildirim, 2012; Khalaf, 2020). Environmental factors and potential economic sources and opportunities are among other key factors to consider (Orbaşlı, 2020; Mısırlısoy & Günçe, 2016).

In recent debates about heritage conservation, there has been a shift from the “management of change” to “management of continuity” or “management of continuity and change” and most recently to “management of continuity and compatible change” (Khalaf, 2020). In this context, continuity is the sustainability of the values and attributes of a historic building. Furthermore, as it is important to sustain the significance of historic buildings while integrating contemporary interventions, compatible change will ensure the minimum adverse impact on the significance of the attributes and values of a historic building.

1.3. Adaptive Reuse Solutions and Hans in Literature

According to most of the factors listed above and especially as regards the physical aspects, in literature it is seen that the han type of building has mostly been converted to commercial purposes (shops, workshops), short term accommodation (boutique hotels), cultural centres (exhibition spaces, mixed-use), and gastronomy purposes, using the open courtyard space as a public meeting place (Menteş, 2006; Yildirim, 2012; Eklemezler & Adiloğlu, 2022;). Some examples in Turkey include historic cities with han districts such as Bursa hans, particularly Koza Han which has similar

architectural characteristics to Büyük Han and which was converted into a silk/cocoon centre. Bursa hans are mainly converted into commercial purposes as well as culture centres (Menteş, 2006; Polat, Çahantimur, Atanur & Tümer Yıldız, 2018; Eklemezler & Adiloğlu, 2022). In Safranbolu's historic centre, hans were reused for accommodation to address the need for bed and breakfasts for tourists. In Diyarbakır and Kastamonu, some of the hans were converted for local gastronomy purposes, providing breakfast places and tea houses in combination with a few shops, whereas the others were converted into boutique hotels. In Edirne, some hans were converted to commercial uses and some others to boutique hotels (Pehlivan, 2018 a,b). In Istanbul, many hans were converted to commercial uses (Menteş, 2006).

The architectural features of this type of building (a large open courtyard in the middle, surrounded by cell-type small rooms) restrict the function types of new uses. In terms of environmental aspects, hans are located in the dense commercial districts/streets and consequently there are many visitors and tourist flows in these areas. These buildings are easy to access by walking as they are within historic centres. Using this as an opportunity, many adaptive reuse decisions for these buildings are oriented towards touristic purposes.

As regards the socio-cultural aspects, local communities experience an attachment to the building both in terms of national identity and cultural heritage values, but also in terms of their daily routines and as part of their memories (Bakshi, 2012; Altan & Özsoy; 2017). These are significant intangible heritage assets of the hans.

As regards the economic aspects, as han type buildings have distinctive architectural features and it is usually expensive to fund restoration works, a viable income needs to be found to earn the investment back. A key aim of evkaf buildings is to use the resources and assets of the buildings to create a self-sustaining system for maintenance and the establishment of other necessary facilities (Sabri, 2013; Yıldız, 2009).

2. Materials and Method

The research method included three stages. (1) A literature review was conducted, focusing on: (a) adaptive reuse to safeguard cultural heritage, (b) adaptive reuse methods to safeguard hans and evaluation methods (c) remaining Ottoman hans in the northern part of Nicosia, (d) restored and reused Ottoman hans in the northern part of Nicosia. (2) Site visits and data collection were carried out in 2023, to investigate the current conditions of the han buildings. (3) As a result, two cases were selected to focus on (Büyük Han and Kumarcılar Han), as these were the only restored and reused Ottoman hans in the northern part of Walled City of Nicosia. Both cases were visited, and their conditions were evaluated in terms of adaptive reuse. This research was carried out using qualitative data collection methods with the author's observations. Based on the literature review, the adaptive reuse evaluation method followed for the two hans in Nicosia is shown below in Table 1.

Table 1. Adaptive reuse analysis and evaluation method for the hans in Nicosia (Author, 2023).

Adaptive Reuse Evaluation Method	
1.Understanding and Analysing the Historical Building and its surroundings **(Continuity of Original/Existing Assets- Management of Continuity)**	**Heritage Values, Significance, Authenticity and Integrity of the Historic Building should be understood and analysed.** After the re-use are these maintained? **Physical aspects**: Architectural typology, the capacity/volume, spatial aspects, materials, architectural elements and components. **Environmental aspects**: The location of the historic building and its surroundings. Urban context, accessibility, car parking facilities. **Socio-cultural aspects**: The community and the people who live/work/entertain in the area. The way of life of the people in the area, the way people think about the historic building, their attachment to the building. **Economic aspects**: Building's potential which may be used to generate an economic income, job creation and the revitalisation of the immediate area without harming the character of the building, funding sources, ownership (private/public).
2.The new proposed function's requirements	Identification of the new function's requirements. Facilities, services, spaces. The new function should not exceed the capacity of the historic building, and there should be only minimum changes to the historic building.
3.The compatibility of the historic building and the new use (Management of Compatible Change)	Adaptation to the new function and fullfillment of the new function. Has there been a sustainable and harmonious adaptation? Reversibility- Are the changes reversible?

3. Findings and Discussion

In Nicosia, of the 19 hans many have been demolished, a few have stayed in the inaccessible Buffer Zone and a few others have stayed in the southern part after the separation of the island and when the Walled City was divided into two (Bakshi, 2012). Among these hans only one has been restored and reused in the southern part (Nicolaides/Koullapais Han) as a bi-communal art museum (The Visual Arts and Research Centre, CVAR). This building is located on Ermou street and was opened to public use in 2014.

In the northern part, five hans have survived. These five hans are in the Selimiye Quarter (Figure 1) and are named Büyük Han, Kumarcılar Han, Deveciler Han (the Cameler`s Inn), Mısırlızade Han and Ay Andonis Han (Ayious Antoniou Han). Deveciler Han is in a ruinous state just like the Mısırlızade Han with partial traces of important architectural features. Ay Andonis Han stayed in the inaccessible military zone and is still in military use by Turkish army.

The focus of this chapter is the Büyük Han and Kumarcılar Han, the only two hans that have been restored and reused in the northern part. Significantly, the Büyük Han is the earliest one to be built and the Kumarcılar Han is the second.

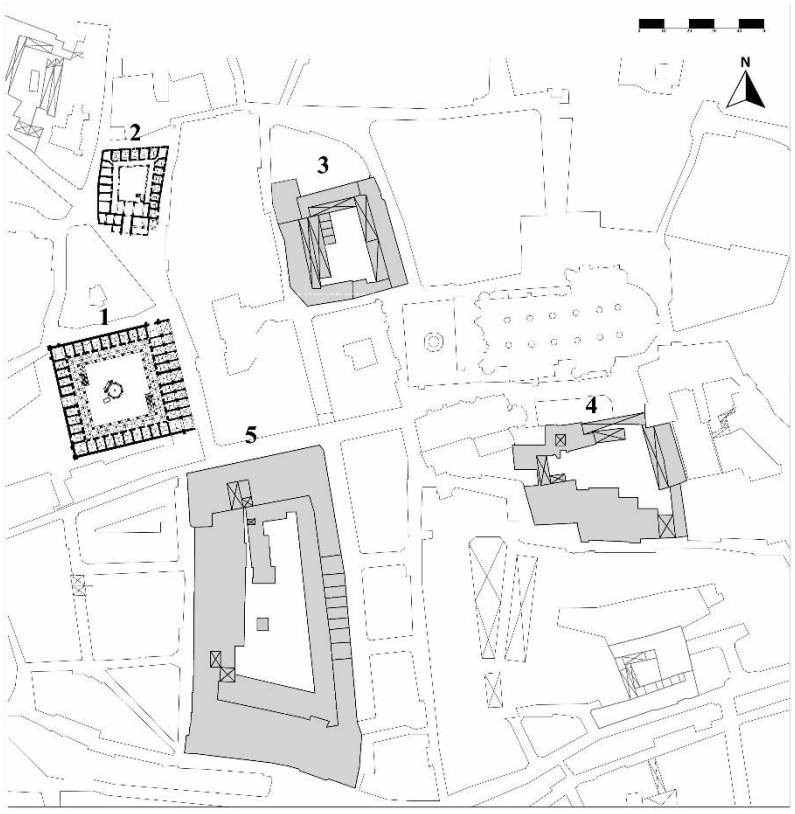


Figure 1. The map showing the remaining Ottoman Hans in Selimiye Quarter, Walled City of Nicosia: (1) Büyük Han, (2) Kumarcılar Han, (3) Mısırlızade Han, (4) Deveciler Han, (5) Ay Andonis Han (Menteş, 2023).

3.1. Büyük Han and Kumarcılar Han's Historical Background, Architectural Features and Previous Restoration Works

This section will talk about the historical background and architectural features in order to highlight the significance, authenticity, integrity and values attached to the original historic fabric. The previous restoration works and the history of the different uses of the two hans are also

explained. The two hans (Büyük Han and Kumarcılar Han) are discussed under separate headings.

3.1.1. Büyük Han

Historical background

The Büyük Han in Nicosia is one of the most elegant of the Ottoman hans as well as one of the most distinctive architectural monuments in the city. The Büyük Han was inspired the commercial han in Bursa, the Koza Han, and was built in 1572 by the first governor Muzaffer Pasha, just after the island began to be ruled by the Ottomans (Bağışkan, 2005; Bağışkan, 2009).

According to Gunnis (1936), the han was built onto an existing building which was adapted to an inn type structure. The eight cornered stone chimneys belong to the old building. Its first name was Alaiye -Alanyalılar Han, as a vast number of businessmen were coming to the city from Alanya for commercial reasons and staying in the building.

However, due to comparisons with the nearby Kumarcılar Han, the name "The Great Khan" became the preferred name for the ancient building as it was bigger. The "Great Khan" is also known as "The Big Khan" "The Great Inn" "Beuyuk Khan" or in its original Turkish name "Büyük Han". The Büyük Han is not only Nicosia's biggest inn but it is also the whole island's biggest and most characteristic han (Bağışkan, 2005; Bağışkan, 2009).

Architectural features

The two-storey building has a simple square plan, is of stone construction and is situated in an east –west direction. The han consisted of sixty-eight

rooms surrounding a square open courtyard with an octagonal small picturesque mosque in the middle, used for prayers, and ten shops facing the Asmaaltı Street.

Although the han is very similar to the Anatolian hans, one notable difference is that the building has two entrance doors, whereas the Anatolian hans usually only have one (Bağışkan, 2005; Bağışkan, 2009). The main entrance is from the east elevation at Asmaaltı Street, which is cluttered with shops and stalls. The camels and the carts would use the higher west entrance as the east entrance does not have enough height to let the animals in. At present both of the entrances are being used.

The rooms on the ground floor were used as storerooms and offices as well as being used as shops. The merchants had their rooms on the top floor with octagonal chimneys, probably because the guests were allowed to have small charcoal braziers in their rooms (Bağışkan, 2005; Bağışkan, 2009).

History of different uses and previous restoration works

The Büyük Han has been used for different purposes between the Ottoman period and today. Until the British period, the han functioned as the accommodation for traveler merchants. Its appearance is that of a grim fortress, and between 1878-1895, the British used this han as Nicosia Central Prison (Bağışkan, 2005; Bağışkan, 2009). However, the physical architectural features proved not to be appropriate for a prison as it was easy for the prisoners to escape; therefore, it was no longer used for that purpose. Between the years 1903 and 1947 it was used for its original function again. According to some records it was abandoned for a long

time until some poor families discovered it and started to make use of it as a home from 1947 to 1953. However, Bağışkan states that the Evkaf started to rent the small cell rooms to these poor families from 1947 to 1962 (Bağışkan, 2005; Bağışkan, 2009).

According to the Evkaf records (1962) the building was said to create an unhealthy environment as there were 65 families living in 63 separate cells. It also states that an addition was constructed in the middle of the courtyard consisting of four toilets and eight washbasins, for about 181 people who were living in the han. All families also had animals such as chickens, rabbits or pigs which would have made the place even dirtier.

In 1953 restoration works started on the building, however these works did not reflect the original Ottoman architectural characteristics. The south-west facade of the han was demolished and rebuilt at this time (Bağışkan, 2005; Bağışkan, 2009). In 1963 the restoration works restarted after stopping for a while, but because of the conflicts between the two communities between 1963 -1975, the restoration works remained unfinished. During this period records show that the han was used for storage purposes for the government's administrative buildings. In 1982, with the support of the TRNC (Turkish Republic of Northern Cyprus) Department of Antiquities and Museums and the Evkaf Adminstration, the Büyük Han started to be refurbished again. Unfortunately, due to lack of financial support, works had to stop again for a while until 1988-1990 when funding came from the German government which enabled restoration works to continue (Bağışkan, 2005; Bağışkan, 2009). These works continued under the 'Nicosia Master Plan' project and had to stop

once more because of a lack of finances, until the Turkish Government helped from 1995 until 2002. Then, finally, the project was completed and opened for public use.

3.1.2. Kumarcılar Han

Historical background

The Kumarcılar Han is the second largest han and it is located in the Asmaaltı Square to the north-east of Büyük Han. The date of the stone building is not known for certain but from the architectural features of the han, the TRNC Antiquities and Museums Department records (1983) and Bağışkan (2005, 2009) state that it belongs to the 17th century. Some other records mention the end of 17th century.

Kumarcılar Han is also known as the Gambler's Inn in its English name, as Hımarcılar Han, Kemancılar Han and as mentioned in the Historic Cyprus by Gunnis, `The Itirenant Musicians. ` In recent times it is known as Kumarbazlar or Kumarcılar Han. Furthermore, an old Nicosia map of 1881 names the han as the "Kuchuk Khan" meaning the 'Little Khan' probably because it was compared to the Büyük Han "Great Inn" (Bağışkan, 2005; Bağışkan, 2009).

Architectural features

Kumarcılar Han has two storeys and a rectangular plan which is situated in a south-north direction. The historic cut-stone masonry building has approximately 52 rooms surrounding the irregular courtyard in the middle. These rooms are of different sizes as the plan of the building is not an exact rectangle and some of the cells have more divisions while others are larger.

The han has aisles on the ground floor creating a corridor between the rooms and the courtyard. The arches that define this aisle are pointed arches. The biggest difference from the Büyük Han is that the ceilings have timber rafters. To reach the upper floor there are stairs in the south-east corner of the courtyard but they are not original.

History of different uses and the previous restoration works

The Kumarcılar Han has also been used for different purposes from the Ottoman period to today. During the Ottoman Period the first floor of the han was used as short term accommodation for the merchants, whereas the ground floor was used as the gathering place for the traders (Bağışkan, 2005; Bağışkan, 2009). The entrance to the han is well known due to its Asmaaltı Kahvehanesi, traditionally a coffee shop for men. The merchants used to group themselves together in the medieval period in their respective trades, such as leather, cloth, jewellery, spices and household utensils. Although the building is in private ownership, it has previously been used as the administrative offices of the TRNC government.

There have been many periods of restoration work to Kumarcılar Han, however not a lot of records have been found especially those which specify dates. During the restoration works in 1952 the original doors to the ground floor rooms that used to open to the inner courtyard were blocked up and new openings were created which opened to the exterior (Bağışkan, 2005; Bağışkan, 2009). In the middle of the 1920s the han was used by a coffee shop owner. The ground floor was used as storage and as a stable at the same time, while the upper floor rooms were rented out as accommodation. During this period the courtyard was sometimes used for

wrestling competitions, while in the 1950s cock wrestling also took place (TRNC Antiquities and Museums Department Records, 1983).

3.2. The Latest Restoration Works and Adaptive Reuse of Büyük Han and Kumarcılar Han

3.2.1. Büyük Han: The latest restoration works and adaptive reuse

The latest restoration works and adaptive re-use of Büyük Han were completed in 2002 after a twenty-year long process led by the TRNC Antiquities and Museums Department. The building is owned by the Evkaf Administration. The restoration works included stone cleaning, replacing new stone in parts where the old stone was decayed or broken, marbling in the internal areas, insulation works, sewerage system renewal, dirty and clean water infrastructure, cornice works, structural stability and strengthening works, repairing the chimneys and the fireplaces, plastering, and organization of the courtyard.

The new use of the building is as a cultural centre, where local artists and craftsmen display their wares by day, and occasionally musicians and entertainers perform by night. Furthermore, there have been many exhibitions and cultural celebrations held in the han's courtyard. The purpose of the historic building is to provide a base for local authentic and cultural arts and crafts as well as to promote authentic Turkish Cypriot culture and cuisine (Figure 2).

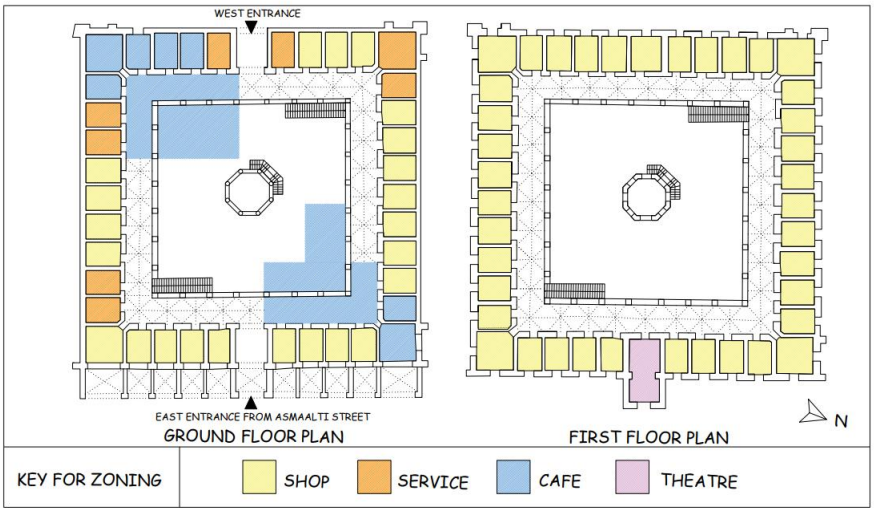


Figure 2. Büyük Han's zoning floor plans showing the use of spaces after the adaptive reuse and photos of the current condition (Author, 2023).

The sixty-eight rooms are used as workshops, studios, exhibition areas and venues for cultural events. There is one restaurant and a traditional coffee shop within the han using the open courtyard space for seating. The traditional coffee shop/sweet shop is sheltered in the shadows of the cross-vaulted ceiling just at the right side of the main entrance (East) and uses the nearby courtyard space. The restaurant is in the far left-hand corner, next to the back entrance (West), in the open courtyard with freestanding portable umbrellas. It serves traditional cuisine to continue the gastronomy culture within the historic building.

To the left of the main entrance there are small handicraft and souvenir shops all around the courtyard, with displays of silk scarves, handmade garments, hand-woven carpets, Ottoman embroidery, pieces of bridal materials, Turkish pillows, crafted model donkeys, hand-knitted shawls and many other gift items. The idea of the handicraft shops is that the shopkeeper is the artist and they can show off their techniques and share information about their art which is an attractive experience both for young locals and for tourists. Another activity which excites visitors is the traditional Karagöz and Hacivat Shadow Puppet Theatre. In the 21 years (2002-2023) which have passed since the han was transformed, the building has continually remained in active use.

3.2.2. Kumarcılar Han: The latest restoration works and adaptive reuse

The latest restoration works and adaptive reuse of Kumarcılar Han were carried out between 2012 and 2016, funded by Turkish Aid. The first phase of restoration works was carried out by TRNC Antiquities and Museums

Department and the second phase was carried out through a tender process monitored by TRNC Antiquities and Museums Department.

In the first phase, restoration works included demolition works, numbering of the original stones, partial foundation construction, ground floor room and corridor flooring works, laying of old and ruined walls, first floor room and corridor flooring works, vault construction, insulation works and repair of detailing. In the second phase of the restoration, stone consolidation works, restoration of historic mortar and the application of new mortar were carried out. Other works included repair works to wooden rafters and cane, the addition of new rafters/cane as required to the first floor's ceiling, roof consolidation works, insulation works and the installation of terra-cotta tiles.

During the restoration works, a number of arches were unearthed and a large number of historic water jugs, jars and pottery fragments were found. These artefacts were restored by the Department of Antiquities and are being exhibited, with the unearthed arches, in a special glass-covered display in the place where they were found. This particular corner of the han has an introduction to the contemporary materials. A glass door to the cell room and a glass floor have been added to display the architectural features and artifacts that were discovered.

Both ground floor and first floor rooms have been converted into artists' shops with arts and handicrafts, toys and accessories. The two shops which face the Asmaaltı Square have been converted into a traditional coffee house and a cafe which are accessed from the square. On the ground floor of the han, the two corner rooms have been converted to be used for

services: an information desk and toilets. Out of 52 rooms, 44 have been converted into workspaces, mainly shops, and 8 for service functions. One cell has been transformed into the counter room, two into toilets and five cells into the kitchen of a restaurant in the courtyard (Figure 3).

Seven years (2016-2023) have passed since the han was transformed for its new uses. During this period, the use of the courtyard space and the shops and service spaces have changed several times. For example, the courtyard was first used as part of a restaurant's seating area (Dwaikat, 2018), however this function discontinued and the restaurant closed down. As a result, since then the kitchen space has also been disused. Furthermore, recently it has been observed that the place has lost its consistent active use, due to different factors.

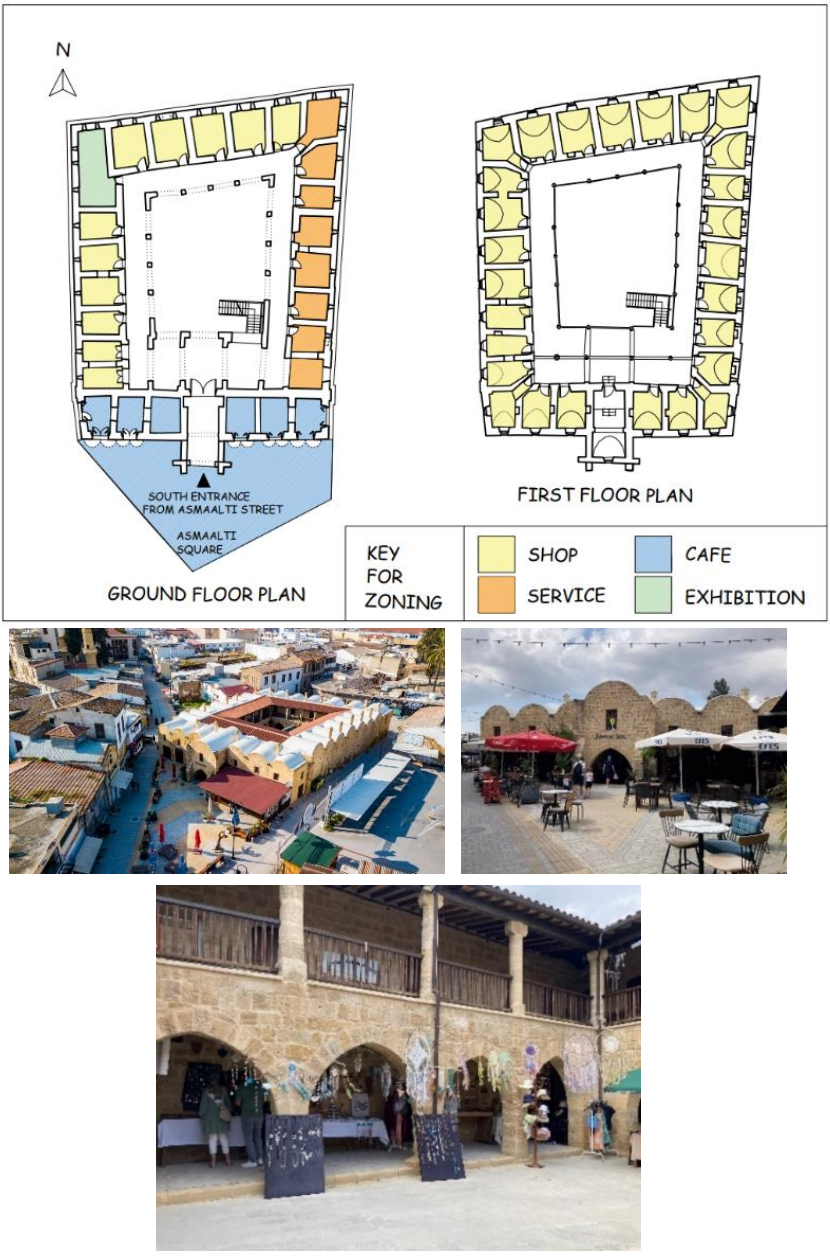


Figure 3. Kumarcılar Han's zoning plan showing the use of spaces after the adaptive reuse and current condition photos (Author, 2023).

3.3. Evaluation of Büyük Han and Kumarcılar Han in terms of Adaptive Reuse

To analyse and evaluate the two hans' adaptive reuse projects, to ensure sustainability, three steps were followed. Firstly, the historical building and its surroundings were analysed. Secondly, the new proposed functions' requirements were analysed. Thirdly, the compatibility of the historic building and the new use were analysed based on the literature (İslamoğlu, 2018; Khalaf, 2020; Pehlivan, 2018 a,b).

In the previous sections, 3.1 and 3.2, both hans' background information was shared in order to contribute to the first stage of the evaluation which was understanding and analysing the historical building and its surroundings. The heritage values, significance, authenticity and integrity of the hans were highlighted within these descriptions. Physical aspects were explained. In the table below (Table 2), all three evaluation steps are explained and the analysis is summarised.

Table 2. Adaptive reuse analysis and evaluation method for Büyük Han and Kumarcılar Han (Author, 2023).

ADAPTIVE REUSE EVALUATION		BÜYÜK HAN	KUMARCILAR HAN
		Cultural Centre with local handicraft and art shops, cafe, traditional coffee shop/sweet shop in the courtyard	Local handicraft and art shops, cafe facing the street
1.Understanding and Analysing the Historical Building and its surroundings	**Heritage Values**	Generally, continue.	Generally, continue.
	Significance	The historical and spatial integrity has remained intact.	The historical and spatial integrity has remained intact.
(Continuity of Original/Existing Assets-Management of Continuity)	**Authenticity**	The authenticity of the building is preserved in general.	The authenticity of the building is preserved in general. However, the social value connected to the dynamic use of the building needs to be activated.
	Integrity	The characteristics of a typical Ottoman Inner City Trade Han continue.	The characteristics of a typical Ottoman Inner City Trade Han continue.
	Physical aspects Architectural typology, the capacity/volume, spatial aspects, materials, architectural elements and components.	Continue, not harmed.	Continue, not harmed, some introduction of new materials.

	Environmental aspects the location of the historic building and its surroundings. Urban context, accessibility, car parking facilities,	There are car parks in close proximity. The closest ones are one next to Kumarcılar Han and another behind Büyük Han. Asmaaltı Street is pedestrianised, and this contributes to the easy accessibility of the hans by foot. The new use blends well with the commercial and touristic recreational activities in the neighbourhood and within the environment.	
	Socio-cultural aspects The community and the people who live/work/entertain in the area. The way of life of the people in the area, the way people think about the historic building, their attachment to the building.	The new function also offers a commercial context like the original without the accommodation. Thus, the socio-cultural associations are preserved and the new use of the han is well accepted by both the local community and the han tenants and visitors. It's an active place every day, an important meeting place for different user groups.	The new use of the han is suitable for the building fabric however there are issues with the han tenants' attachment, and the visitor numbers are insufficient. It's a passive place which needs to benefit from a more dynamic and active use.
	Economic aspects Building's potential which may be used to generate an economic income, create jobs and revitalise the immediate area without harming the character of the	Income generation through tourism, revitalisation of the immediate area. Owned by Evkaf Foundation Funded by Turkish Aid.	Income generation through tourism, revitalisation of the immediate area. Owned privately, rented to the government (to the Department of Tourism and Environment).

	building, funding sources, ownership (private/public),...		Funded by Turkish Aid.
2.The new proposed function's requirements	The new function should not exceed the capacity of the historic building, and there should only be minimum changes to the historic building.	Only a few cell rooms were adapted for service uses such as toilets and kitchens. All other cell rooms were preserved and reused without changing the architectural features in plan and elevation. Ease of access to public spaces and tourist facilities in the buildings were not considered. A ramp has been installed in only one place - at the entrance of Kumarcılar Han.	
3.The compatibility of the historic building and the new use	Adaptation to the new function and fulfilment of the new function.	Successful in terms of adaptation to the new function and fulfilment of the new function.	Successful in terms of adaptation to the new function in spatial terms and fulfilment of the new function.
(Management of Compatible Change)	Has there been a sustainable and harmonious adaptation?	Sustainable and harmonious adaptation.	Unsustainable use, problems due to courtyard space not being used efficiently.
	Reversibility	The changes applied are reversible (portable shading elements/umbrellas in the courtyard).	The changes applied are reversible (timber extension of shading device to the front entrance at Asmaaltı Square).

In general, Büyük Han has been adapted to its new function without harming the architectural character of the historic building. The architectural, structural and historical values have been preserved. The current use of the building as a cultural center provides socio-cultural and economic value as it contributes to enhancing local crafts and local gastronomy. It does this while creating a chance for locals to become part of the process, either by opening shops in the han or by visiting and experiencing the han. The significance of the building, its integrity and authenticity are also preserved in general and are continuing assets. Earlier studies also show that this was the case in earlier periods as well (Menteş, 2006; Baksi, 2012; Altan & Özsoy, 2017; Dwaikat, 2018).

When the new functions are analysed, in general, there is harmony between them and the historical space (Figure 2). Therefore, the new use does not exceed the capacity of the historic building. The cafe and the traditional coffee shop/sweet shop which face the courtyard have a positive impact, attracting visitors and sustaining the courtyard as a living public space.

However, it is also important to highlight a few issues regarding the adaptation of the historic building to the new use and addressing the requirements of the new function. One important issue is including public toilets and storage rooms within the traditional han space. As there are no other public toilet services in the historic quarter, there is high demand for the use of these toilets. This not only provides a visually displeasing appearance but also makes it difficult to keep this part of the han hygenic and clean at all times. These type of public service functions could be

provided in a different building on the same street. Another issue is that there is no water supply in the rooms of the han so as not to change its architectural character and building infrastructure. This situation creates problems for the new users, as there are many artists, painters, sculptors and wood carvers, who need water while working on their art. This issue was apparent when the han was first transformed through adaptive reuse (Menteş, 2006) and it remains the same.

Büyük Han's new use has been well accepted by the community, as shown by its continuing popularity with locals and tourists during the 21 years since its transformation. However despite the similar type of function as the smaller han, Kumarcılar Han did not result in the same outcome. Büyük Han is visited and used by different user groups and different tourist types. Unfortunately, despite much effort, Kumarcılar Han's new use did not turn out to be as sustainable as Büyük Han's. There are a number of factors at play. Firstly, when Kumarcılar Han was transformed to its new use in 2016, Büyük Han had already had its new use for 14 years (since 2002). In this respect there is a question about whether it was the right decision to create the same type of reuse approach for a second and a smaller han. In crowded historic cities, due to high numbers of both local and tourist populations, having more than one adaptive reuse for the same purpose could work well enough. However, in the case of the Walled City of Nicosia, a different and a more creative use for the second han could attract more attention from both tourists and locals.

The tenants of the shops/businesses in Büyük Han are consistent with their opening and closing times. It is a living public space during the week as

well as at the weekends. However, in Kumarcılar Han, on weekdays, most shops are closed until midday. This certainly has a negative impact on the attachment of the business owners, shop tenants and artists to the han. Furthermore, Büyük Han can be said to have more advantages than Kumarcılar Han as regards its physical aspects due to its size, orientation and entrances. Büyük Han is spacious and has a sunny courtyard, which has become an important public space to spend time. Additionally, having two entrances to the han has contributed to the current success of the adaptive reuse of the building as many people use it as a short cut, so the building has become a transitional public space between Asmaaltı street and Kurt Baba street and even to Arasta street. These streets are interwoven with popular commercial and recreational areas in the neighbourhood.

4. Conclusion and Suggestions

The Walled City of Nicosia is a small historic quarter, which contains typical commercial hans dating back to the Ottoman Period. Of the 19 hans only five still remain today in the northern part. Three are in poor condition and they are not being used for any significant purposes. However, all of the hans` locations are important sites for tourism, cultural and recreational activities. In the northern part, only two hans have been restored and reused and both endured long processes to complete this due to funding difficulties. The two han buildings carry important heritage values and they are landmarks within the historic Walled City.

The adaptive reuse of specific building types located within the same district should be considered together as part of urban conservation and

regeneration processes. Büyük Han and Kumarcılar Han are located on an important commercial street and they are connected to public squares where city life becomes dynamic especially during the weekends. These circumstances are certainly effective for regenerating the streets surrounding the hans and the local neighbourhood. In the last 15 years, many traditional buildings in this quarter have been restored and reused for recreational purposes. Certainly this has been triggered by the restoration and adaptive reuse of Büyük Han, and then Kumarcılar Han. In this respect, although there are some issues regarding the continuity and compatibility of the adaptive reuse of the two hans (especially Kumarcılar Han), it can be still summarised that there has been a positive outcome in relation to trying to safeguard the historic quarter and triggering further restoration and reuse projects.

The evaluations of the adaptive reuse of the two hans showed that in terms of the continuity of physical aspects, both hans have been preserved successfully through safeguarding the important architectural characteristics and key elements of the buildings. In general, both hans also retain most of their heritage values, significance, authenticity and integrity. Therefore, in terms of the continuity of original and existing assests, the management of continuity has been achieved. In terms of the management of compatible change, the compatibility of the new use warrants further discussion, in particular regarding the socio-cultural dynamics of daily use, particularly for Kumarcılar Han.

The time factor is also an issue in both cases; positively in Büyük Han and negatively in Kumarcılar Han. Büyük Han, after its new use, became an

important meeting point for locals and an attraction centre for tourists. Within the historic city it now continues its original purpose as a public space to socialise. Even 21 years since its transformation, the han continues its new use in the same way as well as its active use. This is very important as adaptive reuse is closely associated with the management of change. Good adaptive reuse should be beneficial in physical, environmental, socio-cultural and economic terms to the historic fabric and its surroundings.

Kumarcılar Han's process after its transformation and current condition in terms of use, show that the building requires a more creative intervention and a better management plan for its sustainable use. With its smaller size, it cannot compete with Büyük Han. For further sustainable development, it is crucial to reconsider the current use of Kumarcılar Han and activate the use of the building. In order to enhance the potential that the historic building may offer, new ways of thinking at different levels should be considered (Orbaşlı, 2020). Diversity in use should be considered based on the user/visitor profile and a larger area-based management plan is required. The continuity of user and visitor satisfaction is also important in terms of activating the use and enhancing a sustainable future for historic buildings. In this sense, there is an opportunity for further research on these buildings to understand the problems in more detail in terms of user and visitor satisfaction.

In theory and practice terms, these two cases showed that (a) the continuity of original and existing assets and their management, and (b) the management of compatible change, are important for evaluating the

completed adaptive reuse of heritage places. However, another addition should be made: (c) the time factor. Management of time is very important in order to monitor, understand and take precautions or take actions when there are failures of adaptive reuse after historic places are transformed. The transformation process does not finish after a new use is given to a heritage place, but a new life begins. Therefore, that new life should also be managed well in order to make a positive contribution to historic places and their communities.

Acknowledgments and Information Note

The author expresses her appreciation and thanks to Architect Mustafa Hançerli for the Kumarcılar Han drawings and to the former evkaf foundation deputy general manager Mehmet Kanan for sharing his perspectives on Büyük Han. The author also thanks to Helen Phillips for proofreading this text.

The e-book section 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

There is only one author and there is no conflict of interest for this study.

References

Ahunbay, (2009). *Tarihi Çevre, Koruma ve Restorasyon*. İstanbul: Yem Yayınları.

Altan, H., & Özsoy, Ş. K. (2017). Great Khan from historical period to today and space facility in the context of socio-cultural sustainability in adaptive re-use. *The Turkish Online Journal of Design, Art and Communication –TOJDAC*, 7(4), 634-654. Access Address (10.5.2023): https://www.researchgate.net/publication/320159956_

Bakshi, A. (2012). The legacy of Ottoman building in Nicosia: hans as spaces of coexistence in pre-conflict cyprus. *International Journal of Islamic Architecture*, 1(1), 107–128. Access Address (15.5.2023): https://doi.org/10.1386/IJIA.1.1.107_1

Bağışkan, T. (2005). *Kıbrısta Osmanlı-Türk Eserleri.* Lefkoşa: Mavi Basım-Yayın Ltd.

Bağışkan, T. (2009). *Ottoman, Islamic and Islamised Monuments in Cyprus*, T. Sinclair transl. Nicosia: Cyprus Turkish Education Foundation.

Bianca S. (2000). *Urban Form in The Arab World, Past and The Present.* London: Thames and Hudson.

Bullen, P. A. (2007). Adaptive reuse and sustainability of commercial buildings. *Facilities*, *25*, 20–31. Online ISSN: 0263-2772. Access Address (2.05.2023): https://www.emerald.com/insight/content/doi/10.1108/02632770710716911/full/html

Bullen, P. A. & Love, P. E. D. (2011). Adaptive reuse of heritage buildings, *Structural Survey*, 29(5), 411-421. Access Address (12.5.2023): https://doi.org/10.1108/02630801111182439

Dwaikat, O. (2018). Conservation of historic khans through adaptive re-use in the Walled-City of north Nicosia: a comparative analysis based on the concepts of authenticity and integrity (Master's thesis). Eastern Mediterranean University, Famagusta. Accessed from EMU thesis database. Access Address (5.7.2023): http://i-rep.emu.edu.tr:8080/xmlui/handle/11129/5535

Eklemezler, S. & Adiloğlu, S. (2022). Bursa hanlarının güncel kullanım pratikleri ve ziyaretçi görüşlerinin kültürel mirasın yaşatılması bağlamında değerlendirilmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 71, 128-143. Online ISSN: 2587-005X. Access Address (9.06.2023): https://doi.org/10.51290/dpusbe.992540

Ertuğ, M. (2016). *Gizemli Büyük Han (Dünü-Bugünü)* Lefkoşa: Kıbrıs Türk yazarlar birliği yayınları-22.

Evkaf Records. (1962). *Evkaf Property Registers*, Nicosia, North Cyprus.

Feilden, B. (2003). *Conservation of Historic Buildings*, 3e. Oxford: Architectural Press.

Fisher-Gewirtzman, D. (2016). Adaptive reuse architecture documentation and analysis. *Journal of Architectural Engineering Technology*, 5, (3). Access Address (6.06.2023): https://www.researchgate.net/publication/309519831_Adaptive_Reuse_Architecture_Documentation_and_Analysis

Goodwin, G. (2013). *A History of Ottoman Architecture.* New York: Thames & Hudson.

Gunnis, R. (1936). *Historic Cyprus: A Guide to Its Towns and Villages, Monasteries and Castles*. Michigan: Methuen.

Gravagnuolo, A., Fusco Girard, L., Ost, C., & Saleh, R. (2017). Evaluation criteria for a circular adaptive reuse of cultural heritage. *Bulletin of the Claza Bini Center*, 17(2), 185-216. Access Address (5.07.2023): https://doi.org/10.6092/2284-4732/6040

Haroun, H.-A. A. F.; Bakr, A. F. & Hasan, A. E. S. (2019). Multi-criteria decision making for adaptive reuse of heritage buildings: Aziza Fahmy Palace, Alexandria, Egypt. Alex. *Eng. J.*, 58, 467–478. Access Address (15.06.2023): https://www.researchgate.net/publication/332854609

ICOMOS. (1999). Burra Charter, The Charter for Places of Cultural Significance. Access Address (20.04.2023): http://australia.icomos.org/wpcontent/uploads/BURRA_CHARTER.pdf

İslamoğlu, Ö. (2018). Tarihi yapıların yeniden kullanılmasında yapı-işlev

uyumu: rize müzesi örneği. *Journal of History Culture and Art Research,* 7(5), 510-523. Access Address (9.06.2023): http://dx.doi.org/10.7596/taksad.v7i5.1573

Khalaf, Roha W. (2020). The implementation of the UNESCO world heritage convention: continuity and compatibility as qualifying conditions of integrity. *Heritage, 3*(2), 384-401. Access Address (2.07.2023): https://doi.org/10.3390/heritage3020023

Kiessel, M., Kurt, S. & Mesda, Y. (2016). The abandoned khan of Louroujina, Cyprus: A case study of a vanishing building type. ADALYA XIX, 325-349. Access Address (15.08.2023): https://www.acarindex.com/pdfler/acarindex12e3e562d7b690c29b1d3241c9a5cb19.pdf

Latham, D. (2000). *Creative Re-Use of Buildings,* Volume 1. London and New York: Routledge.

Mason, R. (2002). Assessing values in conservation planning: methodological issues and choices. M. de la Torre (Ed.). *Assessing the Values of Cultural Heritage: Research Report*. The Getty Conservation Institute, Los Angeles (2002), (pp. 5-30). Access Address (12.04.2023): https://www.getty.edu/conservation/publications_resources/

Mason, R. & Avrami, E. (2002). Heritage Values and Challenges of Conservation Planning. Teutonico, J. M. & Palumbo, G. (Ed). *Management Planning for Archaeological Sites*. The Getty Conservation Institute, (2002), Part One. (p.13-26). ISBN-13: 978-0-89236-691-0. Los Angeles: The Getty Conservation Institute.

Menteş, A. (2006). The adaptive re-use of the Ottoman hans in the Walled City of Nicosia. (Unpublished Master's thesis). Oxford Brookes University and University of Oxford Department for Continuing Education, Oxford.

Mısırlısoy, D., Günçe, K. (2016). Adaptive reuse strategies for heritage buildings: a holistic approach. *Sustainable Cities and Society*, *26*, 91–98. Access Address (19.05.2023): https://doi.org/10.1016/j.scs.2016.05.017

Orbaşlı, A. (2008). *Architectural Conservation.* Oxford: Blackwell Publishing,

Orbaşlı, A. (2020). Making the case for architectural regeneration. Orbaşlı, A. & Vellinga, M. (Ed.) *Architectural Regeneration*. Croydon: Wiley Blackwell. (2020), Chapter 2 (p. 27-45). ISBN 978-1-1-119-34033-1.

Orbaşlı, A., Vellinga, M. (2020). *Architectural Regeneration*. Croydon: Wiley Blackwell.

Pehlivan, G. F. E. (2018a). Edirne Rüstempaşa Kervansarayı'nın yeni işlevinin değerlendirilmesi. *Süleyman Demirel Üniversitesi Mimarlık Bilimleri ve Uygulamaları Dergisi*, 3(2), 1-20. Online ISSN: 2548-0170. Access Address (2.06.2023): https://dergipark.org.tr/tr/download/article-file/598861

Pehlivan, G. F. (2018b). Anıtsal Türk mimarlık örneklerinden Deveci Han'ın yeniden işlevlendirilmesi, *SUTAD*, 43, 537-559. Online ISSN: 2458-9071. Access Address (2.06.2023): https://dergipark.org.tr/tr/download/article-file/622707

Plevoets, B. & Van Cleempoel, K. (2011). Adaptive reuse as a strategy towards conservation of cultural heritage: a literature review. *Struct. Stud. Rep. Maint. Herit. Archit. XII*, 118, 155–163. Access Address (9.06.2023): https://www.researchgate.net/publication/263124844_

Polat, S., Çahantimur, A., Atanur, G., H. & Yıldız, Ö. T. (2019). A quest for sustainability of cultural heritage sites: the hanlar district of bursa, turkey. *ICONARP International Journal of Architecture & Planning*, 7(1), 01-29. Access Address (9.05.2023): https://doi.org/10.15320/ICONARP.2019.64

Rani, P. (2015). The impact of adaptive reusing heritage building as assessed by the indoor air quality case study: UNESCO World heritage site Penang. *Procedia. Social and Behavioral Sciences, 179*, 297–307. Access Address (2.05.2023): https://www.researchgate.net/publication/276151785_

Ribera, F., Nesticò, A., Cucco, P. & Maselli, G. (2020). A multicriteria approach to identify the highest and best use for historical buildings.

Journal of Cultural Heritage, 41, 166–177. Access Address (17.05.2023): https://doi.org/10.1016/j.culher.2019.06.004

Sabri, R. (2013) The Ottoman waqf built heritage in Cyprus: transitions in the upkeep and conservation practices during the British Colonial era (1878 to 1960) (PhD. thesis). The University of Manchester, Manchester. Accessed from The University of Manchester research database, Access Address (15.08.2023): https://research.manchester.ac.uk/en/studentTheses/the-ottoman-waqf-built-heritage-in-cyprus-transitions-in-upkeep-a

Stovel, H. (2008). Origins and influence of the Nara document on authenticity, *APT Bulletin 39*, 2, 3: 9-17. Access Address (10.05.2023): https://www.iccrom.org/sites/default/files /publications/2020-05/convern8_01_hstovel_ing.pdf

TRNC Antiquities and Museums Department Records, (1983). Lefkoşa.

Vehbi, B. O., Günçe, K., Iranmanesh A. (2021). Multi-criteria assessment for defining compatible new use: old administrative hospital, Kyrenia, Cyprus. *Sustainability*, 13(4):1922. Access Address (17.05.2023): https://doi.org/10.3390/su13041922

Wang, J. & Nan, J. (2007). Conservation and adaptive-reuse of historical industrial building in China in the post-industrial era. F*rontiers of Architecture and Civil Engineering in China*, *1*, 474–480. Access Address (9.05.2023): https://link.springer.com/article/ 10.1007/s11709-007-0064-5

Wang, H. J.& Zeng, Z.-T. (2010). A multi-objective decision-making process for reuse selection of historic buildings. *Expert Systems with Applications*, *37*, 1241–1249. Access Address (17.05.2023): https://doi.org/10.1016/j.eswa.2009.06.034

Yıldız, N. (2009). The Vakıf Institution in Ottoman Cyprus. M. N. Michalis, M. Kappler & E. Gavriel (Ed.). *Ottoman Cyprus: A Collection of Studies on History and Culture*. In the framework of the series: Middle East Monographs: 4. (p.117-159). ISBN: 978-3-447-05899-5. Wiesbaden, Germany: Harrassowitz Publishing House.

Yildirim, M. (2012). Assessment of the decision-making process for re-use of a historical asset: The example of Diyarbakir Hasan Pasha Khan, Turkey. *Journal of Cultural Heritage*, 13, 379–388. Access Address (5.05.2023): https://doi.org/10.1016/j.culher.2012.01.018

Yung, E. H. K., Chan, E. H.W. (2012). Implementation challenges to the adaptive reuse of heritage buildings: towards the goal of sustainable, low carbon cities. *Habitat International* 36(3): 352-361. Access Address (9.05.2023): https://doi.org/10.1016/j.habitatint.2011.11.001

Dr. Aliye MENTEŞ

E-mail: aliye.mentes.y@gmail.com, aliye.yardimci@arucad.edu.tr
Educational Status: PhD
License: BArch, Eastern Mediterranean University, Department of Architecture, 2005, Famagusta/Cyprus.
Degree: MSc in Historic Conservation, Oxford Brookes University and University of Oxford Department for Continuing Education, 2006, Oxford/UK.
Doctorate: PhD in Architecture with a specialisation in Conservation and Regeneration, Oxford Brookes University, 2016, Oxford/UK.
Professional experience: Since 2006, the author has been working as a Conservationist Architect in cultural heritage conservation, historic building surveying and regeneration consultancy both as a leader as well as a team player in different countries; the UK, Turkey and Cyprus. In academia, the author has worked on international research projects in cultural heritage, conservation and regeneration as a researcher in Oxford, Turkey and Cyprus. She has been working as a lecturer since 2015 in Cyprus, teaching mainly restoration and conservation of historic buildings, adaptive reuse and regeneration related theory and design studio courses.

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-8

Intangible Cultural Heritage of Tire Region (Izmir) and its Reflections to the Present

Prof. Dr. Atila GÜL [1]

[1] Süleyman Demirel University, Faculty of Architecture, Department of Landscape Architecture, West Campus. Isparta-Türkiye
ORCID: 0000-0001-9517-5388
E-mail: atilagul@sdu.edu.tr

Fadime ÖNCÜ [2]

[2] Public Relations Specialist Antalya- Türkiye.
ORCID**:** 0000-0002-2924-2463
E-mail: fd_oncu@hotmail.com

Hatice Eda GÜL [3]

[3] Student, Mehmet Akif University, Faculty of Engineering, Architecture, Department of Architecture, Burdur- Türkiye.
ORCID: 0000-0001-5203-1739
E-mail: haticedagul@gmail.com

Citation: Gül, A., Öncü, F. & Gül, H. E. (2023). Intangible Cultural Heritage of Tire Region (Izmir) and its Reflections to the Present. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 8, 216-267. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Cultural heritage is all kinds of tangible and intangible assets of local and universal value related to the past of society, identifying it, and reaching the present day with vital continuity. It includes all the characteristics of the environment resulting from the relationship and interaction between people and spatial features over time (Ünal, 2014; Metin, Gül & Solmaz, 2017; Metin & Gül, 2017).

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) aims to promote the identification, protection, and conservation of the world's cultural and natural heritage, which are considered of outstanding value to humanity. In this context, "*The Convention Concerning the Protection of the World Cultural and Natural Heritage*" was adopted by UNESCO in Paris on November 16, 1972. What makes the concept of World Heritage exceptional is its universal application. World Heritage sites belong to all the peoples of the world, regardless of the region in which they are located (UNESCO World Heritage Centre, 1992-2023).

According to UNESCO (2013); "*It is a general name given to the artifacts created by previous generations and believed to have universal values, such as artifacts, language, and culture, which have survived from generation to generation"* Cultural heritage is the cultural accumulation of society from the past and the sum of the basic elements that make up the society. Heritage is a broad concept covering the natural and cultural environment (UNESCO World Heritage Centre, 2013).

Cultural and natural heritage are among the priceless and irreplaceable assets not only of each nation but of humanity as a whole. The loss of any of these valuable assets through degradation or destruction would mean the impoverishment of the heritage of all the peoples of the world. These heritage values, because of their exceptional qualities, can be considered "*Outstanding Universal Values*" and are therefore assets worthy of special protection against the dangers that increasingly threaten them (UNESCO World Heritage Centre, 2013).

The "Convention for the Safeguarding of the Intangible Cultural Heritage" was adopted at the General Assembly of the 32nd General Conference of UNESCO on October 17, 2003. Türkiye became a party in 2006 as the 45th country (UNESCO Türkiye Millî Komisyonu, 2013).

According to this Convention, the 'Intangible Cultural Heritage' means the practices, representations, expressions, knowledge, and skills – as well as the instruments, objects, artifacts, and cultural spaces associated therewith that communities, groups and, in some cases, individuals recognize as part of their cultural heritage (UNESCO, 2022).

This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature, and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. For this Convention, consideration will be given solely to such intangible cultural heritage as is compatible with existing international human rights instruments, as well as with the requirements of mutual respect among communities, groups, and individuals, and of sustainable development (UNESCO, 2022).

Accordingly, 'Intangible Cultural Heritage' values are classified as; (a) Traditional Craftsmanship, (b) Knowledge and Practices Related To Nature and The Universe, (c) Oral Traditions and Narratives, (d) Performing Arts, (e) Social Practices, Rituals, and Feasts. Milestones of life.

Today, the tangible and intangible values of a region are recognized as cultural heritage values. Assets with heritage value are the basis of universal, national, regional, and local identities, explain and record the historical development process, create a common memory on the scale of space, time, and culture, and are an integral component of present and future change and development (Gül et al., 2019). As a result of the increasing tendencies such as modernism, capitalism, and globalization in our country today, it is seen that changing the way of life and cultural structure has led to the trivialization, devaluation, and even destruction of local cultural heritage values.

The protection and preservation of cultural heritage will be possible by increasing the awareness level of the individual and the society with correct information and realizing it at a harmonious and sincere level in terms of discourse and action and with a holistic vision (Gül & Gül, 2021). Tire (Izmir) region, which is important in terms of the cultural heritage value of our country, resembles an open-air cultural heritage museum with its deep-rooted past, unique cultural values, hosting the sacred places of different beliefs, aesthetic architectural texture (especially religious architectural structures) far from ostentation (Gül et al., 2022).

Tire's (Izmir) natural beauties, mounds, tumuli, rock tombs, ancient city ruins, castles, monuments, rural settlements, building architecture, Tire

City Museum, historical mosques, local original dishes, folk dances, traditions and customs, traditional handicrafts, etc. It is an important touristic destination in terms of tangible and intangible cultural heritage values.

This study aims to examine and analyze the intangible cultural heritage values of the Tire region holistically and to propose strategic actions for their protection and sustainability by associating them with cultural tourism.

2. Material and Method

The intangible cultural heritage values of the Tire (Izmir) region were determined and analyzed according to the titles classified within the scope of UNESCO's (2003) "*Convention on the Protection of Intangible Cultural Heritage"*. They are classified according to the main headings and their contents.

- **Traditional Craftsmanship**: Weavings, woodwork, coppersmithing, hot blacksmithing, felting, wood carving, pottery, quilting, saddlery, filigree, marbling, calligraphy, illumination, etc.
- **Knowledge and Practices Related to Nature and the Universe**: Folk medicine, folk meteorology, folk mathematics, folk architecture, folk economy, folk cuisine, sacred and ceremonial meals (aşure, keşkek, etc.)
- **Oral Traditions and Narratives:** Myths, epics, legends, folk tales, fairy tales, riddles, folk poetry, minstrel tradition, laments, manis, lullabies, etc.

- **Performing Arts:** Traditional theatre (such as shadow play, puppetry, meddah, village spectacles), folk dances, folk music, children's games, folk sports, etc.
- **Social Practices,** Rituals, and Feasts: Milestones of life (birth, circumcision, military practices, weddings, death rituals, etc.), traditional clothes, celebrations, festivals, fairs, festivals (Mesir Macunu Festival, Kırkpınar Oil Wrestling Festival, etc.), anniversaries, commemoration days, seasonal holidays (Hıdrellez, Nevruz, Seven of May, etc.), rituals with religious content (Sema, Semah, and others).

2.1. General Information of Tire (İzmir) District

Tire, known as a 5000-year-old and historical city, is one of the 30 districts of Izmir and is the oldest settlement in Western Anatolia. The Tire region has hosted many civilizations in the past, including the Hittite, Phrygian, Lydian, Persian, Hellenic, Roman, and Byzantine periods (Gül et al., 2022). Tire region has hosted many civilizations in the past, including the Hittite, Phrygian, Lydian, Persian, Hellenic, Roman, and Byzantine periods.cuisine (Gül et al., 2022).

- The name of the Tire is mentioned as Thira, Thyeira, Tyrha, Apeteira, or Teira in various sources.
- "The Neighborhood of the Monks" by the famous historian Pachmeres,
- The Byzantine historian's "City of Monks"*
- 14. Century Ibn Battuta's "Ahi City",
- " The Famous City of Rum" in the Şerafeddin Zafername,*

- ❑ "The City of Great Tire" in Evliya Çelebi's Travel Book,
- ❑ "Old Throne City" by Kâtip Çelebi (1608-1656),
- ❑ In the 1908 Aydın Province Yearbook, names were given as "Ulemas Bed".

Tire, which was one of the important cotton industrial centers in the past, became a symbol with the word "tire" for fine cotton yarn (rîşte-i Tire) (İnalcık, 2008: 80-81).

Tire is located in the southeast of Izmir, approximately 80 km away. Its altitude is 96 meters. Küçük Menderes Plain and Bayındır District in the north, Ödemiş District in the east, Selçuk and Torbalı Districts in the west, and Aydın Province in the south. The surface area of the Tire district is 792 km^2. Tire has 66 villages. The population of the district is 84.457. The soil structure is sandy clay and clayey has a rural base and is very fertile and suitable for growing a wide variety of crops. Küçük Menderes River (175 m long) plays a major role in the diversity of agricultural products. The climate is hot and dry in summer and mild and rainy in winter. The district economy is based on agriculture, trade, and industry. Among the agricultural products, corn, wheat, barley, tobacco, sesame, and all kinds of fruits and vegetables are grown. Beekeeping is at an advanced level. Fattening and dairy cattle breeding are very developed. Daily milk production reaches an average of 250 tonnes. Some of this production is consumed as cheese, butter, yogurt, and buttermilk. It has a meadow and pasture area of 7.711 ha. Modern and technical methods are used in the agricultural sector. The majority of livestock farms in Tire are located in

plain villages and central district plains (Ataberk, 2017; Tire Belediyesi, 2020).

Tire has an important touristic potential with its natural beauties, mounds, tumuli, rock tombs, ancient city ruins, castles, monuments, rural settlements, Tire Museum, cultural attractions such as handicrafts, houses, bazaar, and food varieties, cultural structures or cultural heritage that keeps alive the district-specific dishes, folk dances, traditions and customs, handicrafts. However, despite its cultural heritage and natural tourist attractions reflecting the historical and cultural richness of the district, it does not receive sufficient attention in tourism and these attractions are not used in tourism (Emekli, 2010).

The cultural assets in The Tire are as follows: 14-15. Century tombs (Balım Sultan, Rum Mehmet Pasha, Lütfü Pasha, Molla Mehmet Çelebi), 41 mosques and masjids (Yeşil İmaret Mosque -1441, Yeni Mosque-16th century, Tahtakale Mosque -1401, Lütfü Pasha Mosque-16th century, Gazhane Mosque, Kutu Inn and Arastası -1426-1444, Bedesten-15th century, and others),

The Tire has a total of 6 protected areas, 5 archaeological sites, 1 urban site, 418 immovable cultural assets, 2 libraries, 1 cultural center, 1 cultural activity venue, 2 exhibition halls, 1 cinema hall, 1 Tire City Museum, 65 associations interested in culture and arts, 4 foundations (İzmir Development Agency, IZKA, 2013). The Tire is on the Silk Road and the King's Road and is the passage place of the old clergymen to Ephesus and the Church of the Virgin Mary. In terms of tourism resources of The Tire District, 6 basic components come to the fore (Gül et al., 2022).

- Cultural (historical and architectural structures) values,

- Local Cuisine values,
- Handicraft values,
- Local Tuesday Market,
- Agricultural products (fruit and vegetables etc.),
- Livestock products (meat, milk dairy products, and others).

3. Findings and Discussion

According to the titles classified within the scope of UNESCO's (2003) "Convention on the Protection of Intangible Cultural Heritage", the intangible cultural heritage values of The Tire (Izmir) region were examined according to the main titles and their contents.

3.1. Handicraft Tradition of Tire Region

Traditional Handicrafts have emerged as a result of practices and productions that have been continuing depending on nature and living conditions since the existence of humanity. It has given its first examples to meet the needs of people, cover, and protection. Handicrafts, which later developed and showed changes according to environmental conditions, in addition to the functions that the society in which it emerged imposed on the objects; It has gained the quality of "traditional" by reflecting their emotions, artistic tastes, and cultural characteristics.

Traditional Turkish Handicrafts have formed a rich field by combining the cultural heritage of various civilizations transferred from the thousands of years of Anatolia's history, the diversity of different raw materials offered by the geography, and the traditional techniques maintained.

In the 14th century, Ibn-i Batuta referred to The Tire as "***The City of Âhi".*** Handicrafts, which have enriched its folklore for centuries, shaped its life,

affected its relations with its environment and the state, and shaped its social and economic life, are known as the most important intangible heritage value. While many handicrafts were made in the Tire in the past, most of these arts have been lost, and today they still come to life in the hands of the last representatives of professions such as weaving, which continue to diminish. Due to economic reasons, the lack of apprentices to continue these art branches accelerates the disappearance of these professions. While each of these arts used to have the Arastas, streets, and bazaars, only a few of them are alive today.

In the 18th Century, Tire became a weaving and dyeing center due to its agricultural productivity and commercial vitality, which also shaped the textile industry of the Western Anatolia region. It was also a lively domestic market for the trade of textile products produced in the neighborhood. In addition, the cotton and cotton weaving industry developed, specializing in products such as “white and elvan bogasi, Çine tülbendi, lining (astar), kirpas-ı penbe, alaca, sash (kuşak) and peshtamal (peştamal)”.

Today, the traditional handicrafts of Tire, which are disappearing, are exhibited in the Tire City Museum and attract great interest from visitors. (Figure 1).

a. The Tire Beledi Weaving

b. The Tire Beledi Weaving

c. Wicker making (Sepetçilik- Hasırcılık

d. Nalın /Clog Making

e. Saddlery (Semercilik

f. Tinning (Kalaycılık)

g. Quilt making

h. The Rope-Weaving

ı. Nalın (Nalıncılık)

i. Saddlery (Saraççılık)

j. Gusseted Boots (Körüklü Çizme)

k.Wickerwork (Hasırcılık)

l. Needle lace (İğne Oyası)

m. General view of the Tire City Museum

Figure 1. Handicraft exhibition areas exhibited in the Tire City Museum (Original Photo: Gül, 2023)

a. The Rope-Weaving (Urgancılık): It is the symbol of the Tire. Hessian rope made from hemp comes to mind. The history of hand weaving dates back to antiquity. In the fertile lands of the Küçük Menderes plain, the highest quality hemp of the region has been grown for centuries and has gained fame all over the country with its whiteness and durability. It is rumored that when Mehmet the Conqueror conquered Istanbul, he towed his ships from land to the Golden Horn with the rope woven by craftsmen from Tire. The ropes of the Ottoman Navy were also woven in Tire. For this reason, the city was exempted from the Hemp Tax for centuries. The number of wheels, which was more than a thousand during the Ottoman period, was mentioned as 600 wheels in the book published by the Tire Chamber of Commerce and Industry in 1951, while 50 wheels have survived to the present day (Tire Chamber of Commerce, 2022). "The Tire Urgan" has gained fame all over Anatolia with its durability and whiteness. Today, urgan making is carried on by a master in the Tire City Museum, an intangible cultural heritage application workshop. The hemp harvested from the field is soaked in water for a week. The soaked and softened hemp is processed more easily and ropes of various thicknesses are prepared (İzmir Vakfı, 2020).

b. The Tire Beledi Weaving (Tire Beledi Dokuma): In Tire, which was one of the centers of sericulture in the past, different fabric weavings were made with wool and cotton yarns as well as silk (İzmir Vakfı, 2020). "Beledi weaving", which developed within this deep-rooted weaving culture, has an important place in history as a jacquard weaving technique unique to Tire. It is one of the weaving arts of the early Ottoman period. Its origin is known to have been woven in the Tire in the 16th century and

later in Bursa Tire Beledi Weaving was registered as a Geographical Indication on 17.12.2020 **(**T.C. Kültür ve Turizm Bakanlığı, 2023a). Beledi Weaving was used as quilts, cushions, and window covers for hundreds of years. In the early 1900s, production was carried out on 60 looms in Tire, while today it has decreased to a single loom (İzmir Vakfı, 2020) (Figure 2). Other tools used in the production of Beledi Weaving; loom, Frame (Kesgen), Selmin, Comb / Dem, Tefe, Çukur Iron, Pedah or pedals, Mouthpiece scale, Cımbar, Maber, Birds. During weaving, equipment consisting of a Shuttle, Spinning Wheel, Small Cabinet, Masur / Roller, Çağ are used. Patterns and Compositions Used in Beledi Weaving; Süleymaniye embroidery consists of approximately 40-50 motifs. These motifs are made up of goğuşlu, arm, frequent star, setrek star, and plain patterns. The main motifs are Bademli, Kutulu, Celepiş, Tireiş, Aynalı and Yıldızlı. The bottom part of Beledi Weaving, which is double-fold, is white. The upper parts are in white, yellow, red, blue, and dark blue colors (İzmir Vakfı, 2020). Tire Beledi Weaving was registered as a "*Geographical Indication*" on 17.12.2020.

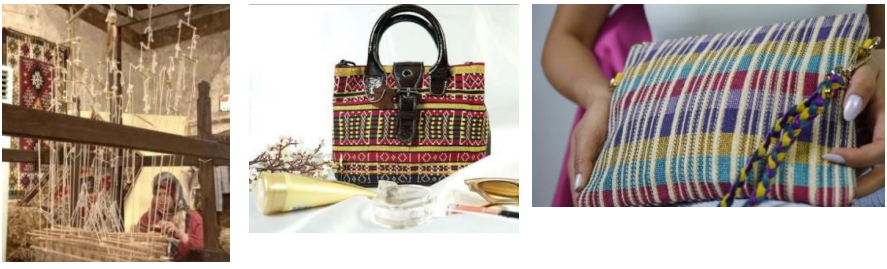


Figure 2. Beledi weaving samples produced by Nurefşan Yaykal (Original Photo: Yaykal, 2023).

c. Needle lace (İğne Oyası): Needle lace, which is embroidered in three-dimensional motifs with needle and preferably silk thread, is known as "Turkish lace" in the literature. There is an intense richness of motifs and colors in needle lace, which exists in different regions of Türkiye. In many regions, women's social status, marital status, feelings, and expectations are expressed through needlelaces. In this sense, needle laces turn into a means of communication. Motifs and colors influenced by the natural environment are also the main characteristics of needle laces. Today, it is possible to see needle lace forms in daily-use items, clothes, jewelry, and accessories. Rather than being a type of lace in itself, needle embroidery is applied to fabric edges such as headscarves, handkerchiefs, collars, and sleeve edges. In Izmir, especially in Tire and Ödemiş, the tradition of needle lace is still alive (İzmir Vakfı, 2020).

d. Quilt making (Yorgancılık): It has an important place in handicrafts due to its place in urban and foreign markets. With the modernization of heating equipment in houses, the need for thick wool and cotton quilts has decreased. Today, due to the development of technology, the discovery of new raw materials, and the change in needs accordingly, it has lost its former brightness and has ceased to be economical. It continues its existence with around 25 workplaces in Uzunçarşı, known as Yorgancılar Bazaar. It has a very rich variety of motifs. Quilt patterns such as honeycomb chain, hexapartite, cypress, mirrored baklava, fish scale, pinwheel, pentapartite, straw, flower branch, rose, pumpkin leaf, and Bursa model are still in use today (İzmir Vakfı, 2020).

e. Nalın (Nalıncılık)/Clog Making (Takunyacılık): In written sources, nalın is defined as a kind of slipper made of a single piece of wood

with a leather collar on it that allows it to be worn on the foot. Nalın is used in wet places such as Turkish baths (Hamam) and tanneries, where it is not practical to wear leather shoes, or while performing ablution in mosques and masjids. In the Tire, nalın has a different place among handicrafts. It is said that the first nalın embroidered with glitter on velvet was made in Tire for the first time. In the historical process, many types of wood such as walnut, hornbeam, mulberry, sycamore, and poplar were used in nalın making. In general, the use of poplar wood also facilitated the workmanship. The manufactured nalıns are painted in henna color and then embroidered with glitter, glaze, and sequins. It has become a tradition to give these nalıns to young girls as engagement and wedding gifts to keep this art alive for many years. Today, the nalıns embroidered with glaze on velvet made by the Tire craftsmen have become one of the cultural and touristic symbols of Tire. In the past, the "nalıncı chisel", which is also the subject of idioms, was used to shape the wood, while today the sole of the nalın is formed with special sawmills. For the collar part that allows the nalın to be worn on the foot, pieces of car tires are mostly used. Nalıns are made of wood, velvet, thin felt, and beads and sequins in various colors. On special occasions such as henna night and engagement ceremonies, colorful and highly decorated "nalıns" worn under bindallıs are also produced (İzmir Vakfı, 2020).

f. Felting (Keçecilik): Pieces of decorated felt from the 8th century BC found during excavations in Central Asia provide information about the history of felting. It is reported that felt was brought to Anatolia with nomadic Turks from the 11th century onwards. Felt has been a tool used in many areas from clothing to shelter for nomadic communities. Felt

making, which has left important traces in the social life of Tire with its artisan organization and traditions, has been a source of livelihood for a large mass of people for years and has added color to the folklore of Tire. This handicraft, which requires intensive labor, has succumbed to technology and has faced oblivion and disappearance. Felt is a handicraft product that is difficult to prepare, comfortable to use, and healthy. A kind of weaving surface is obtained by compressing the wool obtained from sheep and lamb with heat and soap. The cleaned wool is combed in the machine, patterns are created with colored wool on the mat, and wool is sprinkled on it and rolled into a roll. It is compressed in machines. The felt taken from the mat is sprinkled with soapy water and then beaten again in the beating machines for five hours. The felt carpet taken from the machine is washed and put into use. Red and navy-blue colors are mostly used in felt. Today, wearable clothes felt carpets, shepherd's caps, saddle felts, chair cushions, cushions for car seats, and shoe felts are used in a wide range from clothing to the kitchen sector (İzmir Vakfı, 2020).

g. Saddlery (Saraçlık): The Turks, who are descended from the peoples of Central Asia, take place on the stage of history with their horse breeding characteristics. Due to the importance given to horse breeding and horses, saddlery has an important place among the ancient Turkish arts. The fact that the Turks raised their horses increased the importance of the art of saddlery and caused great interest in this art. The art of making hunting equipment such as animal harnesses, belts, gun holsters, bullet holsters, and bags with thick leather is called "leather" and normal thin leather is called Saddlery, and those who are engaged in this business are called Saddlery. The saddlery profession is also divided into sections

called specialization or division of labor. These are hamut makers, harness makers, and halter makers (İzmir Vakfı, 202).

Whips are made from two-year-old calf skins and straps called Çerkez belts are made from fresh cattle and ox skins on condition that they are purchased from the butcher. The sticks for the whips made by the saddlers are supplied from the villages (Öncü, 2013).

Today, the number of people working as saddlers in the Tire does not exceed the fingers of one hand. The construction-repair work of all harness materials used in transport work with animals such as horses and donkeys are called saddlery, and the place where this profession is carried out is called saddlery. In the saddlery profession, where leather is mostly used, textile products have started to be used. The fact that leather is expensive compared to textile materials, and difficult and time-consuming to process, has caused craftsmen to stop using leather materials or to use them very little (İzmir Vakfı, 202).

h. Saddlery (Semercilik): The tool placed on horses, donkeys, and mules used as beasts of burden and riding animals to ride and wrap the load is called "saddle" and the craftsman who makes this tool is called "saddler". The use of the name saddle varies from region to region and is also defined as "paldım", "çul", "peki", "palan", "kürtün". The part of the saddle between the animal's back and the wooden frame is called "havut" or "*döşek*". It forms the main part of the saddle. The wooden part surrounding the havut is called the "*skeleton*". The skeleton consists of two main parts, front and back eyebrow. The chipped pieces of wood on the front brow with the ends curved inwards are called "fish", and the chipped pieces on the back brow, also curved inwards, are called "hoggets"

(kocacık). The fish and the kocacık are two on each side and are connected to the front and back eyebrows with bolts and nuts. The boards connecting the front and back brow are called "*side boards* (*yan tahtalar*)" or "*ribs* (*kaburgalar*)". There are six of them, three on the right and three on the left. The fish and the hoggets" (kocacık) are the places where the rope is tied for wrapping wood, meat, sacks, and others.

Saddlers make use of many different tools and equipment in saddle production. These are reed, leather, wood, kinnap, felt, American cloth, iron rings and handles, kepe, scissors, vaccine iron, hand iron, pliers, saw, chisel, rasp, biz, chisel, scarp hammer, wooden mallet (Öncü, 2013).

Due to the nomadic culture of the Turks in the past, it is related to the traditions related to other beasts of burden, especially the horse. Saddles are manufactured from natural materials such as wood, leather, and felt with careful dimensioning to ensure comfortable movement of both the rider and the animal. These materials also have different ornaments to prevent the evil eye on the animal. Saddle-making is one of our rapidly decreasing folk arts. The wooden section, which forms the main skeleton in saddle making, is made of a plane tree. This section is covered with thatch, sackcloth, felt and goat skin taken from the lakeside at the end of summer. The master uses a measuring stick inherited from ancestors and grandfathers to determine the dimensions of the saddle, which are called small, medium, and large, and to make the horse saddle. It takes an average of three days to make a saddle.

i. Hot Blacksmithing (Sıcak Demircilik); Hot blacksmithing is the production of products such as sickles, axe, plows, cutters, horseshoes, keys, etc., which has been widely performed in Anatolia since ancient

times. It can be said that blacksmithing, which is believed to be a sacred profession, is also related to folk medicine as it is a method used in the treatment of some diseases. The belief of shamans related to blacksmithing also spread among the Central Asian Turks. Among the Anatolian people who believe that the blacksmithing profession is sacred, there are legends about the profession. In one of these legends, it is believed that "*Hz. David*", the pioneer of the blacksmithing profession, was able to hold the hot iron with his hand and put his hand into the fire. According to the legend, *Hz. David*, who worked with his apprentice, went home for lunch one afternoon and left his apprentice in his place. The apprentice wanted to hold the hot irons like his master and put his hand into the fire. However, the apprentice, whose hands were burnt, could not do the work that his master advised him to do. Meanwhile, a dog entered the shop. He sat with his front legs crossed. There was a piece of bread between his two legs. When the apprentice saw this situation, he suddenly thought of making a tool that could hold the hot iron without touching it. He pierced two flat bars in the middle and riveted them. He squeezed the hot iron between the other two ends by squeezing them at the ends. Thus, this apprentice made the first clamp in blacksmithing. According to the legend, this is *Hz. Hızır* disguised as a dog, and he came to help this apprentice to unravel the secret of the Prophet *Hz. David*. After the clamp was made, the dog, i.e. *Hz. Hızır* disappeared. *Hz. David* returned to his work unaware of everything. Again, he wanted to hold the hot iron with his hand, but his hand was burnt and then he realized that his secret was solved. For this reason, this profession is believed to be prayed and is considered sacred.

Tools and Materials Used in Hot Blacksmithing.

- Annealing tools, hammers, hammers, trolleys, shorteners, anvil, and its base, furnace,
- Perforated plate, masonry plate, blacksmith's cone, ram (air hammers),
- Presses, measuring instruments (diameter calipers, meters, gauges, and templates),
- Saw bench and profile scissor bench, Electric welding machine (Atay, 2011).

j. Mandrelle / Hot Glass Art in Flame (Alevde Mandrelle /Sıcak Cam Sanatı): It is created by melting special glasses in a 1200-degree flame. High temperatures are needed to melt the glass, and to achieve this temperature, liquefied petroleum gas (LPG) cylinders and oxygen concentrators or oxygen cylinders used in households are used. In addition, tools called torches are also used in the process of melting the glasses that collect all these heat and oxygen sources together. The glasses used are specially produced glass rods of certain diameters with each color separately. When the glasses are melted, they turn into paste consistency and their fluidity increases rapidly during the time they remain in the flame. When this stage is reached in the flame, the glasses are wound on steel rods called mandrels using the winding technique, and beads of the desired size are obtained. The making time of the beads varies depending on the size and the techniques applied.

k. Kabak Kemane Production: Kabak kemane, a common instrument in the Aegean and Mediterranean regions, is an instrument made of natural materials such as gourd and leather and its origin dates back to Central Asia. When making the kabak kemane, the gourd is cut

below the knuckle that tapers upwards, the heart membrane or leather is put over it, and a wooden arm is mounted on the gourd. Kabak kemane is played with a bow made of horsetail hairs tied together.

l. Wickerwork (Hasırcılık): Wicker is produced by using a simple weaving technique with thatch, a natural material. Many materials, other than the spread, can gain function with the wicker weaving technique. The tradition of wicker weaving in Tire is mostly based in the Village of Boynuyoğun. The reeds brought from Işıklı Village in Aydın Province are soaked in the evening. The softer the reed, the more durable the products are. In the past, wicker weavings were also called Boynuyoğun carpets and were used under carpets and rugs. 200-300 mats were brought to Tire's famous Tuesday Bazaar and all of them were sold, today There are no weavers left, and this tradition is continued only within the City Museum. In the museum, products such as wicker carpets of different sizes, chair seats, American service, bags, and beach bags are made and sold.

m. Wicker Making (Sepetçilik): Wicker is produced by using a simple weaving technique with thatch, a natural material. Many materials other than the spread can gain function with the wicker weaving technique. The tradition of wicker weaving in Tire is more common in Boynuyoğun village. The reeds brought from Işıklı village in Aydın province are soaked in the evening. The softer the reed, the more durable the products are. In the past, wicker weavings were also called Boynuyoğun carpets and were used under carpets and rugs. 200-300 mats were brought to Tire's famous Tuesday Bazaar and all of them were sold, today There are no weavers left, and this tradition is continued only within the City Museum. In the

museum, products such as wicker carpets of different sizes, chair seats, American service, bags, and beach bags are made and sold.

n. **Gusseted Boots (Körüklü Çizme):** Bellows boots, which were the "trademark (alametifarikası)" of efes and aghas in the past, are now produced only for special orders. They are produced by special order for folk dance ensembles, series, and the film industry as well as for enthusiasts. Only two-year-old calfskin is used in the production of gusseted boots. It takes 10 days to make. The leather is laid in the flour obtained from the material called caterpillar at the bottom of the cones of oak trees. Since Efeler wears them with bare legs, no chemical material is used in order not to harm their health. Two layers of leather are glued together, and the pieces are sewn together and then pulled into the mould. The leg stays in the mould for a day and is finally removed from the mould and the bellows are made. Then it is again kept in the mould for two days, dried, and delivered to the customer.

o. **Tinning (Kalaycılık):** To protect copper tools and equipment, they must be tinned at certain intervals. Tin work is a kind of plating handicraft applied by melting and pouring tin, a silver-like metal with a bright ash color, called a white lead, on the surface of a material made of copper.

p. **Debbağlık/ Leatherworking/ Sepiculture (Sepicilik)**: Leatherworking, which is among the oldest occupational groups in the world, has been the source of a wide variety of disciplines and has been the subject of research. More than one term is used in the leatherworking profession. The person who tanned the skins is called "dabbağ", "*tabak*" or "*sepici*", the place where the skins are tanned is

called "*debbaghane"*, "*tannery (tabakhane)"*, "*dabağhane*", in other words, a kind of factory (Koyunlu, 1986, p:29). The Tire was one of the important tanning centers, especially during the Ottoman period. It is known that some of the leather needs of the Ottoman army were met in cities such as the Tire, Simav, Uşak, Kütahya, Yalvaç, and Diyarbakır where tanning was advanced. It is stated that the number of tanneries in The Tire, which was moved to the current Tannery Region in 1936 and which was once 22 tanneries, is 5 tanneries today. Today, it is stated that the tannery in the Karacaali neighborhood of the Tire district is the only enterprise that processes leather with old-style herbal methods (T.C. Ticaret Bakanlığı. 2021, p.314).

3.2. Knowledge and Practices Related to Nature and the Universe

Information about the Tire from the past to the present;

- The Holy Land of the Temple of Artemis in Ephesus, which includes the western villages of Tire from the Temple of Artemis in Ephesus and reaches Bozdağ, has given Tire a holiness for hundreds of years. The famous Roman Emperors Julius Caesar, Augustus, and Trian donated a part of The Tire's lands to the Temple of Artemis, which has also found its place in historical documents. During the Roman period, Tire was represented in the Roman Senate under the name of "Kaystros Senatorship", that is, Küçük Menderes Senatorship. In the Byzantine period, which started later, especially in the shaping of Orthodoxy, Tire was an active, decision-making, Christian city in the Church Councils in Kadıköy of Istanbul (then called "*Halkedon*") and Iznik, then called "*Nikea*" and "*Hagia Sophia*". Tire, which also had the right to vote

in these councils, continued this bright period throughout Byzantine history.

- Since the Tire was located on the *Silk Road* and the *King's Road*, it became a passage for the clergymen traveling to Ephesus. It is even rumored that the Virgin Mary stayed in Tire for two years on her way to Ephesus. Because of the Monks (keşişler) worshipping in the caves in the mountains, it is known as the 'monks' region'. It is one of the seven major episcopal centers of Anatolia and is surrounded by monasteries and churches.
- The Mausoleum of Theos, located near Halkapınar Village of the Tire, is the largest and highest tomb monument in Anatolia after the Mausoleum of Halicarnassus, one of the seven wonders of the world. Although the identity of the tomb monument is still a matter of debate among archaeologists today, the opinion that it was built in the name of Theos II, one of the Kings of the Seleucid State, who died in 246 BC in Ephesus, is predominant.
- The Tire is known as the Land of Madrasa during the Ottoman Period. While 82 Madrasas (Medrese) were established in Anatolia during the Ottoman period, it is said that the number of existing madrasas in the Tire was 32. Many Sultans, Judges, and Muftis who educated the grand vizier were trained in Tire Madrasas. The Madrasah of Molla Arap, the teacher of Yıldırım Beyazıt, Karakadı Madrasah, Dar-ül Kurra Madrasah of Selim II, the Madrasah of Ottoman Grand Vizier Lütfü Pasha were educational institutions that undertook the function of today's higher education institutions.

The fact that Fatih Sultan Mehmet the Conqueror created the Vefa neighborhood by making the Tire a model and that he settled people from the Tire in Skopje and Bayburt is an indication of the influence of this town on Ottoman culture. Thanks to the fact that the sultans received the culture and education of the clergymen raised in the Tire, The Tire transferred the culture of living together with people of different cultures and religions to the Ottoman Empire. The Tire made a great contribution to the Ottoman Empire's ability to manage different religions and cultures for years.

- There are many Mevlevihane in the Tire. One of them is Yahşi Bey Mevlevihane. The Mevlevihane, which is from the foundation of Halil Yahşi Bey, one of the commanders of Murat II, is better known as "Yeşil İmaret Zaviyesi" among the people. Located in the Yeni neighborhood, the zaviye is the first Ottoman work in the city. The deep niche of the mosque's mihrab suggests that the building may have been converted from a church. It preserves its uniqueness in Tire with its tile decorations on its minaret. The blue Stars of David, the symbol of Judaism, on the minarets of Yahşi Bey Mosque and Yalınayak Mosque, which were built in Tire in 1441 and used as a Mevlevihane, are shown as an example of the interaction between Judaism and Islam (İzmir Kültür ve Turizm Dergisi, 2023).
- It is said that Fatih Sultan Mehmet the Conqueror had his ships towed by land with Tire ropes when he conquered Istanbul due to the strength of Tire's ropes. (Kokal, 2016). It is also rumored that

the redbud trees decorating the Bosphorus of Istanbul were brought from the Tire Güme Mountains by Fatih Sultan Mehmet in 1453.

- From the 15th century to the 18th century, it is said that Tire was the mint of the Ottoman Empire for three hundred years and the coins of the empire were printed here (Kokal, 2016).
- The Polish Armenian Simeon Simeon, who visited the Ottoman Empire at the end of the 17th century, described Tire in his travelogue as a rich city with a lively trade, stating that every day cargo was tied up and a caravan set off.
- Evliya Çelebi wrote about Tire, which he passed through on his pilgrimage in 1671, as a large and lively city. According to him, the city had 68 neighborhoods, 144 mihrabs including 36 mosques, 30 madrasahs, 13 baths, 27 inns, 60 schools, 270 fountains, 5 fountains with lead domes and water flowing from house to house (Tire Ticaret Odası, 2022).
- Tire seems to emulate the three capitals of the Ottoman Empire. It is said that the fact that it is built on Yeditepe at the foot of Güme Mountain evokes Istanbul, its trees and greenery evoke Bursa, and its mosques evoke Edirne (Kokal, 2016).
- The city of Tire, which was occupied in the last periods of the Ottoman Empire, responded to the enemies who entered the city on 27 May 1919 with the Zincirli well bullet and regained its freedom on 4 September 1922. The Efe groups, mobilized by Gazi Mustafa Kemal's Havza Declaration, liberated the Tire from occupation and took its rightful place in the Kuvayi Milliye (Aydemir, 1987).

Famous People Raised in the Tire

- "Baruthane Minister Mehmet Necip Pasha", who served as governor of Damascus and Baghdad during the reign of Mahmut II (1786-1839), is an important figure for Tire. It is not known exactly why the Necip Pasha Library, which was built by Mehmet Necip Pasha in Tire in 1827, was built. In 1826, it is rumoured that Necip Pasha supervised Şanizade Ataullah Efendi, one of the greatest medical scholars raised by the Ottoman Empire, who was exiled here, during his exile, and when he came to Tire with him, he decided to make such a charity by regretting that the students of Ibn-i Melek Madrasah studied under the trees, but the periods in which these two people lived are different. This library, which is one of the last important examples of the Principalities period in Tire, was established near the old small library named after the Ottoman scholar Ibn Melek and at the location of the Ismâil Efendi Madrasah. The library currently contains a total of 2282 Arabic, Persian, and Turkish works, of which 1147 are manuscripts and 1135 are printed. 671 of these are valuable works provided by Necip Pasha and preserved in red leather cases after maintenance. The total number of books reached 11,330 with grants from various individuals and organizations (İslam Ansiklopedisi 2006; Tire Ticaret Odası, 2022; Kültür Envanteri, 2022) (Figure 3).

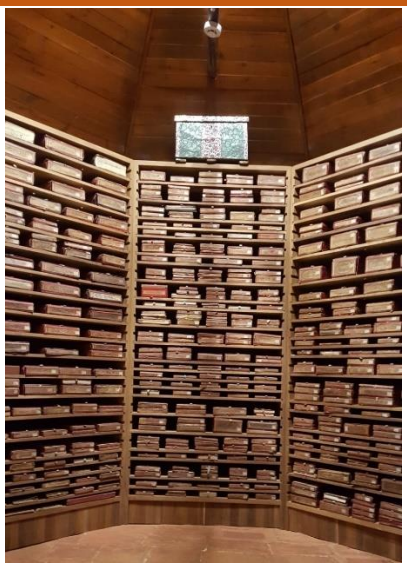


Figure 3. Necip Pasha Library in the Tire (Original Photo: Gül, 2023)

- Ali Arabi, who was the Sheikhulislam of Beyazit II and known as Molla Arabi, has taken his place in history as a person who played an extremely effective role as the sultan of the period.
- One of the scholars and intellectuals of Aydınoğulları Principality was Ibn Melek and his family. He left many works that were taught as textbooks in Ottoman madrasas. His brother Abdülmecid Ferişte wrote many works on Hurufism. These works were effective in the spread of Hurufism in Anatolia and Rumelia and continued their influence for a long time (Sarıkaya, 2017).
- Other famous personalities known today are painter Fuat Mengi DİLEKSİZ, theatre actor Nejat UYGUR, Yalçın MENTEŞ, Gönül DUMAN, Cansel ELÇİN, Faik TOKLUOĞLU, Halil ÇULHAOĞLU, Mehmet KURŞAKLIOĞLU, Muammer KETENÇOĞLU, Seha GİDEL, Tahir KARAPINAR, Tanju OKAN (singer), and others.

Traditional Cuisine of the Tire Region

- The historical past of the Tire is also reflected in the culinary culture of the Tire. The Tire's traditional food and beverages have important cultural heritage value. The fact that Tire's open street market, which is established on Tuesdays, is considered to be the largest market in the Aegean region is an indication of diversity and richness. The basis of Tire Cuisine is olive oil, herb dishes, red meat, and dairy products. In addition, the cultivation of all kinds of agricultural products and the development of milk and dairy products reveals its richness in terms of gastronomy (Gül et al., 2022).
- The basis of Tire Cuisine is olive oil, herbs, red meat, and dairy products. Tire is a grass paradise with its fertile plain irrigated by the Kaystros (Küçük Menderes) river for thousands of years and the Aydın Mountains on which it rests. In addition, all kinds of agricultural products (figs, olives, chestnuts, pomegranates, walnuts, cherries, peaches, black mulberries, etc.) are grown. Ovine and bovine breeding, milk, and dairy products have a very high capacity in terms of production and diversity (Gül et al., 2022).
- Herbaceous Plants; Ivy, foxglove, mallow, pincushion, shingle, stinging nettle, nettle, cibez, horseradish, kenger, cassia, helvacık, honeycomb, radicchio, labada, urgancık, tiksincik, kapurcuk, tangle, nerve grass, chicory, mustard, sirken, dog grape, cauliflower flower, gaymecik, chard, donkey halva, melengeç, bell can, purslane, cress, dill, gerdeme, cabbage dwarf and many more are among the herbs consumed by Tire’s. The people of Tire make roasts from the mixture of these

herbs using olive oil and tomato paste (sometimes onion, leek, radish, lemon, garlic, and salt are added to the mixture).

- Tire's most famous dish, the Tire shish meatballs (Tire şiş köfte), was registered as "*A Geographical Indication*" on 12.02.2021 (T.C. Kültür ve Turizm Bakanlığı, 2023b).

Types of the Tire's Local Cuisine;

Meals; The Tire Meatballs (Tire Köfte), Kuyu Tandir Kebab (Tak Tak kebab). Stuffed Bread (Ekmek Dolması), Lamb Meat Sevketi Bostan (Kuzuetli Şevketi bostan), Roasting Pulp (Posalı Kavurma), Eggplant Fish (Gıylangı -Patlıcan Balığı): Lamb Kapama (Kuzu Kapama), Keskek (Keşkek), Stuffed Zucchini Flowers (Kabak Çiçeği Dolması), Sinkonta Pumpkin Dish (Sinkonta Bal Kabağı), Herb Roasting (Ot Kavurma), Spring Rolls (Kolböreği), Gazel Vaccine (Gazel Aşı), and others. **Salad Types**: Some of the vegetables and fruits included in the salad are lettuce, arugula, cress, dill, green onions, tomatoes, red cabbage, carrots, cucumbers, leeks, white cabbage, green apples, quince, vine sprouts, etc. In the spring, acacia or redbud flowers are also added to the salad and others. Okma Salad Meal (Okma Salatası Yemeği). **Soups:** Heybeli Soup (Heybeli Çorba), Tandir Soup (Tandır Çorbası) and others. **Beverages (Non-Alcoholic);** Subye drink (Subye): Somata (Almond) drink (Somata (Badem) içeceği): Koruk sherbet (Koruk şerbeti): Compote juice (Hoşaf suyu): Pomegranate juice and syrup (Nar suyu ve ekşisi) and others. **Desserts:** Black Mulberry Curd Dessert (Karadutlu Lor Tatlısı): Keppat (Citrus) Jam (Keppat (Turunç) Reçeli): Fig, black mulberry, etc. Jams (İncir, karadut vb Reçelleri) and others. **Dairy Products**: It is generally consumed by making cheese (Tire cheese, Curd cheese, Mud cheese, and

others.) and yogurt varieties from cow's milk and others (Gül et al., 2022) (Figure 4).

		
Lamb Kapama (Kuzu Kapama)	**Tire Meatballs (Tire Köfte)**	**Kuyu Tandir Kebab (Tak Tak Kebab)**
		
Roasting Pulp (Posalı Kavurma)	**Stuffed Zucchini Flowers (Kabak Çiçeği Dolması)**	**Keskek (Keşkek)**
		
Salad varieties	**Salad varieties**	**Lamb Meat Sevketi Bostan (Kuzuetli Şevketi Bostan)**
		
Subye drink (Subye):	**Black Mulberry Curd Dessert (Karadutlu Lor Tatlısı):**	**Salad varieties**

Figure 4. Some types of Tire's Local Cuisine

3.3. Oral Traditions and Narratives

The Tire has two known legends. These are Bear Stone Legend and Bloody Pelit (Bloody Poplar) (Aydınoğlu, 2005). **Bear Stone Legend:** Once upon a time, four or five girlfriends went to the mountain to cut bushes. After cutting and preparing the bushes, they sat down somewhere and started to rest. Meanwhile, one of them fell asleep from tiredness. When the other girls wrapped the bushes, they had cut and prepared on their backs, they realized that one of their friends had fallen asleep. The girl was sleeping so well that her friends did not want to wake her up, saying, "She will wake up soon anyway". When the girl woke up, it started to get dark. The girl immediately loaded the cut bushes on her back and started walking down the mountain in the twilight. Meanwhile, a bear appeared from the side. When she saw that the bear chasing her was getting closer, she realized that there was no salvation and collapsed on the ground and said, "God, I am no longer salvation from this creature. Make me either a stone or a bird." When her prayer was accepted and she became a stone, the bear also caught up and reached out to the girl and they turned into stones together (İzmir Kültür ve Turizm Dergisi, 2023b).

Bloody Pelittir (Bloody Poplar) (Kanlı Pelit) Legend: It is rumoured in summary. In Tire, there was a famous Bey and an elegant and benevolent daughter whose beauty was legendary. Bey's daughter gets sick because of love. Bey cannot find a cure for her illness from any of the physicians and herbalists for the treatment of his daughter. Afterward, Bey announces that he will give whatever he wants to the one who will cure his daughter by sending messengers in all directions. A young man, a lover of truth, pleads to Almighty Allah, I am a strange servant, do not withhold your help from

me. Here are my hands in your presence, he prays, saying heal her, send me what she needs. As a result of 3 months of prayers and supplications, one day two dervishes with a bunch of roses in their hands came to his door and welcomed him into his house and prayed together, and the dervishes left the house saying that the rose petals could be used for therapeutic purposes. The young lover of truth took the roses with him and went straight to Bey and in this snow and winter, they brought me roses from Serendip Mountains. If I heal your daughter, will you give her to me as a wife? Bey promises to give what he wants if my daughter is cured. He boils the young rose petals and drinks the water drop by drop to the young girl who is seriously ill and prays continuously. The treatment lasts for a few days and the girl gets better and gets up. Bey tells the young man that he keeps his promise. He says you can start the wedding preparations. However, some mischievous people who do not consent to the marriage of the beautiful girl and who are jealous of the beautiful girl take the young lover of rights under the Great Pelit Tree at the foot of today's Toptepe the day before the wedding and kill him there. After killing him, they hang him on a branch of the great pelit tree. The name of the great pelite tree at the foot of Toptepe is known as "Kanlı Pelit (Bloody Poplar)" tree. The name of the neighborhood is Bloody Poplar. The great pelit tree continues to shed its bloody tears every Thursday for about seven hundred years for the love of two young people (Haber Tire, 2014).

Menkibeler**;** The source of Menkibeler is usually religion and holiness. For this reason, the lives and extraordinary stories of religious elders and famous people who have had miracles in history, which have religious and realistic features, are called menkıbe. There are many stories lived in the

Tire region. But only a few of them have survived until today. Gelin Rock in Başköy, one of the villages of Tire, Kara Kız Rock in Küçük Kale Village, Sır Hatunlar Tomb, Ayazma and Şems Masjid, and others, can be counted as (Aydınoğlu, 2005). One of the most important myths is the story of Ayazma and Şems Masjid.

The story of Ayazma and Şems Masjid is summarised as follows; The nations of different religions who lived together in Tire for centuries have inherited historical artefacts that can be considered unique examples of religious brotherhood and tolerance. One of these examples is the Ayazma and the Şems Masjid built on it. Şems Masjid was built on the Ayazma in the 15th century and its interesting story is given as follows. The daughter of a priest in the neighborhood of Derekahve, where the Ayazma is located, was afraid that her father would kill her for being a Muslim and hid in the area where the Ayazma was located. She was never seen again. In the early 1500s, Şemsi Bey of Tire, who was influenced by this story, built a masjid on the Ayazma to show the brotherhood of religions. This situation was conveyed to Manisa, to Murad II. Murad II comes to the place where the Ayazma is located one night and sends for Şemsi Bey and asks him why he did such a thing. When Mr. Bey explains his intentions, Murad II congratulates him and says, "You have done something that will be an example to the world". A sad love story between a Muslim boy and a Christian girl is also told in the region. According to the story, after their families refused to allow them to marry, the Muslim youth committed suicide by jumping into the stream in the Derekahve neighborhood. At the spot where the young man fell, a plane tree grew, taking the silhouette of his body. Christians living in this area believe that this plane tree is the

body of the young man who committed suicide. Thus, the lower floor of the Ayazma is sacred for Christians and the upper floor is important as a mosque, and its surroundings are covered with historical bridges and natural beauties (İzmir Kültür ve Turizm Dergisi, 2023; Hacıbaba 1940, 2023) (Figure 5).

Figure 5. Ayazma and Shams Masjid (Hacıbaba 1940, 2023)

Narratives Related to the Tire:

- It is not known in which age and by whom Tire was founded. Before the Turks, it was first under Hittite, then Phrygian, Lydian, Persian, Canaanite, and Byzantine rule. "It is stated that the name 'Tire' originates from the Hatti-Luvi language and it is said to have the meaning of 'Castle' or 'Fortress'." According to another source, the name "Tire" comes from "Tyria" meaning walled city. "While it was called "Thyrea" and "Thyriaia" during the Byzantine period, Evliya Çelebi states that it was called "Tire" as a galat since it was the structure of the queen named "Sirye" from the daughters of Cemşidin. This name took its present form after the Turks settled in the region (Aydınoğlu, 2005).

In Homer's Ilya; The Tire is depicted as follows; (T.C. Tire Kaymakamlığı, 2023).

On both sides of the Kystros (Little Menderes) Waving their wings arrogantly,
How they fly this way and that,
How the meadow sings when it lands with a clamour,
Just like that, people from ships and barracks spread on the plain of Skamandros (Old Menderes)...
The earth groaned under the feet of the grass...
Thousands of people stood on the flowery meadows of the Skamandros Plain, like leaves turning green in spring...
(HOMEROS)

Evliya Çelebi's Discourses on the Tire

- Evliya Çelebi's Tree; "*I set up my tent in this plateau and enjoyed it for two days and carved a Karahisarı style large writing on the trunk of a big plane tree with a knife, and I hope that as long as that tree stands until doomsday, that writing will not disappear and will become more beautiful writing with tim*e (Balpınar Plateau)". Evliya Çelebi's description of Tire is as follows: "*Sweatshirt grape, white bread, tandoori kirdesi, kebab, various kinds of iced sour cherry pleasantries and white cherries are unique in the world. Those who eat chestnuts, buns, and chicken pastry have a healthy heart*".
- Evliya Çelebi also wrote about the houses of Tire; "*The houses on the qibla side of this city are airy houses built on 7 slopes, streams, and hills. They are beautiful houses with gardens, one on top of the other, with all the windows facing the east and the Tire Sahara on the north side,"* he wrote (Postseyyah, 2017).
- **Lullabies:** It has been a habit since time immemorial for a mother to rock her baby in her lap or cradle by singing a lullaby in a soft voice to put the baby to sleep. Lullabies, which are not known by whom they were produced and are a part of our culture, are similar to lullabies sung all over Anatolia. At the end of the lullabies consisting of quatrains, the words "e,

e,..." are usually repeated, and sometimes there are words that have no meaning (Öncü, 2013).

The lullabies sung can be full of good intentions for the baby and its future, as well as words full of complaints. Tire's most famous melodized poem with one stanza in the style of "Lullaby" or local language (Nenni) in terms of both historical and natural aspects is as follows (Aydınoğlu, 2005).

"Did you not hear the call to prayer?
Didn't you wake up from the sleep of heedlessness?
My only child, you're dead and gone.
Didn't you fall with black rain?
lullaby lullaby lullaby
****
Oily, greasy pugaca,
There's no inside,
My child has no teeth
"My daughter doesn't sleep, lullaby
And a very naughty lullaby
The lullaby never stops without a game
Sleep, girl, sleep, baby, lullaby...

- **Idioms;** While "nalıncı keseri", which is also the subject of idioms, was used for shaping the wood in the process of Tire shoe shoemaker handicrafts, today the base of the shoe is formed with special saws. In this context, the expression "*nalıncı keseri*" has emerged in this way. It means; "*to carve for oneself, to always think of one's interests in one's work*". In addition, some known idioms specific to Tire are "*The baby is in the cradle and the dowry is in the chest*", "*Harman yellen düğün ellen*, etc."

3.4. Performing Arts

- Carombol Game (Lek game): The carombol game, which is played only in Tire, is a game brought by the Jews who were deported from Spain in 1497 and took refuge in the Ottoman Empire and settled in Tire, which was then the sanjak center of Aydın province. Today, this tradition is continued only here. The game, which is also defined as "billiards played by hand" in Tire, is loved by everyone in the district and is a part of this richness. Played on a 4x12 meters polished concrete floor called "field", the game is played by four people in pairs or pairs. Players start the game by throwing their oak from the starting band at the edge of the field to hit the spots. The game aims to hit one of the spots and keep the turn to play.
- One of the most important games played on Hıdrellez in Tire is the "*Niyet Game*". It is applied to open the fortune of young girls and determine their fortune. This game is called the "Mantufar" game in Tire. This game takes different names according to the regions such as fortune pot, Isparta; ring pulling, Sinop; mantufal, kadirli; intention extraction, etc. (Aydınoğlu, 2005).

3.5. Social Practices Rituals and Feasts

- In the Tire region, there are traditional practices such as "childlessness and solution practices, beliefs about pregnancy, birth and beliefs, birth preparations, birth and afterbirth, naming, teething, circumcision wedding, military service, marriage, marriage, seeing, asking for blood, promise cutting, engagement, wedding, henna night, pilgrimage, death. Although these social practices are similar to other regions, they are different in some aspects. For example, it is said that "*a wedding cannot*

be without keşkek" and keşkek, soup, chickpeas with meat, pilaf, salad, and semolina halva are mostly served at the wedding. Opening the door to those who come to congratulate the bride after the wedding", the bride usually wears her wedding dress for those who do not attend the wedding and accepts her guests in this way. If the bride comes to congratulate the bride, they bring milk so that her house will be fertile and say: "*I brought you milk, may your house be filled with faith, may you have a string of children, may one of them be a boy and one of them be a girl*" etc. There are many similar social practices (Aydınoğlu, 2005).

- Clothing and Adornment: The clothing of society carries many cultural elements such as value judgments, social status, aesthetic views, and artistic elements. The clothes, which are included in the intangible cultural heritage; The constructive laws of nature combine with human talent and are shaped according to their tastes and emotions, with their apparent values, create differences according to the way of view of the society in which they find themselves.
- The clothing culture of the Tire region, which is one of the important cultural centers of the Aegean Region and contains various socio-cultural communities, is suitable for both satisfying the imagination (that is, to make people think and develop and direct them back to their own culture) and appealing to the heart to address the artistic dimension in an artistic dimension within the lifestyles, natural conditions, belief, and cultural interaction.

- Traditional Nevruz Celebrations in the Tire date back to ancient times. Timur, who emerged victorious from the Battle of Ankara and captured Yıldırım Beyazıd Khan, spent the winter in Tire with his army. Timur, who is said to have burned and destroyed everywhere he passed, admired the city and did not touch a stone. Timur, who stayed in the city for four months, celebrated the arrival of spring with his soldiers on 21 March with great festivities. This celebration, which is a Central Asian tradition, is called "Nevruz". In the following days, while leaving Tire, Timur left all the old, sick, crippled, and wounded soldiers in his army here. As they apply these remaining mass habits, which are mixed with the Central Asian tradition, in every field, they do not give up Nevruz and celebrate it with great enthusiasm every 21 March in the promenades (Emekli, 2010).
- Built in 1496, Balım Sultan Tomb belongs to Balım Sultan, one of the founders of Bektashism, and is located on the outskirts of Hisarlık Village of Tire. It has special importance in terms of being the source of the traditional "Sultan Nevruz" ceremonies in Tire. These celebrations, which were first held around the tomb of Balım Sultan, spread to large areas in the following years and are celebrated by organizing great festivities and entertainment in all the promenades of the region with the participation of the local people (Emekli, 2010).
- Hıdırellez celebrations, which are celebrated as Hagia Yorgi for Orthodox and St Georgius for Catholics, are also held in the same places (Emekli, 2010).

- Traditional Camel Wrestling: The beginning of camel wrestling in Tire dates back to the Ottoman period. During the time of Sultan Mahmut II, one of the Ottoman beys, hundreds of camels were used in the transport of alum to be transported from Gediz Shaphane to Kuş Port, and barley and wheat to be sent from Menderes Basin to Kütahya, and after this transport work was completed, the camels were not delivered to their owners and riots broke out. Despite the sultan's edict, it was rumored that the people of Tire kept the camels in their hands for a long time due to camel wrestling (Münis Armağan, 2000). This tradition continues in Tire. In January 2022, a camel wrestling event was held for the 21st time. The winners of the wrestling are rewarded with money or carpets and rugs.
- Liberation Day Celebration of the Tire**:** The Tire was occupied by the Greeks on 28 May 1919 and regained its freedom after a great struggle on September 4, 1922. Every year 4 September is celebrated as the Liberation Day of Tire.
- Many festivals and races are held in the Tire. For example, the Tire Herb Festival (May 2017); In addition, some events such as Traditional Horse Races (4 September), Traditional Bullfights (5 June), and Culture and Art Events (3-6 September) are held (IZKA, 2013).
- Traditional and Historical the Tire Tuesday Market: It is the largest open-air market in the Aegean and even in Türkiye, where local producers and local consumers meet, and has partially gained a touristic identity. More than 2 thousand tradesmen set up stalls in the Tuesday

Market every week and it spreads over an area of approximately 3.5 km^2.

- In 2014, "The Tire City Museum" was established by Tire Municipality. In the museum, which was opened by restoring the old municipality service building, an urban memory and handicrafts bazaar was created (https:// www.tirekentmuzesi.com).
- There are many tombs and mansions in the center of Tire. These are Arappınarı (Kalpakkaya) Tomb, Ibn-i Melek, Buğday Dede, Ali Baba, Alamadan Dede, Balım Sultan, Soğan Dede, Sır Hatunlar, Dön Dede, Şemsi Mescidi, Süleyman Şah, Kesikbaş, Çıtlık Dede, Cağaloğlu Alipaşa Tomb, Hacı Fakıh Tomb, İsa Baba Tomb, Karakadı Mecdettin Tomb, Molla Çelebi Tomb, Musa Bey Tomb, Rum Mehmet Pasha, Şeyh Nasrettin Tomb, Yağlıoğlu Tomb (Aydınoğlu, 2005).
- The habits applied against the evil eye in the Tire can be summarised as follows; "A piece of cloth, blue beads, hyssop, garlic, stork droppings, shells of sea animals, old money, lead, paper with prayers written on it, amulets, etc. are believed to ward off the evil eye and neutralize it. In the region, the evil eye beads are the most acceptable. These are pinned on the person, they can also be hung as a necklace. They are also hung on houses and cars to prevent the evil eye. Recently, evil eye beads have become ornaments under the influence of fashion, and many varieties have emerged. In addition to the evil eye beads, it is believed that "those who carry amulets, handham juz, hyssop herb on them will be protected from all kinds of the evil eye, and bones, turtle

shells, baby shoes or horseshoes are tied to the newly purchased field or garden to prevent the Evil eye (Aydınoğlu, 2005).

4. Conclusion and Suggestions

The Tire region has a rich and diverse potential in terms of tangible and intangible cultural heritage values. It is observed that the protection and preservation of these values, especially intangible heritage values, is inadequate in terms of discourse and action and that these values are gradually being lost. In addition, it is observed that these values cannot be associated and reflected in the cultural tourism dimension of the Tire as a whole. In this context, it is possible to provide multifaceted added value with the cultural heritage values of the Tire region in diversifying and enriching the existing touristic supply and demand potential of İzmir Province. The fact that it is located close to the tourism destination triangle such as "İzmir City Center", "Kuşadası" (coastal tourism and cruise tourism tourists, second homeowners), and "Selçuk" (visitors to the ancient city of Ephesus, Selçuk-Efes Museum and the House of Virgin Mary) should be considered as an important advantage for tourism in the Tire.

Suggestions on the discourse and action dimension of the Tire's intangible cultural heritage values can be summarised as follows;

- A holistic strategic action plan for the tangible and intangible cultural heritage values of the Tire region should be created and integrated with Izmir tourism planning in a coordinated manner.

- Action plans should be prepared with the participation of all relevant stakeholders.
- Local identity values of the Tire region should be determined by scientific research and prioritized in the strategic action plan.
- Local administration and all stakeholders should create policies for the protection and sustainability of the identity of the region and the tangible and intangible cultural heritage values, and within the scope of sustainability, the forgotten or forgotten intangible cultural heritage values that can be revitalized should be identified and turned into action.
- A web-based information system covering tangible and intangible cultural heritage values in the Tire should be created. Cultural inventory should be updated and developed in a GIS environment.
- Events and activities should be envisaged to extend the cultural tourism potential in the Tire region to 12 months.
- Mechanisms to provide national and international funding support should be developed. Stakeholders with legal personality (institutions and organizations, universities, NGOs, etc.) should produce joint projects with internal and external resources.
- The number of NGOs and Tourism Agencies in the Tire should be increased.
- Educational activities should be organized to promote and disseminate the heritage values of the region.
- The Historic Efeler Way Route should be created to include many natural and historical values such as Bayındır, Ödemiş, Tire, and Selçuk

and should be designed and implemented by the European Cultural Routes standards.

- An international cultural and natural walking route should be created for the Küçük Menderes Basin to become a tourism destination area and contribute to its promotion.
- Daily and overnight cultural tourism routes should be established in the region and package programs should be organised.
- In the context of attracting and promoting cultural tourism in the Tire, accommodation facilities, and capacity should be increased. For this purpose, traditional house boarding or boutique hotel concepts should be encouraged and supported.
- The traditional houses of Tire should be restored and brought to tourism with different functionalities.
- It is not enough to exhibit local traditional handicrafts only in the Museum, handicraft workshops should be created, diversified, and developed in the city and rural areas.
- A handicraft village workshop should be established by the Local Administrations to keep the traditional handicrafts such as felting, lanyard weaving, “Beledi weaving”, and shoe making alive. In this village, it should be ensured that they are transformed into tourist products through educational activities and the production of souvenirs.
- In terms of the region's commitment to traditions and customs, especially asking for a girl, weddings, henna lighting, bride playing, dowry laying, birth, sending to military service, eating and drinking, folk dances are still being carried out with all their vitality and

authenticity. Some mechanisms should be developed to utilize these features in cultural tourism.

- Scientific research on intangible heritage values should be increased, visual and written materials should be produced, and product design, production, and marketing strategies should be developed.
- The Tire's economy is based on agriculture and livestock production. For this reason, within the scope of cultural tourism, agrotourism, gastronomy tourism, organic agricultural tourism, farm tourism, etc. should be organized by prioritizing their components.
- Local policies and strategies should be developed for the cultivation, support, promotion, encouragement, production, and marketing of tourist products, etc.
- National or international herb festivals, dairy festivals, gastronomy festivals, handicraft festivals, competitions with different concepts, fairs, and educational and awareness activities should be organized and heritage values should be promoted and kept alive.
- Village farms in rural areas outside the city should be utilized within the scope of tourism.
- Since the agriculture and livestock production of the region is rich and diverse and the gastronomy capacity is high, activities such as the production and collection of agricultural products and product sales may attract tourists. For this purpose, the development of farm tourism should be encouraged.
- A Tire gastronomy museum should be established.

- Within the scope of gastronomy tourism, the number of local restaurants where local dishes and beverages are served should be increased.
- Postcards and statuettes, key chains, t-shirts, t-shirts, paintings, rugs, etc. should be produced and marketed to promote the intellectuals and famous people who have lived in Tire from the past to the present.
- Museums should be created, or exhibitions should be opened for famous people.

As a result, as cultural heritage values are protected, they are valued, and as they are kept alive, their added value increases. Thus, it will be possible to convey cultural heritage values to future generations in their original form. The protection and preservation of local heritage values is everyone's responsibility and should be acted on with awareness.

Acknowledgements and Information Note

The article complies with national and international research and publication ethics. Ethics Committee approval was not required for the study. This article was orally presented at the II. International Art and Design Research Congress (ART&DESIGN-2022) held in Kayseri (Turkey) between 20-21 June 2022 and published only as an abstract in the Symposium Book.

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.

References

Ataberk, E. (2017). Tire (İzmir)'de turizm türlerini bütünleştirme olanakları: Kültür turizmi, kırsal turizm, agroturizm ve gastronomi turizmi, *Turizm Akademik Dergisi*, 4 (2), 153-164.

Atay, T. (2011). Demircilik. (Date of access: 21.07.2023) (http://turkiyekulturportali.gov.tr/Sayfalar/HalkBilim/ElSanatlarıGeleneği/Geleneksel Meslekler/Demircilik.aspx,

Aydemir, Ş. S. (1978). Tek Adam Mustafa Kemal (1919-1922). Remzi Kitabevi, A.Ş., 2. Cilt 76. İstanbul. ISBN: 978-975-14-1955-2

Aydınoğlu, B. (2005). Tire merkezinde halk inanışları, Celal Bayar Üniversitesi, Sosyal Bilimler Enstitüsü, Türk Dili ve Edebiyatı Ana Bilim Dalı (Yüksek Lisans Tezi), Manisa.

Doğan, M. & Vardar, S. (2010). Tire'nin Jeomorfolojisi ve Arazi Kullanımına Etkisi. l. Ulusal Tire Sempozyumu, s.17-31. 18-20 Ekim 2010 Tire / İzmir.

Gül, A., Cesur, B. & Bostan, Ç. (2019). Kültürel turizm kapsamında yerel kimlik oluşturma yöntem yaklaşımı. (Approach to the method of local identation in cultural tourism). *Eurasian Education & Literature Journal (Avrasya Bilimler Akademisi Avrasya Eğitim ve Literatür Dergisi)* Özel Sayı: UTKM3,15.06.2019. Haziran / July, 2019, ISSN: 2149-3510. s.461-476. http://utkmkongresi.mu.edu.tr/Belgeler/29/29/UTKM3bildirikitabi.pdf

Gül, A. & Gül, H. E. (2021). An approach to determining the evaluation criteria of cultural heritage sites in terms of heritage values. C. Çobanoğlu, E. G. Küçükaltan, M. Tuna, A. Başoda, S. Doğan, (Co-Editors): Advances in Managing Tourism Across Continents (MTCON 2021). p.198-209. April 01-03, 2021 University of South Florida M3 Center Publishing. ISBN 978-1-955833-00-4. https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=1006&context=m3publishing, DOI: 10.5038/9781955833004. Sarasota, FL, USA.

Gül, A. (2022). Original photographs were taken by the Authors.

Gül, A., Öncü, F. & Gül, H. E. (2022). Current situation and evaluation of Tire (İzmir) region in terms of gastronomy tourism. 2nd International Architectural Sciences and Applications Symposium. (IArcSAS-2022) Proceedings Book. September 09-10-11, 2022. p.671-687. Issued: 25/10/2022, Baku, Azerbaijan. ISBN: 978-625-8246-12-4. https://www.izdas.org/_files/ugd/614b1f_8ee72e2b86bf41269fd82e84e38776b1.pdf

Emekli, G. (2010). İzmir kültürel turizminde yeni bir merkez: Tire. Kültür Mirasının Kültürel Turizm Aracılığıyla Değerlendirilmesi. Ulusal Tire Sempozyumu, 18-20 Ekim 2010.

Haber Tire. (2014). Tire'nin en acıklı efsanesi: Kanlı Pelit. Tireli Eğitimci Yılmaz Göçmen anlatımı ile. (Date of access: 24.07.2023), https://www.habertire.com/tirenin-en-acikli-efsanesi-kanli-pelit

Hacıbaba 1940. (2023). Ayazma ve Şems Mescidi Tire. https://www.hacibaba1940.com/tirelik/).

İnalcık, H. (2008). *Türkiye Tekstil Tarihi Üzerine Araştırmalar*, İstanbul: Türkiye İş Bankası Yayınları. 80-81.

İslam Ansiklopedisi. (2006). Necip Paşa Kütüphanesi (Erişim Tarihi: 24.07. 2023. S. 494. https://islamansiklopedisi.org.tr/necip-pasa-kutuphanesi

İzmir Kalkınma Ajansı, IZKA. (2013). 2014-2023 İzmir Bölge Planı İlçe Toplantıları Tire İlçe Raporu Mayıs, 2013. İzmir.

İzmir Kültür ve Turizm Dergisi. (2023a). İnançların izinde Tire. (Date of access: 25.07.2023), (https://www.izmirdergisi.com/tr/turizm/inanc-turizmi/1561-inanclarin-izinde-tire

İzmir Kültür ve Turizm Dergisi. (2023b). Ayı Taşı Efsanesi. (Date of access: 25.07.2023). https://www.izmirdergisi.com/tr/dergi-arsivi/27-3ncu-sayi/2250-ayi-tasi-efsanesi

İzmir Vakfı. (2020). *Izmir'in Somut Olmayan Kültürel Mirası Geleneksel El Sanatları*. İzmiŕ Kalkınma Ajansı–İZKA

Kokal, Ö. (2016). Bereketli Topraklar Üzerinde, Tire ve Birgi. (Date of Access: 09,05,2016). https://www.mmarzm.com/gez-mekan/bereketl-topraklar-uzernde-tre-ve-brg_125100.

Kültür Envanteri. (2022). Necip Paşa Kütüphanesi. (Date of Access: 23,07 2023). https://kulturenvanteri.com/tr/yer/necip-pasa-kutuphanesi/#16/38.086372/27.732109

Metin, K. Gül, A. & Solmaz, S. (2017). The relationship between cultural landscape and cultural Heritage and protection principles (Kültürel peyzajın kültürel miras ile ilişkisi ve korunma ilkeleri). ICCHT-2017 International Congress on Cultural Heritage and Tourism, May 19-21, 2017, s.703-712, Konya-Turkey. ISBN: 978-605-83262-1-7

Metin, A. E. & Gül, A. (2017). Ethical approaches in protection of cultural heritage (Kulturel mirasın korunmasında etiksel yaklaşımlar). ICCHT-2017 International Congress on Cultural Heritage and Tourism, May 19-21, pp. 20-33. Konya, Turkey

Munis Armağan, A. (2000). *Tire Guide*, p. 14. İzmir.

Öncü, F. (2013). *Yalvaç'ın İnsan Birikimleri, Yalvaç'ın Somut Olmayan Kültürel Mirası*. Ankara: Dönmez Ofset. Yalvaç Belediyesi Kültür Yayınları.

Postseyyah. (2017). Evliya Çelebi'nin İzinde; Tire. (Date of access:16.07.2023). http://www.postseyyah.com/evliya-celebinin-izinde-tire/

Sarıkaya, F. (2017). İbn Melek ve ailesi. *MCBÜ Sosyal Bilimler Dergisi,* Cilt:15, Sayı:1, Mart 2017. s.639-656 Doi: 10.18026/cbayarsos.300051

T.C. Tire Kaymakamlığı. (2023). Tire'nin Tarihçesi. (Date of access: 22.07.2023), http://www.tire.gov.tr/tire-gece-manzarasi

Tire Belediyesi. (2020). 2020-2024 Stratejik Plan.

Tire Ticaret Odası. (2022). Date of Access:10.07.2023) https://tireto.org.tr/tire/el-sanatlari/

T.C. Ticaret Bakanlığı. (2021). Geleneksel Meslekler Ansiklopedisi. Esnaf, Sanatkârlar ve Kooperatifçilik Genel Müdürlüğü. ISBN: 978-605-7612-05-2. s.314. Ankara.

T.C. Kültür ve Turizm Bakanlığı. (2023a). Tire Beledi Dokuması. İzmir İl Kültür ve Turizm Müdürlüğü. (Date of access:19/07/2023). https://izmir.ktb.gov.tr/TR-294212/tire-beledi-dokumasi.html

T.C. Kültür ve Turizm Bakanlığı. (2023b). İzmir Coğrafi İşaret Tescilli Ürün Listesi. (Date of Access:19/07/2023). https://izmir.ktb.gov.tr/TR-208324/izmir-cografi-isaret-tescilli-urun-listesi.html

Ünal, Z. G. (2014). *Kültürel Mirasın Korunması*. İstanbul: İSMEP Rehber Kitaplar Beyaz Gemi Sosyal Proje Ajansı.

UNESCO Türkiye Millî Komisyonu. (2013). Somut Olmayan Kültürel Mirasın Geleceği Türkiye Deneyimi, ISBN 978-605-62155-5-1. Ankara.

UNESCO. (World Heritage Centre). (2013). Operational Guidelines for the Implementation of the World Heritage Convention. United Nations Educational, Scientific and Cultural Organisation WHC. 13/01 July 2013. http://whc.unesco.org/

UNESCO. (2022). Basic Texts of the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage. https://ich.unesco.org/en/convention

UNESCO World Heritage Centre. (1992-2023). World Heritage. https://whc.unesco.org/en/about/

Yaykal, N. (2023). Merhum Beledi Ustası Saim Bayrı'nın çırağı olan, kızı ve torunu 4. Kuşak Gülnur Yaykal, 5. Kuşak torunu Nurefşan Yaykal tarafından Beledi Dokuması Örnekleri (Orijinal Fotoğraflar Nurefşan Yaykal a aittir).

Prof. Dr. Atila GÜL

E-mail: atilagul@sdu.edu.tr
Educational Status
Undergraduate 1: Istanbul University, Faculty of Forestry, Department of Forestry Engineering (1986).
Undergraduate 2: Anadolu University Education Faculty of Business Administration, Department of Business Administration (2020).
Master: Yıldız Technical University, Science Institute, Landscape Planning (1988).
Ph.D.: Ege University, Science Institute, Field Crops (1998).
Associate Professor: UAK Landscape Architecture (2008).
Professor in Landscape Architecture (2013-...)
Professional experience:
• Süleyman Demirel University, Faculty of Architecture, Department of Landscape Architecture (2014-……...),
• Süleyman Demirel University, Faculty of Forestry, Department of Landscape Architecture (1999- 2014),
• Researcher, Aegean Forestry Research Directorate, İzmir (1993-1999).

Fadime ÖNCÜ

E-mail: fd_oncu@hotmail.com
Educational Status
License:
Degree: Halkla İlişkiler ve Tanıtım Selçuk Üniversitesi
Doctorate:
Professional experience:

Hatice Eda GÜL

E-mail: haticedagul@gmail.com
Educational Status
License: *Mehmet Akif University, Faculty of Engineering, Architecture, Department of Architecture,*
Degree:
Doctorate:
Professional experience:

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-9

Balancing Heritage and Innovation in Waterfront: A Study of Cultural Preservation and Urban Development

Assist. Prof. Dr. Doğa Üzümcüoğlu [1]

[1]Rauf Denktas University, Faculty of Architecture and Engineering, Department of Architecture, Nicosia, North Cyprus.
ORCID: 0000-0001-8968-5103
E-mail: doga.uzumcuoglu@rdu.edu.tr

Citation: Üzümcüoğlu, D. (2023). Balancing Heritage and Innovation in Urban Waterfront Architecture: A Study of Cultural Preservation and Development. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 9, 268-302. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Throughout history, urban waterfronts have been centers of cultural significance, serving as vital nodes of human activity and commerce. The interactions between communities and the ebbing and flowing of time have woven a complex tapestry of history into these dynamic spaces. Nevertheless, as cities evolve and modernize, the challenge arises of maintaining a delicate balance between preserving the historical fabric of these areas and welcoming innovation to meet the demands of a world in constant flux. This chapter explores the complex relationship between heritage and innovation in urban waterfront architecture, particularly emphasizing the preservation of cultural identity and environmentally conscious growth.

The chapter's discussion and descriptive analyses are based on the author's extensive research, encompassing studies from their Ph.D. dissertation, scientific articles, and comprehensive searches in waterfront development. Additionally, the author draws upon their firsthand experiences in this domain, including in-depth field studies and several case study analyses conducted in various cities in Cyprus, such as Kyrenia Ancient Harbor and Limassol Promenade. These empirical investigations and academic pursuits provide a solid foundation for the chapter's examination of the intricacies and challenges surrounding waterfront development, facilitating a nuanced understanding of the subject matter.

The first section of this chapter provides a comprehensive overview of the context within which urban waterfront architecture operates. It examines

the historical development of waterfronts, emphasizing their essential roles as economic hubs, cultural landmarks, and social spaces. By examining the forces that have shaped waterfronts throughout history, the relevant authorities can better understand the challenges and opportunities posed by these distinctive areas in the present.

The second section explores the significance of cultural preservation in urban waterfront architecture. It examines the intrinsic value of heritage, not only as a relic of the past but also as a living link to a community's identity, traditions, and collective memory. It investigates the approaches and strategies used to preserve and exhibit the cultural heritage embedded in the coastal architecture, using examples and best practices.

The third section focuses on innovation and environmentally conscious growth in urban coastal architecture. The study examines how innovations in design, technology, and environmentally conscious practices reshape waterfront areas while preserving their historical context. By analyzing contemporary examples of innovative waterfront developments around the globe, the study highlights the incorporation of modern elements and cutting-edge solutions to resolve environmental challenges, improve functionality, and promote social inclusion.

The fourth section of this chapter is devoted to the intricate task of striking a compromise between tradition and innovation. Examining the multidimensional considerations architects, urban planners, and stakeholders must consider when revitalizing waterfront areas using theoretical frameworks, examples, and expert insights. It investigates the potential conflicts, inventive tensions, and collaborative strategies

involved in balancing the preservation of cultural heritage with the need for progress and adaptability.

In the concluding section, the study considers the changing function of urban waterfront architecture in an era of rapid urbanization and environmental degradation. It discusses the emerging trends and opportunities that may influence the development of coastal areas, such as the incorporation of intelligent technologies, resilient design strategies, and community engagement. The study concludes with insights and suggestions to guide future efforts to balance heritage and innovation in urban waterfront architecture by reflecting on the chapters' findings.

This chapter focuses on the intricate relationship between heritage and innovation in urban waterfront architecture through a comprehensive examination. By comprehending the complexities and nuances of this fragile equilibrium, architects, urban planners, policymakers, and stakeholders may navigate the obstacles and seize the opportunities presented by these unique spaces to create environmentally responsible, culturally rich, and vibrant waterfront environments for future generations.

2. Establishing the Context

This section examines the historical development and complexity of urban waterfronts. Throughout history, waterfronts have evolved from vital economic centers to cultural landmarks and social gathering places. This section focuses on the effects of industrialization on waterfront areas and subsequent revitalization initiatives. The study gains insight into the difficult task of harmonizing tradition and innovation in urban waterfront

architecture by comprehending the various roles and functions waterfronts serve.

2.1. The Evolving Character of Urban Waterfronts

Urban waterfronts have undergone a remarkable transformation throughout the centuries, shaped by many factors spanning from commerce and industry to social and cultural dynamics (Üzümcüoğlu & Polay, 2022). In this section, the study examines the historical development of urban waterfronts, documenting their evolution from humble ports and harbors to thriving hubs of activity and symbols of civic identity.

Since their earliest origins as vital gateways for waterfront commerce and transportation, waterfronts have been the lifeblood of urban areas. These strategic locations provided easy access to waterways, facilitating the movement of products and people and expanding commerce. As urban populations grew, waterfronts grew to accommodate many warehouses, factories, and markets that thrived on exchanging commodities and services (Craig-Smith, 1995). There is a wide variety of cultural, commercial, and residential uses for waterfronts, including but not limited to residential settings; hotels; heritage; sports amenities; recreational zones; tourism; local allures; new employment extents (Desfor, Goldrick & Merrens, 1988); festivals; exhibition areas; concert activities; museums; public arts (Breen & Rigby, 1996); transport; industry; nutrition; commerce (The Waterfront Center, 1999); leisure activities; exclusive housing (Giovinazzi & Moretti, 2010); office developments; retail; cafés; inns; aquariums; festival marketplaces; historic boats; hotels; and several

others (Kostopoulou, 2013), and industrial, manufacturing, agricultural, and service activities (Popovic, Vlahovic, & Vatin, 2015).

The cultural significance of waterfronts has increased over time. They became the economic, social, and cultural centers of cities (Iwata & Rio, 2004; Osman & Farahat, 2018). Waterfront areas have become community gathering places, hosting thriving markets, festivals, and other social events. The visitors acquired their own identity, frequently reflecting the distinctive qualities and atmosphere of the city to which they belonged.

Hoyle (2000) wrote in an article that waterfront redevelopment in port cities and elsewhere is here to stay due to advancements in technology and transportation and as a characteristic of urban development in the twenty-first century. The relative success of such innovations will be primarily determined by three integration factors: first and foremost, integration of the past and present; second, integration of diverse goals and purposes; and third, integration of communities and their surrounding environments.

Nevertheless, the eighteenth and nineteenth centuries industrial revolutions significantly altered waterfronts. Warehouses and factories now dominate the landscape due to the rise of mechanization and the requirement for more extensive infrastructure. The once vibrant communal spaces began to lose vitality as the emphasis shifted from public interaction to industrial efficiency.

Throughout the 1970s, 1980s, and 1990s, urban waterfronts became integral to global urban renewal and regeneration initiatives as urban waterfront communities adopted strategies for post-industrial urban growth. Sydney's Darling Harbor has been transformed from a dilapidated

waterfront into a tourism attraction that highlights the city's history. Once a sign of industrial decline, Baltimore's Inner Harbor is now a symbol of post-industrial urbanization, replete with its associated undertones of gentrification, spectacle, social conflict, and injustice. Melbourne, Australia's urban waterfront, was renovated to reflect the city's internationally oriented, economically conscientious, and consumption-driven urban strategy. The waterfront of Hong Kong has been renovated and significantly expanded as part of the renovation. It includes the construction of entirely new urban infrastructure, including airports, railroads, highways, tunnels, and bridges. Toronto's industrial and rail facilities that once lined the shores of Lake Ontario have been redesigned and continue to develop. A post-industrial zone within the London docklands has been converted into a modernist pastiche, with luxury apartment balconies lining the quaysides and cranes serving as antiques (Davidson, 2012).

Urban waterfronts have experienced a renaissance in recent decades. Cities acknowledged the unrealized potential of these underutilized areas and launched ambitious revitalization initiatives. The conversion of dilapidated warehouses into mixed-use developments, the development of waterfront parks and promenades, and the incorporation of cultural and recreational facilities have revitalized these formerly neglected areas. Waterfronts have become magnets for residents, travelers, and businesses, highlighting the need for considerate preservation and inventive design.

2.2 Economic Hubs, Cultural Landmarks, and Social Areas

The waterfronts of urban areas have always served as economic hubs, cultural landmarks, and social gathering sites. In this subparagraph, the study delves deeper into waterfronts' various roles and functions, casting light on their rich tapestry of activities and their importance to the urban fabric.

Historically, waterfronts have been economic centers for commerce and trade. The establishment of ports and docks that facilitated domestic and international commerce was necessitated by the proximity of waterways, which enabled the efficient transport of goods and led to their establishment. Along the waterfront, warehouses and storage facilities sprung up to meet the needs of the expanding urban population. Not only did these economic activities sustain the local economy, but they also shaped the urban landscape, defining the architectural style and character of waterfront areas.

Waterfronts are culturally significant landmarks that embody a community's heritage and collective memory (Fernandes, de Sousa & Salvador, 2017). The waterfront is frequently dotted with historic structures, monuments, and landmarks that serve as reminders of a city's past and cultural identity (Seçmen, 2018). These architectural treasures are windows into a place's history, art, and stories, contributing to the residents' sense of place and pride.

In addition, waterfronts have historically been vital social spaces, providing opportunities for recreation, leisure, and community engagement. Along the water's edge, parks, promenades, and public

squares offer a respite from the bustle of the city, inviting people to congregate, relax, and appreciate the scenic views. Waterfronts cultivate a sense of belonging and civic pride by serving as democratic gathering places for people from diverse backgrounds.

Through a case study of the Seattle Waterfront, Wessells (2014) examines in what way "doing justice" on the waterside reaches afar physical features by investigating crucial aspects, including accessibility, regional fairness, and affordability.

The Barcelona case study by Wuijts et al. (2022) reveals that stakeholders highlighted the need for well-being, a socially fair and secure city that encourages physical activity, offers clean air and premium public areas, and safeguards its residents' physical and mental wellness. It may be essential to raise the amount of green and blue public spaces in low-income communities to build a healthful, socially fair, and safe city. For instance, a riverfront revitalization project on the Bess River altered pedestrian and bicycle access to the waterfront. Therefore, developing green and blue areas, such as water squares, playgrounds, and green parks, provides areas for cooling and storing water. These opportunities for workouts, calmness, and socializing improve health. Consider that these concerns still need to be tackled during urban planning. Consequently, investments in premium blue and green areas could accelerate gentrification and aggravate socioeconomic disparities (Wuijts, et al., 2022).

Urban waterfront development primarily concerns social cohesion, communal appeal, cultural plea, safety, openness, and well-being, various green and blue places, easing areas, and socialization occasions.

Gentrification and socioeconomic inequality become hazards when social factors are not measured through the design and operation phases.

In a broader sense, revitalization is often operationalized through numerous socio-economic directories, such as a growth in housing cost and stock, a reduction in joblessness, and a rise in family profits. Consequently, revitalization is associated with enhancements in human well-being. According to this definition, well-being comprises freedom of select and behavior, health, positive social interactions, and safety (Nixon, Carlton & Ma, 2022).

Understanding the complexity of balancing patrimony and innovation requires an appreciation of the multifaceted nature of urban waterfronts and their historical development. By recognizing waterfronts' economic, cultural, and social roles throughout history, the study obtains a broader perspective on the challenges and opportunities inherent in developing sustainable and culturally rich urban waterfront environments.

3. The Value of Cultural Preservation

This section focuses on the value of cultural preservation in urban waterfront architecture. It emphasizes the significance of cultural heritage as a living link to identity and memory in defining the character of waterfront areas. This section examines strategies for protecting cultural heritage, such as conservation, restoration, community engagement, and adaptive reuse. The study ensures the continuity of historical narratives by preserving and incorporating cultural heritage into waterfront designs. It creates vibrant, inclusive spaces celebrating the past while looking to the future.

3.1. Heritage as a Living Link to Identity and Memories

Cultural preservation is paramount in urban waterfront architecture as a bridge connecting the past, present, and future. In this section, the study explores the significance of heritage as a living link to identity and memory, highlighting its role in shaping the character of urban waterfronts.

In addition to tangible elements such as historic buildings and structures, cultural heritage includes intangible aspects such as traditions, conventions, and stories (Sairinen & Kumpulainen, 2006). It represents the community's collective memory and provides a sense of continuity and identity amidst the ever-changing urban landscape. Often interwoven with the historical fabric of a city, urban waterfronts bear witness to the stories of generations, reflecting the values, aspirations, and struggles of those who shaped them.

The preservation of cultural heritage in urban waterfront architecture transcends conservation efforts. It entails recognizing the value of historical strata and permitting them to coexist harmoniously with modern interventions. Architects and urban planners can create designs that commemorate the past while addressing the needs and aspirations of the present by understanding the narrative embedded in these spaces.

3.2. Protection of Cultural Heritage in Urban Waterfront Design

In this section, the study examines the strategies and methods used to protect cultural heritage within the context of urban waterfront architecture. Efforts at preservation must establish a balance between

preserving the authenticity and accommodating functional needs and contemporary expectations.

Conservation and restoration techniques are essential to preserving historic waterfront structures' physical structures and characteristics. These techniques seek to preserve the original character, materials, and craftsmanship, thereby preserving architectural heritage (Xie, 2023). Sensitivity to the historical context, supported by exhaustive research and documentation, enables informed decision-making and ensures that interventions are compatible with the significance and integrity of the site. In addition to physical preservation, community engagement, and participation are essential for the long-term conservation of cultural heritage along urban waterways. By involving residents, cultural organizations, and other stakeholders, a sense of ownership and pride can be nurtured, fostering a sense of shared responsibility for preserving and promoting the historical significance of these spaces (Üzümcüoğlu & Polay, 2022; Fernandes, de Sousa, & Salvador, 2017; Xie, 2023). This participatory strategy also facilitates the transmission of intangible heritage, such as traditional knowledge, skills, and cultural practices, thereby ensuring their continued vitality.

Additionally, the adaptive reuse of historic waterfront structures can revitalize these areas while preserving their cultural significance. By transforming derelict warehouses, docks, or industrial structures into vibrant cultural centers, museums, galleries, or mixed-use developments, these structures can provide spaces for cultural expression, economic activities, and community engagement.

The study not only preserves the tangible and intangible treasures of the past by preserving cultural heritage in urban waterfront architecture but also enriches the present and future. By striking a balance between preservation and innovation, practitioners can design dynamic and inclusive waterfront spaces that honor the legacy of a community while addressing the requirements of a world in rapid evolution.

4. Embracing Innovation and Sustainable Development

This section emphasizes the significance of adopting sustainable and innovative practices in urban waterfront architecture. It discusses design and technology advancements, such as adaptable approaches, digital tools, and intelligent technologies, which enhance the functionality and efficacy of waterfront development. Additionally, the section emphasizes sustainable practices, such as incorporating green infrastructure, energy efficiency, renewable energy sources, and social considerations for inclusive and community-oriented waterfront spaces. By embracing innovation and environmentally conscious development, urban waterfronts can become resilient, efficient, and environmentally conscientious spaces that satisfy the changing needs of cities while preserving the usual environment.

4.1 Developments in Engineering and Technology

Urban waterfront architecture should embrace innovation and technological advancements to achieve environmentally benign development (Cialdea & Pompei, 2022; Üzümcüoğlu & Polay, 2022; Xie, 2023). This section examines how evolving design and technology are

shaping the development of waterfront areas, enhancing functionality, and promoting sustainable solutions.

Waterfront architecture has increasingly incorporated adaptability, flexibility, and resilience design principles in recent years (Le, 2020; Jun, 2023). A mixed-use development, urban regeneration, and transit-oriented design create multifunctional spaces that optimize land use and promote sustainable transportation options (Ravagnan, Rossi & Amiriaref, 2022; Schreurs, Scheerlinck, & Gheysen, 2023). Moreover, developments in digital technologies, such as Building Information Modelling (BIM), parametric design, and virtual reality, allow architects and planners to visualize, simulate, and optimize waterfront projects more efficiently and sustainably (Wei, Bonenberg, Zhou, Wang & Wang, 2018).

According to Wei et al. (2018), based on the case study analyses of the Jinan Riverfront District North Lake area conceptual design utilizing BIM, the benefits are numerous: these are better plans for wiser, more sustainable environments; staff and project stakeholders can better share digital design information, geospatial data, infrastructure models, and other documentation; improve coordination with architects, engineers, and others; utilize this data to model, analyse, and accurately predict performance, appearance, and cost; deliver projects reliably, quicker, cheaper, and with less environmental impact.

Moreover, creative technology integration is revolutionizing urban waterfronts. The Internet of Things (IoT), sensor networks, and data-driven systems provide real-time infrastructure monitoring and management opportunities, enhancing operational efficiency and resource

allocation (Shi et al., 2020). In waterfront areas, intelligent illumination, waste management systems, and energy-efficient solutions contribute to sustainability and improve the quality of life.

According to Shi et al. (2020), the Sidewalk Toronto project, which is dependent on Toronto's eastern waterfront, aims to influence the city's future and serve as a model for comprehensive urban development on a global scale. Using technology and data, the idea combines intelligent life, transportation, public space, and fundamental architecture to endow the city with an intelligent mind, sophisticated limbs, and systems for the senses. Sidewalk Toronto facilitates the combination of the physical and digital layers, resulting in more adaptable construction, roads created with individuals in mind, inclusive public areas, and the unrestricted use of underground facilities. Therefore, intelligent technical support is required for high-level services such as intelligent traffic lights based on artificial intelligence and machine perception, intelligent parking toll mechanisms, drones, logistics machinery, LED variable lane mechanisms, open high-speed wireless Internet, data protocols for city event awareness, machine learning modelling for facility circumstances, and advanced learning cameras with front-end-designed processing features. Everything on Sidewalk Toronto, from smart gadgets and sensors to fundamental facilities, has become interconnected and intelligent due to the merging of AI. Due to intelligent security, bicycles could be rented on demand for a nominal fee. Using machine learning, massive amounts of data are continuously collected, analysed, and displayed on real-time maps. Intelligent models are capable of detecting and predicting urban events.

With the addition of driverless transportation, complimentary wireless Internet access, smart medical care, and other technological components, the city would become remarkably more intelligent.

4.2 Sustainable Urban Waterfront Architecture Practices

Sustainable development is the most essential aspect of urban waterfront architecture to resolve environmental challenges and ensure long-term viability. This section investigates waterfront design and operation practices prioritizing environmental responsibility, resource efficiency, and resilience.

The incorporation of green infrastructure is an essential aspect of sustainable development. In addition to enhancing the ecological value of waterfronts areas, living shorelines, wetlands, and urban parks also provide essential ecosystem services, such as stormwater management, biodiversity conservation, and climate regulation (Xie, 2023; Mo, Chen, & Xie, 2023). Waterfront developments can mitigate the effects of climate change, protect against sea-level rise, and enhance water quality by incorporating nature-based solutions.

According to Mo et al. (2023), the urbanization of Beijing has exacerbated the fragmentation of ecosystems, particularly forests and wetlands. Therefore, wetland conservation is a cornerstone of Beijing's sustainable economic and social development. The following recommendations are made for the case study area: support the use of rainwater and recycled water and enhance the organized usage of water resources; bolster the ecological protection and restoration endeavours to realize the environmental protection system of water–city integration; and construct

a forest water communication network to eliminate obstacles such as limited resource space, high human stress, and a lack of scientifically-based policies.

Furthermore, energy efficiency and renewable energy sources play a crucial role in sustainable waterfront architecture. Passive design strategies, energy-efficient building systems, and the integration of solar and wind energy technologies reduce carbon emissions and improve the resiliency of waterfront developments (Gabbar & Esteves, 2023). Rainwater harvesting and greywater recycling are water conservation measures contributing to resource efficiency and supporting sustainable water management practices (Parween & Sinha, 2022).

Urban waterfront architecture should also take social sustainability into account. Designing for inclusion, accessibility, and community engagement promotes social cohesion and guarantees equitable access to waterfront spaces (Guvenbas & Polay, 2020). Public participation in decision-making processes and the provision of amenities for various user groups produce vibrant, inclusive, and pleasant waterfront areas (Üzümcüoğlu & Polay, 2022).

By embracing innovation and sustainable design in urban waterfront architecture, it is possible to create resilient, efficient, and harmonious spaces that respond to the requirements of cities while protecting the environment. By striking a balance between technological advancements, sustainable practices, and social considerations, waterfront areas can serve as models of innovation and environmental stewardship, inspiring sustainable urban development.

5. The Art of Balancing Heritage and Innovation

This section examines the balancing act between tradition and innovation in urban waterfront architecture. It discusses the significance of reconciling the past with the present by incorporating heritage elements into modern designs and fostering placemaking. The section also focuses on strategies for integrating contemporary interventions with historical contexts, such as contextual design, design guidelines, and adaptive reuse. Urban waterfronts can become vibrant spaces that respect their historical significance while embracing the potential of progress and contemporary aesthetics by establishing a thoughtful balance between heritage preservation and innovative design.

5.1 Harmony of the Past and Present

Urban waterfront architecture is a subtle art that requires striking a delicate equilibrium between history and innovation. This section examines the difficulties and strategies involved in reconciling the past and the present, recognizing the importance of cultural heritage while embracing the need for innovation and progress.

To maintain a sense of continuity and identity, preserving and celebrating waterfront areas' historical character is essential. The past can be honored by incorporating heritage elements into contemporary designs, such as retaining facades, repurposing historic structures, and incorporating historical references into new construction. This harmony between the past and the present creates a visual dialogue that allows tradition and innovation to coexist (Figure 1).

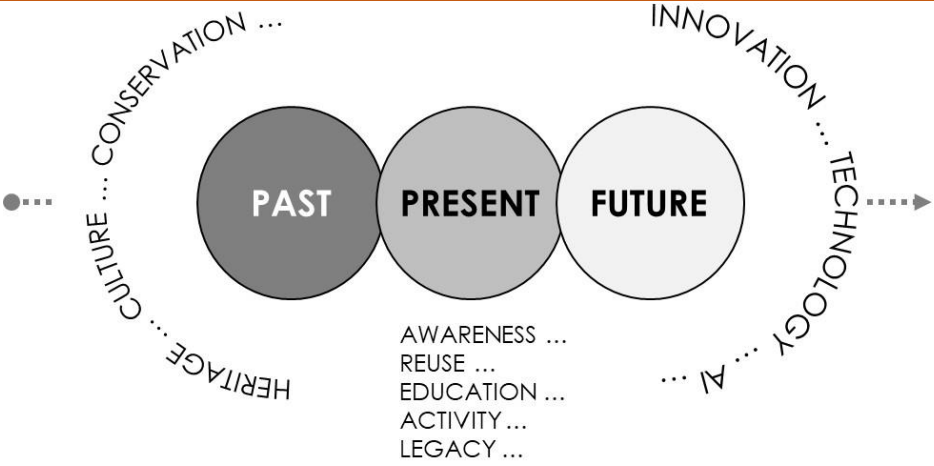


Figure 1. The necessary dialog between the past, present, and future in urban waterfront architecture

In addition, placemaking is essential for harmonizing tradition and innovation. Through the creation of significant public spaces and the activation of waterfront areas with cultural programming, art installations, and community involvement, a sense of place and belonging is fostered (Mohamed & Salim, 2018; Üzümcüoğlu & Polay, 2022). These shared experiences help bridge the distance between the historical context and modern aspirations, ensuring that the past and the present have a significant presence in the urban waterfront environment.

According to Üzümcüoğlu and Polay's (2022) analysis of the Kyrenia Waterfront, a historically significant location in Cyprus, there is a need for more promotion of historic buildings. There should be increased cultural and artistic pursuits; the distinctive image needs to be safeguarded, and modern image requirements should be met. In addition, the potential of alternative tourism must be considered when developing new initiatives

(e.g.; creative and cultural tourism); enhancing open internet entree and technological advantages, for example virtual reality zones, and research and development areas should be fortified to be resourceful and inventive.

5.2 Incorporating Contemporary Interventions in Historical Context

Integrating contemporary interventions into the historical context of urban waterfronts requires a considerate and sensitive approach. This subparagraph explores the strategies and factors involved in integrating innovation with the historic fabric of waterfront areas.

Contextual design is fundamental to successful integration. By analysing the historical context, including architectural styles, materials, and spatial relationships, architects and urban planners can create designs that are respectful of and responsive to the existing built environment (Mohamed & Salim, 2018; Abdul Latip, 2020). Complementary interventions to historic structures' scale, massing, and materials contribute to the harmonious integration of innovation into the waterfront landscape.

In addition, design guidelines and preservation standards can provide a framework for balancing innovation and preservation (Jones, 2017). These guidelines ensure that new developments and renovations in waterfront areas respect their historical significance. By establishing a common language and framework, design guidelines enable a continuous dialogue between heritage preservation and innovative design.

In addition, the adaptive reuse of historic waterfront structures can serve as a model for harmonizing tradition and innovation. Reusing ancient warehouses, industrial buildings, or waterfront infrastructure can introduce new functions while preserving their architectural legacy (Wang & Nan,

2007). This method gives historical structures new life and demonstrates the potential of combining heritage preservation with innovative adaptive reuse.

In the art of harmonizing heritage and innovation, a delicate equilibrium is achieved in which urban waterfronts' historical significance and cultural identity are honored while also embracing the possibilities of progress and modern design. Urban waterfronts can be transformed into dynamic and harmonious spaces that combine the best of the past and the present, leaving a legacy for future generations using contextual design, adaptive reuse, and inclusive placemaking techniques.

6. Prospective Paths and Concluding Remarks

This section addresses the future directions of urban waterfront architecture, highlighting the evolving approaches and emerging trends that will influence the design and development of waterfront areas. It highlights the significance of resilience, climate adaptation, and sustainable practices in creating a balanced and sustainable future for urban waterfronts. Additionally, the section emphasizes the importance of community engagement, social inclusion, and the integration of heritage and innovation. By considering these factors, urban waterfronts can become thriving, environmentally friendly, and socially vibrant spaces that preserve cultural heritage, embrace innovation, and cultivate a sense of place and belonging.

6.1 Evolving Urban Waterfront Architecture Strategies

The urban waterfront architecture discipline is constantly evolving, driven by shifting societal needs, environmental concerns, and technological

advances. This section examines the emerging trends and future orientations reshaping waterfront design and development.

A key aspect of future directions is climate adaptation and resilience. Urban waterfronts must be designed to withstand rising sea levels, storm surges, and extreme weather events due to the growing threats posed by climate change. Concepts such as floating architecture, ecological infrastructure, and adaptive design strategies are gaining popularity, offering novel approaches to bolstering the resilience of waterfront areas (Le, 2020).

Moreover, incorporating sustainable and regenerative practices will be crucial to the future of urban waterfronts. It includes implementing circular economy principles, renewable energy systems, and regenerative landscapes that promote biodiversity and ecological restoration. Following global sustainability objectives, future waterfront developments will aim to be carbon-neutral, energy-efficient, and socially equitable (Mo, Chen, & Xie, 2023).

In addition, the future of urban waterfront architecture will emphasize social inclusion and community engagement. Waterfront spaces that reflect the requirements, aspirations, and cultural identities of the people they serve will result from collaborative planning processes, co-designing with local communities, and incorporating diverse perspectives. This approach ensures that waterfront developments are aesthetically pleasing, socially dynamic, and inclusive (Üzümcüoğlu & Polay, 2022).

The fundamentals of waterfront architecture are still relevant today. Since the 1970s, the discussions have evolved and come up to today (Table 1).

Since there is a potential threat to waterfront development planning and practice, the forthcoming additions to the current principles are essential. To effectively address these issues, technological advancement, innovation, and creativity are currently crucial factors.

Table 1. Changes in the issues concerning waterfront architecture (Modified from (Üzümcüoğlu & Polay, 2022)

Waterfront Architecture Concerns	Declining Movement Since the '70s	Renewing Movement			
	The '80s	*the '90s*	*the 2000s*	*the 2010s*	*the 2020s*
Physical	1. Flexibility in terms of usage (Gehl, 1987) 2. Accessibility (Gehl, 1987) 3. Restoring public perception, facilities, and the natural setting (Wrenn, 1983)	1. Regarding the decreased focus on environmental concerns (Jones, 1998) 2. The significance of environmental cooperation (Jones, 1998)	1. Re-creation of the location's image. (Marshall, 2001; Hoyle, 2002) 3. Urban competitiveness (Marshall, 2001)	1. Bridging the city and water (Meiner, 2010; Jones, 2017) 2. Physical framework, settlement, and permeability formation (Carta, 2012) 3. Possibilities for growth (Timur, 2013) 5. A scale concern throughout the improvement (Jones, 2017)	1. City and water connection (Armenio & Mossa, 2020) 2. Advances to individual psychological, societal, and socioeconomic well-being that are equal and sustainable. (Angradi, Launspach, & Wick, 2022)
Functional	1. Variety of facilities (Gehl, 1987) 2. Office-driven and recreation-driven growth (Parkinson, 1989) 3. Essential, elective, and social pursuits (Gehl, 1987)	1. Diversity of facility types (Breen & Rigby, 1994; Jones, 1998)	1. Blending both private and public utilizes, such as marketing and entertaining (Vallega, 2001)	1. Diversifying of port's usual uses (Desfor et al., 2012) 2. Opportunities for residential, recreational, touristic, business, and other public uses (Smith et al., 2012; Kostopoulou, 2013) 3. The use of creative waterfront redevelopment (Carta, 2012)	1. parks, green places (Zhao, 2020) 2. considering waterfronts as multifunctional spaces (Miloš & Dragana, 2021) 3. Defend, develop, or reestablish the natural setting (Angradi, Launspach, & Wick, 2022)
Social	1. Enhancing employment possibilities (Breen & Rigby, 1985) 2. The effect on collaboration abilities (Falk, 1989) 3. Influence on socioeconomic characteristics (Falk, 1989)	1. Social and economic communal existence (Norcliffe, Bassett, & Hoare, 1996) 2. Increasing environmental and social worries (Jones, 1998) 3. local involvement in the community (Jones, 1998)	1. Concerns regarding the environment and society (Couch, 2003; Meyer, 2000) 2. Bring back inhabitants to desolate regions (Marshall, 2001) 3. Chances for employment (Couch, 2003)	1. The significance of security in usage (Timur, 2013) 2. Innovativeness and creativity in waterfront transformation (Jones, 2017) 3. Resilience in communities' concerns (Jones, 2017) 4. "homogenization" and "standardization" concerns (Jones, 2017) 5. Social equalities / inequalities (Avni & Teschner, 2019)	1. Accessibility and security for the able and disabled (Sealey et al., 2021) 2. Residents' learning and instruction (Theodora & Spanogianni, 2022) 3. A city that is wholesome, equitable, and secure (Wuijts, et al., 2022; Angradi, et al., 2022) 4. A stable indicator of household income, owning a home, health, education, unity in society, and divorce. (Angradi, et al., 2022)
Economic	1. Developing a consensus for beneficial action (Patton & Witzling, 1989) 2. The deindustrializati on of manufacturing, the industry, and jobs (Ley, 1980)	1. Building a business facility (Breen & Rigby, 1994) 2. Market-driven strategy (Brownill, 1990) 3. Insufficient government funding (Jones, 1998)	1. Public-private alliances and substantial private investment (Shaw, 2001) 2. Attracting international investment (Marshall, 2001) 3. Boosting	1. Entrepreneurial administration (Biddulph, 2011) 2. Globalization in the economy and competitiveness (Tallon, 2013) 3. enhancing marketing potential (Smith et al., 2012)	1. Appropriate economic and fiscal incentives and strategies for regional development (Theodora & Spanogianni, 2022) 2. Economic advantages 'e.g., housing sector consequences; raised tourism' (Hartig, Krantzberg, & Alsip, 2020)

Waterfront Architecture Concerns	Declining Movement Since the '70s	Renewing Movement			
	The '80s	*the '90s*	*the 2000s*	*the 2010s*	*the 2020s*
	3. Tourism's economic earning potential (Wrenn, 1983)	4. Urban competitiveness (Pryke & Lee, 1995)	regional real income (Begg, 2002) 4. Location marketing and branding (Kavaratzis & Ashworth, 2005)	4. Development of Creative Waterfront 'Production,' 'Projects' (Carta, 2012) 5. Reuse potential (Timur, 2013)	3. Cooperation and interaction at the international and national levels (Theodora & Spanogianni, 2022)
Cultural	1. Contribution to the fabric of culture (Breen & Rigby, 1985)	1. Protecting construction and cultural heritage (Jones, 1998)	1. Harmonizing cultural and quality of life (Shaw, 2001) 2. Culturally significant architecture, structures, and artifacts (Vallega, 2001)	1. Temporary cultural event opportunities (Timur, 2013) 2. Concerns regarding cultural awareness and capability (Jones, 2017) 3. Preserve public safety, protect cultural heritage, and honor local culture (Avni & Teschner, 2019)	1. Blending of culture, health, and socioeconomic variables (Angradi, et al., 2022) 2. Cultivating social and cultural ties (Ravagnan, Rossi, & Amiriaref, 2022) 3. Increasing cultural inheritance (Ravagnan, et al., 2022)
Politic	1. The formulation of both short- and long-term policies (Castells, 1989) 2. Examining disagreement, collaboration, and competitiveness in planning and evaluating waterfronts (Hoyle et al., 1988)	1. Public-private collaboration (Breen & Rigby, 1994) 2. Planning policies and assessment (Krugman, 1996; Jones, 1998; Begg, 1999; Brownill, 1990) 3. Sustainability and resilience (Sorensen, 1993)	1. The network of coastal settlements (WCP, 2007) 2. Pertaining to the strategic planning scheme (Couch, 2003) 3. Sustainability and resilience (Creel, 2003)	1. Driven irresponsibly, often with no strategy (Agardy & Alder, 2010) 2. As required, legislation and organizational structures to guarantee the sustainability (Sano, Rosa, Brito, & Ferreira, 2010) 3. Strategic management of processes (Jones, 2017) 4. Boosting entrepreneurialism (Jones, 2017)	1. Socioeconomic empathy, adaptability, and sustainability (Le, 2020) 2. Response to climate change, energy impartiality, and health crises are of paramount importance (Theodora & Spanogianni, 2022) 4. Managing and bringing funds (Theodora & Spanogianni, 2022)

6.2. A Sustainable and Balanced Future for Urban Waterfronts

A holistic and multidimensional approach is necessary to achieve a balanced and sustainable future for urban waterfronts. By considering the interplay between heritage and innovation, as well as environmental, social, and economic factors, we can create waterfront environments that enrich the lives of residents and visitors.

Table 1 provides valuable insights indicating the ongoing evolution of waterfront development discussions. In the past, these discussions primarily centered on creating new waterfront areas and assessing their impacts on social, cultural, and economic aspects. However, the present-day discourse encompasses a broader spectrum, encompassing central

themes such as the reuse, regeneration, and redevelopment of existing waterfronts. This modern dialogue also recognizes the imperative to address contemporary urban necessities, including innovation, technology, sustainability, resiliency, creativity, and adaptability. As urban environments continue to transform, the multifaceted nature of waterfront development demands comprehensive and forward-thinking approaches to strike a delicate balance between preserving heritage and embracing innovation.

The integration of innovative design and the preservation of cultural heritage must go hand in hand. By recognizing the historical significance of waterfront areas, we preserve a sense of place and continuity while embracing innovation and contemporary interventions to meet changing requirements. This delicate equilibrium guarantees that urban waterfronts will continue to be vibrant and relevant in the face of urbanization and progress.

The sustainability of urban waterfronts is a fundamental aspect of their future. We can create resilient, environmentally favourable, and equitable waterfront environments by prioritizing ecological responsibility, resource efficiency, and social inclusion. It involves implementing green infrastructure, employing energy-efficient technologies, and encouraging community engagement and participation.

Urban waterfront architecture has the potential to be a catalyst for positive change in the future, functioning as a hub where heritage, innovation, and sustainability intersect. Urban waterfronts can flourish as vibrant, resilient, and culturally-rich spaces that inspire and elevate future generations by

embracing emerging approaches, leveraging the design and technological advancements, and fostering a sense of community ownership.

Acknowledgements and Information Note

Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

The article was written by a single author. There is no conflict of interest.

References

A.Gabbar, H., & Esteves, O. (2023). Planning and Evaluation of Nuclear-Renewable Hybrid Energy Penetration for Marine and Waterfront Applications. *Preprints.org*.

Abdul Latip, N. S. (2020). Contextual Integration in waterfront development. *Journal of Architecture, Planning and Construction Management, 1*(1).

Agardy, T., & Alder, J. (2010). Coastal Systems. In P. Dayton, S. Curran, A. Kitchingman, M. Wilson, A. Catenazzi, J. Restrepo, . . . C. Vorosmarty, *Ecosystems and human well-being: current state and trends* (pp. 513-550). Washington, DC: Island Press.

Angradi, T. R., Launspach, J. J., & Wick, M. J. (2022). Human well-being and natural capital indicators for Great Lakes waterfront revitalization. *Journal of Great Lakes Research*, In Press.

Armenio, E., & Mossa, M. (2020). On the Need for an Integrated Large-Scale Methodology of Coastal Management: A Methodological Proposal. *Journal of Marine Science and Engineering, 8*(6), 385.

Avni, N., & Teschner, N. (2019). Urban Waterfronts: Contemporary Streams of Planning Conflicts. *Journal of Planning Literature, 34*(4), 408-420.

Begg, I. (1999). Cities and Competitiveness. *Urban Studies, 36*(5-6), 795-809.

Begg, I. (2002). *Urban competitiveness: Policies for dynamic cities*. Policy Press.

Biddulph, M. (2011). Urban design, regeneration and the entrepreneurial city. *Progress in Planning, 76*(2), 63-103.

Breen, A., & Rigby, D. (1985). Urban waterfront: Positive directions urban problems. *Proceedings from recreational conference* (pp. 60–80). Mertyle Beach, SC: Dept. of Interior.

Breen, A., & Rigby, D. (1996). *The New Waterfront: A Worldwide Urban Success Story.* London: Thames & Hudson.

Brownill, S. (1990). *Developing London's Docklands.* London: Paul Chapman Publishing.

Carta, M. (2012). Waterfronts between Sicily and Malta: an integrated and creative planning approach. *PortusPlus, 3*, 1-9.

Castells, M. (1989). *The Informational City. Information TechnDlogy, Economic Restructuring, and the Urban-Regional Process.* Oxford: Basil Blackwell.

Cialdea, D., & Pompei, C. (2022). The Waterfront Development in Europe: Between Planning and Urban Design Sustainability. In C. Piselli, H. Altan, O. Balaban, & P. Kremer, *Innovating Strategies and Solutions for Urban Performance and Regeneration. Advances in Science, Technology & Innovation* (pp. 49–60). Cham: Springer.

Couch, C. (2003). *City of Change and Challenge.* London: Routledge.

Craig-Smith, S. J. (1995). The Importance and Problems of City Waterside Regions. In S. J. Craig-Smith, & M. Fagence, *Recreation & Tourism as a Catalyst for Urban Redevelopment* (pp. 1-12). Westport: Praeger Publishers.

Creel, L. (2003). *Ripple effects: Population and coastal regions.* Washington, DC: Population Reference Bureau.

Davidson, M. (2012). Urban Geography: Waterfront Development .

Desfor, G., Goldrick, M., & Merrens, R. (1988). Redevelopment on the North American water-frontier: the case of Toronto. In B. S. Hoyle, D. A. Pinder, & M. S. Husain, *Revitalising the Waterfront; international dimentions of dockland redevelopment* (pp. 92-113). London: Belhaven Press.

Falk, N. (1989, October 6). On the waterfront. *The Planner*, 11-15.

Fernandes, A., de Sousa, J. F., & Salvador, R. (2017). The Cultural Heritage in the Postindustrial Waterfront: A Case Study of the South Bank of the Tagus Estuary, Portugal. *Space and Culture, 21*(2), 170-191.

Gehl, J. (1987). *Life between Buildings: Using Public Space.* (J. Koch, & V. Nostrand, Trans.) New York: Reinhold.

Giovinazzi, O., & Moretti, M. (2010). Port Cities and Urban Waterfront: Transformations and Opportunities. *TeMALab Journal, 3*, 57-64.

Guvenbas, G., & Polay, M. (2020). Post-occupancy evaluation: A diagnostic tool to establish and sustain inclusive access in Kyrenia Town Centre. *Indoor and Built Environment, 30*(10), 1620-1642.

Hartig, J. H., Krantzberg, G., & Alsip, P. (2020). Thirty-five years of restoring Great Lakes Areas of Concern: Gradual progress, hopeful future. *Journal of Great Lakes Research, 46*(3), 429-442.

Hoyle, B. (2000). Global and Local Change on the Port-City Waterfront. *The Geographical Review, 90*(3), 395-417.

Hoyle, B. (2002). Urban waterfront revitalization in developing countries: the example of Zanzibar's Stone Town. *The Geographical Journal, 168*(2), 141-162.

Iwata, N., & Rio, V. d. (2004). The Image of the Waterfront in Rio de Janeiro: Urbanism and Social Representation of Reality. *Journal of Planning Education and Research, 24*(2), 171-183.

Jones, A. (1998). Issues in waterfront regeneration: More sobering thoughts. A UK perspective. *Planning Practice and Research, 13*(4), 433-442.

Jones, A. (2017). Regenerating Urban Waterfronts—Creating Better Futures—From Commercial and Leisure Market Places to Cultural Quarters and Innovation Districts. *Planning Practice & Research, 32*(3), 333-344.

Jun, J. (2023). Towards Sustainable Urban Riverfront Redevelopment: Adaptability as a Design Strategy for the Hangang Riverfront in Seoul. *Sustainability, 15*(12), 9207.

Kavaratzis, M., & Ashworth, G. J. (2005). City branding: an effective assertion of identity or a transitory marketing trick? *Tijdschrift voor Economische en Sociale Geografie, 96*(5), 506-514.

Kostopoulou, S. (2013). On the Revitalized Waterfront: Creative Milieu for Creative Tourism. *Sustainability, 5*(11), 4578-4593. doi:10.3390/su5114578

Krugman, P. (1996). *The Self-organizing Economy.* Oxford: Blackwell Publishers Ltd.

Le, T. D. (2020). Climate change adaptation in coastal cities of developing countries: characterizing types of vulnerability and adaptation options. *Mitigation and Adaptation Strategies for Global Change, 25*, 739–761.

Ley, D. (1980). Liberal Ideology and the Postindustrial City. *Annals of the Association of American Geographers, 70*, 238-258.

Marshall, R. (2001). *Waterfronts in post-industrial cities.* London: Spon Press.

Meiner, A. (2010). Integrated maritime policy for the European Union - consolidating coastal and marine information to support maritime spatial planning. *Journal of Coastal Conservation, 14*, 1-11.

Meyer, H. (2000). *City and Port: Transformation of port cities: London, Barcelona, New York and Rotterdam.* London: Routledge.

Miloš, M., & Dragana, V. (2021). Mythology as a Driver of Creative Economy in Waterfront Regeneration: The Case of Savamala in Belgrade, Serbia. *Space and Culture*.

Mo, L., Chen, J., & Xie, Y. (2023). Wetlands conservation in Beijing of China: Present status and development strategies. *Watershed Ecology and the Environment, 5*, 73-79.

Mohamed, B., & Salim, N. (2018). Preserving sense of place at historic waterfronts in malaysia. *7th International Conference on Local Knowledge (ICLK 2017)* (pp. 133-137). Malaysia: SHS Web of Conferences.

Nixon, R., Carlton, J. S., & Ma, Z. (2022). Drivers of revitalization in Great Lakes coastal communities. *Journal of Great Lakes Research*.

Norcliffe, G., Bassett, K., & Hoare, T. (1996). The emergence of postmodernism on the urban waterfront: Geographical perspectives on changing relationships. *Journal of Transport Geography, 4*(2), 123-134.

Osman, K. A., & Farahat, B. I. (2018). The conservation of the waterfront of Saida: A model for tourism and culture-led revitalization in valuable areas. *HBRC Journal*, 321–333.

Parkinson, M. (1989). *The Thatcher Government's Urban Policy, 1979-1989: A Review*. Liverpool University Press.

Parween, S., & Sinha, R. C. (2022). Identification of Indicators for Developing an Integrated Study on Urban Water Supply System, Planning, and Management. *Journal of Environmental Engineering, 149*(3).

Patton, C. V., & Witzling, L. P. (1989). Urban design as public policy: integrating planning, design, programming and fundraising. *5th International Conference on Making Cities Livable.* Venice.

Popovic, S., Vlahovic, S., & Vatin, N. (2015). The Role of Water in City Center, through Location of "Rakitje". *Procedia Engineering, 117*(2015), 849-858.

Pryke, M., & Lee, R. (1995). Place your bets: towards an understanding of globalisation, socio-financial engineering and competition within a financial centre. *Urban Studies, 32*, 329-344.

Ravagnan, C., Rossi, F., & Amiriaref, M. (2022). Sustainable Mobility and Resilient Urban Spaces in the United Kingdom. Practices and Proposals. *Transportation Research Procedia, 60*, 164-171.

Sairinen, R., & Kumpulainen, S. (2006). Assessing social impacts in urban waterfront regeneration. *Environmental Impact Assessment Review, 26*(2006), 120-135.

Sano, E. E., Rosa, R., Brito, J. L., & Ferreira, L. G. (2010). Land cover mapping of the tropical savanna region in Brazil. *Environmental Monitoring and Assessment, 166*, 113-124.

Schreurs, G., Scheerlinck, K., & Gheysen, M. (2023). The local socio-economic impact of improved waterborne public transportation. The case of the New York City ferry service. *Journal of Urban Mobility, 3*, 100042.

Seçmen, S. (2018). New Public Spaces of Post-Industrial Waterfronts. In D. Babalis, & T. G. Townshend, *Urban Waterfronts and Cultural Heritage; New Perspective and Opportunities* (pp. 88-99). Italy: Altralinea Edizioni.

Shaw, B. (2001). History at the water's edge. In R. Marshall, *Waterfronts in Post-Industrial Cities* (pp. 160-172). London: Spon Press.

Shi, F., Ning, H., Huangfu, W., Zhang, F., Wei, D., Hong, T., & Daneshmand, M. (2020). Recent Progress on the Convergence of the Internet of Things and Artificial Intelligence. *IEEE Network, 34*(5), 8 - 15.

Sorensen, J. (1993). The international proliferation of integrated coastal zone management efforts. *Ocean & Coastal Management, 21*(1-3), 45-80.

Tallon, A. (2013). *Urban Regeneration in the UK* (2nd ed.). London: Routledge.

The Waterfront Center. (1999). *Urban Waterfront Manifesto.* Retrieved from http://www.waterfrontcenter.org/about/manifesto.html

Theodora, Y., & Spanogianni, E. (2022). Assessing coastal urban sprawl in the Athens' southern waterfront for reaching sustainability and resilience objectives. *Ocean & Coastal Management, 222*.

Timur, U. P. (2013). *Urban Waterfront Regenerations.* Retrieved September 14, 2018, from cdn.intechopen.com: http://cdn.intechopen.com/pdfs/45422/InTech-Urban_waterfront_regenerations.pdf

UNEP. (2009). *Marine Litter: A Global Challenge.* Nairobi: UNEP.

Üzümcüoğlu, D., & Polay, M. (2022). Urban Waterfront Development, through the Lens of the Kyrenia Waterfront Case Study. *Sustainability, 14*(15). doi:https://doi.org/10.3390/su14159469

Vallega, A. (2001). Urban waterfront facing integrated coastal management. *Ocean & Coastal Management, 44*, 379-410.

Wang, J., & Nan, J. (2007). Conservation and adaptive-reuse of historical industrial building in China in the post-industrial era. *Frontiers of Architecture and Civil Engineering in China, 1*, 474–480.

WCP. (2007). *The Waterfront Communities Project.* WCP symposium: funded by Inter Reg. IIIB and led by Edinburgh City Council.

Wei, X., Bonenberg, W., Zhou, M., Wang, J., & Wang, X. (2018). The Case Study of BIM in Urban Planning and Design. In J. Charytonowicz (Ed.), *AHFE 2017, Advances in Intelligent Systems and Computing. 600.* Cham: Springer.

Wessells, A. T. (2014). Urban Blue Space and 'The Project of the Century': Doing Justice on the Seattle Waterfront and for Local Residents. *Buildings, 4*(4), 764-784.

Wrenn, D. M. (1983). *Urban Waterfront Development.* Washington: ULI.

Wuijts, S., de Vries, M., Zijlema, W., Hin, J., Elliott, L. R., Breemen, L. D., . . . Hilderink, H. (2022). The health potential of urban water: Future scenarios on local risks and opportunities. *Cities, 125*.

Xie, C. (2023). The Symbiotic Development of Urban Waterfront Spaces and Regional Culture: Unleashing Potentials, Innovative Design, and Sustainable Development. *Journal of Innovation and Development, 3*(2), 26–30.

Assist. Prof. Dr. Doğa ÜZÜMCÜOĞLU

E-mail: doga.uzumcuoglu@rdu.edu.tr

Educational Status:

License: B.Arch, Eastern Mediterranean University, 2013

Degree: MSc. in Architecture, Eastern Mediterranean University, 2016

Doctorate: Ph.D. in Architecture, Eastern Mediterranean University, 2022

Professional experience: Dr. _Üzümcüoğlu is the founder of Üzümcüoğlu Architecture. Utilizing a rich array of experience, he has embarked on numerous residential design projects. In addition, he has deftly combined his experiences with collaborative efforts, contributing his ingenuity to a wide range of competition projects encompassing the urban and building scales. Dr. Üzümcüoğlu is a Full-Time faculty member at Rauf Denktaş University, Nicosia, Cyprus.

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-10

Using Digital Methods on Cultural Heritage Conservation - Case Study Erzurum

Dr. Tuna KAN [1]

[1] Topkapı University, Faculty of Fine Arts, Design and Architecture, Department of Architecture, Balat Campus, Istanbul/Türkiye.
ORCID: 0000-0002-1016-0927
E-mail: tunakan@topkapi.edu.tr

Citation: Kan, T. (2023). Using Digital Methods on Cultural Heritage Conservation - Case Study Erzurum. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 10, 303-356. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Historical cities and urban areas are spatial formations that describe the evolution of a society and its cultural identity; they are part of the natural and man-made environment. Historic cities and urban areas are living evidence of the past that shaped them. Therefore, the architectural heritage of a place contains all the material and spiritual traces and codes of that place in the historical process. They are tangible manifestations of that place's identity (Ulusoy Binan, 2017).

Traditional buildings create a local or regional identity suitable for the environment. Style, form and appearance consistency are examples of traditional design approaches and construction techniques, which are transferred anonymously due to the use of traditional building types Before any intervention to a traditional building, the form and structure of the building should be examined in detail, documented and reported (URL 1, ICOMOS Charter of Traditional Architectural Heritage, 1999). The process for the conservation of the architectural heritage; It consists of documentation, research, analysis, interpretation, determination of diagnosis and protection approach, definition of practical intervention, implementation and monitoring. Experts from related professions should be involved in this process (URL 2, ICOMOS Türkiye Mimari Mirası Koruma Bildirgesi, 2013).

Cultural heritage is the values that bring the life, traditions, architecture, art and ethos of the past periods to the present. The object of conservation is to prolong the life of cultural heritage and, if possible, to

clarify the artistic and historical values without the loss of authenticity (URL 3, Guidelines on Education and Training in The Conservation of Monuments, Ensembles and Sites, 1993). The first step of the conservation action, which defines all the operations to “preserve the authentic qualities" of a building or property, is "to understand the object, to collect data about its physical condition before any action or intervention that can change it" (URL 4, Operational Guidelines of World Heritage Sites, 1998). The purpose of the conservation action is to “preserve the authenticity”. The first step is to record the “current status of the heritage”. Projects carried out within the scope of the protection of cultural and architectural heritage are the projects of survey, restitution and restoration. The implementation process begins after these analytically prepared projects are approved by the relevant board (URL 5. principle nr. 660, 1999, URL 6. law nr. 2863).

Documentation for cultural assets is the "physical description" of the structure, together with its surroundings, under threats such as deterioration, destruction or inappropriate interventions (wrong restoration practices without a project). The "Analytical Survey" study is carried out together with the photographic, linear and written determination of the image of the building and its environmental relations as well as analytical data such as material detection, age detection and damage assessment (URL 5. principle decision nr. 660, 1999, URL 7, Principles for The Recording of Monuments, Groups of Buildings and Sites, 1996).

This data is also the study that forms the basis for the “restitution project”, which analyses the authenticity of the building when it was first built and the “restoration project”, which functions in accordance with current comfort conditions. There are advanced documentation technologies used together with conventional methods in the documentation of cultural assets. It has become possible to process the data collected by different methods at the point of data collection from the field, by means of data acquisition with Terrestrial Scanning methods, laser technologies such as airborne lidar, mobile lidar and photographic methods such as drone and panoramic shooting. By using such measurement methods together, the disadvantageous parts can be eliminated.

Over the years, research to increase the sensitivity of documentation has led to the use of these technologies together and to the point of scanning the entity with 3D laser scanning devices today. The importance of coordinated and precise measurement has increased in the documentation of the current situation in order to identify the lost parts of the civil architectural examples that need to be preserved in the context of the cultural texture and to make their reconstructions.

Documentation of cultural heritage by digital methods is mentioned in article 3 of ICOMOS Principles for the Conservation and Conservation of Wall Paintings / 2003PDFEN ICOMOS Principles for the Preservation and Conservation-Restoration of Wall Paintings, 2003, "Conventional methods in the documentation of wall frescoes" It is stated that the

documentation made with writing and drawing can be supported by digital methods (URL 8, ICOMOS, 2003).

Documentation of the current state of cultural assets is carried out with analytical survey sheets, in which deformations and materials used are examined, along with the measurement and drawing stages. In addition to the measurement and calibration photo shooting method made with 3D laser instruments in documentation, conventional methods can still be used in detail documentation. Laser scanning technology is especially necessary in the survey works of structures that have lost their integrity. Even the worst condition construction component can be traced from the 3D scan of the structure. In this way, the authentic plan and facade can be read.

Erzurum has been an area dominated by Hurrians, Urartians, Romans, Seljuks, Byzantium and Ottomans since 1600 BC. The city, which was known by many different names until it was named Erzurum today (Konyali, 1960), stands out with its cultural layers and many cultural assets (Yilmaz, 2010). The city where the Erzurum Congress was held played an important role in the start of the national struggle.

The borders of the city, which was a castle settlement in the past, have expanded today and a small part of the castle and its surrounding settlement texture has survived to the present day. The traditional neighbourhood mentality, street structure, stone houses and urban equipment of Erzurum Historical City Core, which has been destroyed for various reasons (war, earthquake, poverty, etc.) since its

establishment, has caused the cultural and social structure to be destroyed as well. The Registered Civil Architecture Examples around the Castle were documented, and conservation projects were designed within the scope of the Cultural Road Project, which is planned to be carried out in order to protect, sustain and economically evaluate the immovable cultural heritage, which are considered the most important values of cultural identity.

2. Material and Method

In this study, experience in the project processes of 14 buildings, which are registered examples of civil architecture in the Kale region of Erzurum from field survey to restitution projects will be shared. The act of conservation of cultural heritage aims to reveal the value of "authenticity" and to protect it. According to the World Heritage Convention guide, “authentic features of the heritage” are a prerequisite in this context (URL4, Operational Guidelines of World Heritage Sites, 1998). Restitution projects, which periodize the interventions of the cultural heritage over time and reveal the situation in the period in which it was made, with historical research and comparative analysis methods, are an important stage in terms of performing the restoration works on the right basis (URL9, Tek Yapı Ölçeğinde Rölöve, Restitüsyon Ve Restorasyon Projeleri Teknik Şartnamesi, 2023). For this reason, this study is reviewed in the context of survey and restitution projects.

Survey studies around Erzurum Castle were started in December 2011 and terrestrial laser scanning method was used for measurements in the

field and supported by conventional methods. In addition, high resolution photo shoots were performed. The fieldwork lasted for a total of three weeks with five-day periods. In the same process, detail measurements were taken with a working group consisting of 12 architects and restorers in total. After the data process, the surveys consisting of 2D-cad base drawings were completed in three months by a team of 6 architects and 6 restorers. In the survey study, the 3D point cloud data was dropped according to plan, section and elevation improvement, drawn in Zmap and exported to AutoCAD. Analytical drawings were prepared on the survey drawings with legends authentic, non-authentic parts, the material used, the deformation and deteriorations that occurred.

The restitution projects, which show the autentic condition of the buildings, were produced through the survey study. Periodical additions of the buildings were investigated in the research studies on restitution based on the survey. The restitution projects were carried out with the identification of the currently lost and ruined building sections and according to authentic state the reintegration of the cultural heritage.

In the restoration projects designed on the basis of the Restitution Project, the authentic architecture of the buildings has been functionalized with appropriate public uses. In the restoration, comfort conditions suitable for current needs were added. Restoration works of buildings whose survey, restitution and restoration projects have been approved by the Monuments Board and implementations continue.

3. Findings and Discussion

It is necessary to protect and sustain the immovable cultural heritage, which are considered as the most important values of cultural identity and to make use of them economically. Therefore, within the scope of the Cultural Road Project, which is planned to be carried out in order to protect the urban culture of Erzurum, projects have been designed for the purpose of documenting and preserving the Registered Civil Architecture Examples around the Castle (Figure 1, 2).

As a result of the development of the sciences of conservation of cultural heritage, the new concept of Cultural Routes shows the evolution of ideas with respect to the vision of cultural properties, as well as the growing importance of values related to their setting and territorial scale, and reveals the macrostructure of heritage on different levels (URL 10; The ICOMOS Charter on Cultural Routes, 2008).

Examples of traditional architecture, local architecture and civil architecture, which are formed based on the location, natural environment, topography, material resources, climate, and past disaster information, are more fragile than the most monumental heritage in terms of protection (Sezgin, 2006; Ulusoy Binan, 2017).

Geography, traditions, lifestyle and production style determine the local housing architecture in Turkey. The geography and culture determine the material, plan and facade character of the buildings and the construction system (Sezgin, 2006). Eldem traditional houses named the according to the regions and collects them in seven big groups (Eldem, 1984).

In traditional buildings, wood, stone, brick and adobe materials are used in different forms and structures depending on the region. Stone material appears with structures of different character from the Aegean coastline to Eastern Anatolia (Sezgin, 2006).

Erzurum houses, with their rubble stone and wood-framed constructions, display a simpler quality than the face stone structure seen in Kayseri (Gündoğdu, 1986), Cappadocia (Binan, 1994), Mardin and Diyarbakir regions, and closer to the character of Bitlis and Siirt houses. Erzurum houses are the buildings of special quality with their designs shaped by the geography and culture they are located in and bearing the traces of traditional life and climate. Wooden beam-frame system was used in the stone masonry walls used as building material due to the fact that it is an earthquake zone.

The residential buildings are located within the borders of the outer castle outside the inner castle. One of the most common problems faced by conservation specialist architects is that the time allocated for projects is less than the work period. However, conservation projects are large-scale and sensitive studies that start with the present condition assessment (survey) and include research, analytical work and design. The basis of these studies is “Documentation”. Proper documentation ensures that all other project work is done correctly. In areas such as Erzurum where terrain conditions are difficult, documentation should be fast and measurement, detail and photographic works should be done quickly and

accurately. At this point, it is important to conventional measurement methods with current technologies.

Property owners in the project area left the buildings due to economic, urban migration or comfort reasons. The field survey was carried out under very difficult conditions due to the poor structural conditions of cultural properties, security problems in the surrounding area and climatic problems (snow and cold).

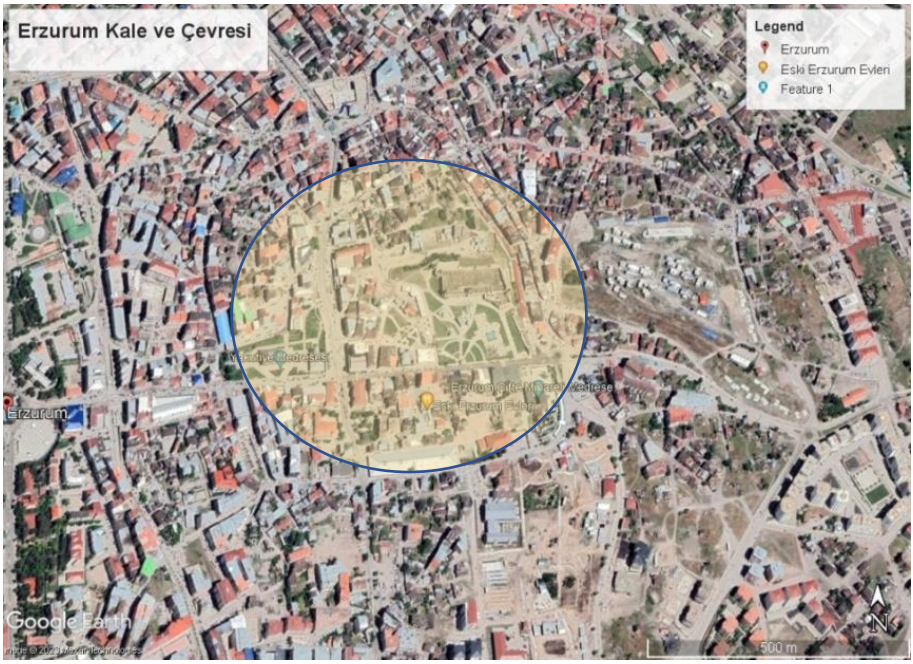


Figure 1: Erzurum Castle, Google Earth Pro, 30.07.2023

Figure 2: Erzurum Castle, (kulturportali.gov.tr), 11.07.2023

According to the traveller Ibn-Batuta from the 14th century, the first houses built in this region have gardens. J.B Tavernier, who came to Erzurum in the 17th century, mentions that the buildings inside the Castle were built with wood and earthen materials in an unpleasant way (Fig 3, Sakaoglu, 1996).

Evliya Celebi, describing the province of Erzurum again in the 17th century, stated that there were 70 Turkish and 7 Armenian neighbourhoods and no Gypsies or Jews. During the suppression of the revolt that broke out in the Erzurum Sanjak in the 17th century, the castle and its surroundings were damaged. He mentions the size of the inner castle and the fact that there is a spring water in the inner part of the

fortress. Today, this water still flows from the many fountains we see in the region (Evliya Celebi, 2002).

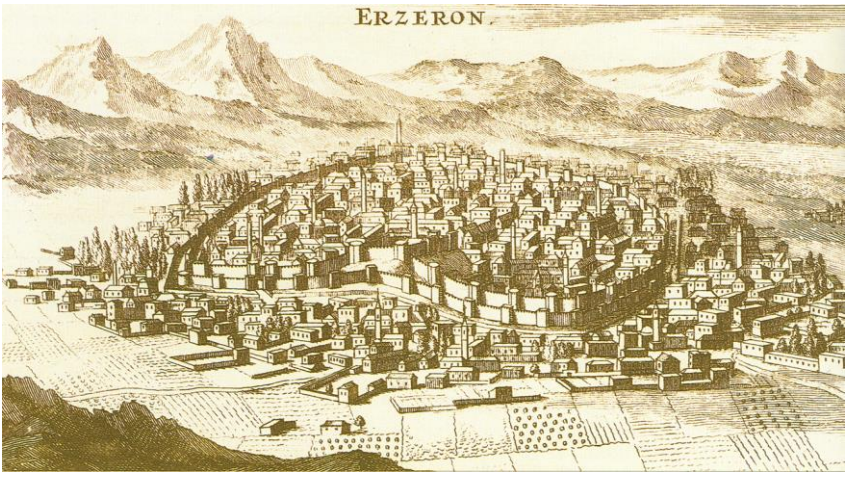


Figure 3: At the beginning of the 18th century, Erzurum, Tornefort (Sakaoglu, 1996)

Evliya Celebi talks about the "Pasha palaces" in the area, which we see today as the inner castle settlement (Evliya Celebi, 2002).

The city, which was devastated during the Ottoman-Russian war in the first half of the 19th century, was shaken by an earthquake in 1859. In the photographs of the end of the 19th century and the beginning of the 20th century, it is seen that the buildings in the city have lost their integrity to a large extent. In Erzurum, which had the opportunity to revive after the Independence War, the buildings were left to their fate due to migration to the big cities in the 1970s. Since the 1980s, when international initiatives related to cultural heritage and world heritage showed their effect in Turkey, the value of civil architecture examples began to be

appreciated. Erzurum Castle and its surroundings were declared a protected area in 1993 (Sekmen, 2023).

Figure 4: A panoramic view from Erzurum (H. Hepworth, Through Armenia on horseback, London, 1898; URL, 11).

The masonry structures of Erzurum houses, which have a different structure from the typical Turkish House character, also make it difficult to document these structures (Figure4). For this reason, 3D laser scanning method was used together with conventional methods in the survey studies. Most of the buildings in the project area have been abandoned. Within the scope of autenticity and integrity, it has been determined that some parts of the buildings, which are in a very bad condition, were demolished or completed using non-autentic materials. During the creation of the Restitution Projects, it has been tried to reach the autentic state of the building by analysing the autentic parts and through the existing traces and old documents that can be found (Figure5). On the other hand, it was aimed to restore the buildings to

their autentic state and up-to-date equipment and functions were introduced for the continuity of conservation in restoration projects.

Figure 5:Erzurum houses, 1900, Maps | Province of Erzurum : Houshamadyan - a project to reconstruct Ottoman Armenian town and village life, (11.07.2023)

The castle and the surroundings were declared a protected area in 1993. After this date, detection and registration studies started in the area and a conservation development plan was carried out in 1993 and 2012. Upon the continuation of the detections in 2013 and the expansion of the conservation area, the plan studies were started again in 2015 and it was approved in 2019 (URL 12, Erzurum Belediyesi, 2023).

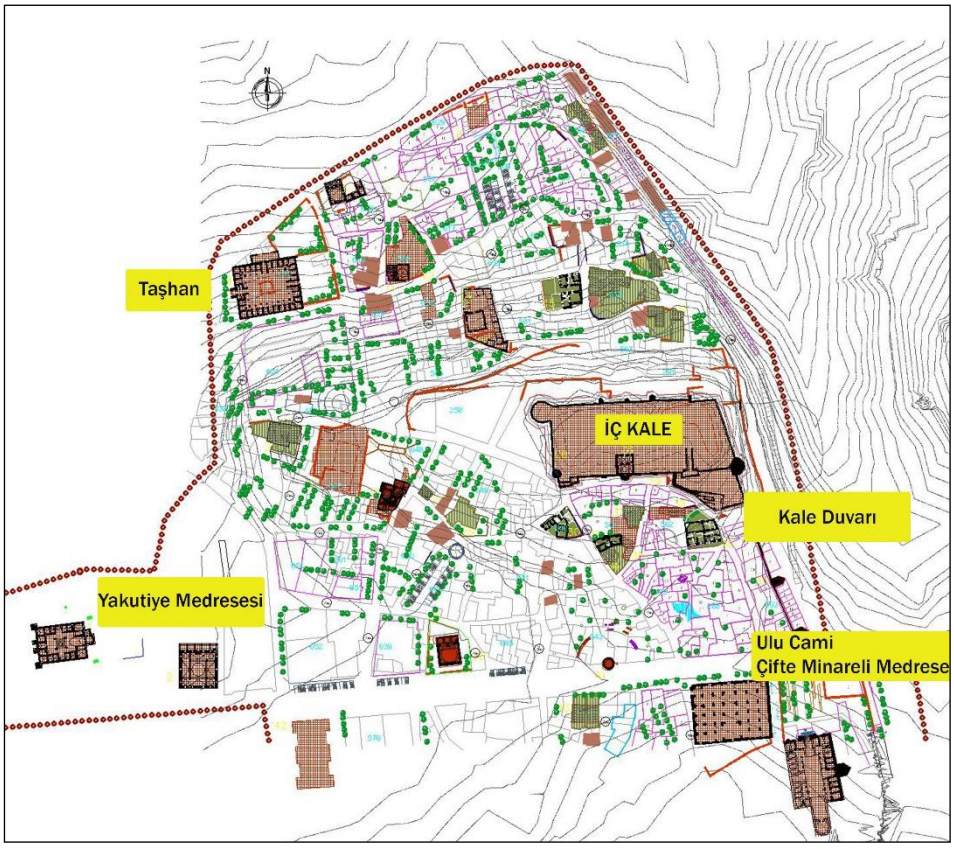


Figure 6: Cultural properties in Erzurum Castle and in the surroundings

The area where the study was carried out is located in the first city centre within the outer castle around the Inner Castle structure built in the 5th century (Figure 6). Projects of 14 registered buildings in 8 building blocks (Assessment, Restitution, Restoration and Engineering) have been designed. All of the buildings with a living area of between 95 m^2 and 1300 m^2, among which the oldest mansion building in the region Zirnikli

Vehbi Bey Mansion (1739) is located, are two-storey buildings with masonry stone-wood beam construction specific to the region.

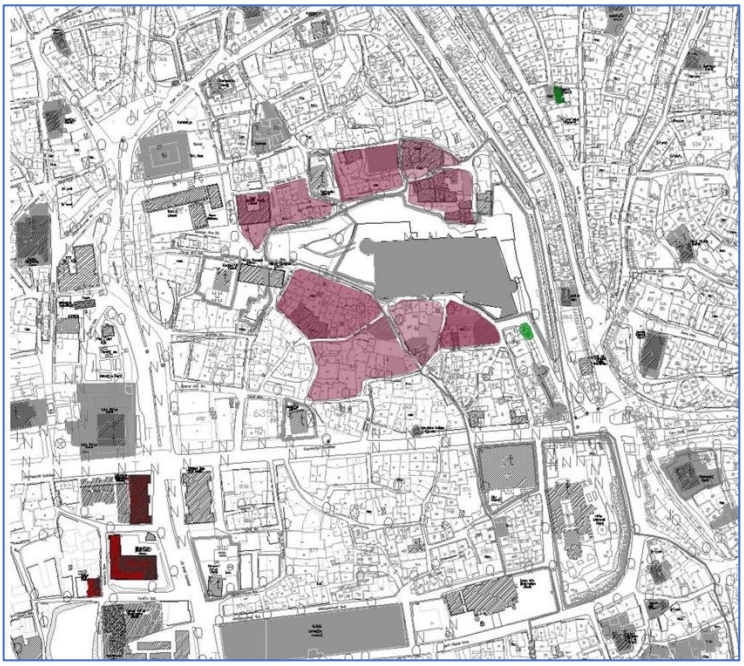


Figure 7: Location of the blocks with surveyed buildings

3.1. Data Collecting

Before the fieldwork, office work was carried out and planning was made regarding the study team and data collection method. Study groups and measurement methods were planned by examining the layout sheet and satellite photograph, the building layout area and the state of the building (Figure 7, 8, 9). The planning was made for a short time and to be completed in a few times considering the climatic conditions of the area such as cold weather and daylight duration.

Due to the necessity of keeping the working time in the field short and the difficulty of distinguishing the autentic materials (stone-soil-wood) of the buildings from the land, which arose due to the deterioration of their nature and integrity, has led to the preference of the terrestrial laser scanning method.

Figure 8, 9: Location of the blocks with surveyed buildings (googlearth-2012)

Conventional methods have been used in spaces that are too narrow for laser scanning or where there are too many items. Conventional methods have also been preferred for 1/1 scale architectural details such as doors, windows, ceilings and cabinets. This method is preferred in architectural details due to factors such as frequent scanning prolongs the working time in the field, working with the laser scanning team in the field and the architectural team finishing the detail drawings during the laser scanning process (Table 1).

Table 1: Measurement methods used

ERZURUM CULTURAL HERİTAGE DOCUMENTATİON									
number	Island	Parcel	Building Area - Ground(m2)	Building Area-Measure	Conventinal Methods		Geodesic	3d Laser Scanning	
					İnterior	Detail	Coordinate	Exterior	İnterior
1	515	1	332,00	480,00					
	515	2	808,75	292,00					
	515	3	95,00	136					
	515	5	190,00	187					
	515	6	298,32	188,00					
2	561	8	220,00	150,00					
3	561	9	200,00	120,00					
4	561	12	267,78	320,00					
5	562	4	287,76	233,00					
6	562	5	857,38	800,00					
7	566	12	150,79	150,79					
8	567	10	100,00	200,00					
9	567	12	200,00	200,00					
10	567	13	318,00	420,00					
11	581	7	1.285,69	1.320,00					
12	641	10	163,00	163					
13	642	1	399,18	798,36					
14	649	27	154,00	308,00					
	TOPLAM		6.327,65	6.466,15					

3.1.1. Conventional measurement

Measurements are taken by meters, plumbing, and scales in conventional methods. Starting from a point in the area, continuous measurements are taken in a clockwise direction. Before starting the measurement, +1 m level is marked or drawn horizontally by pulling a rope horizontally so that the level differences on the ground do not cause wrong measurement, then the continuous measurements are supported with diagonal measurements. Diagonal measurement ensures that each measuring point is verified by measuring from a reference point at least twice. Measurements are taken with a profile comb for architectural details such as doors, windows and ceiling profiles. A sketch is drawn and the dimensions are engraved on it (Figure 10).

Figure 10: Instruments used in conventional measurement.

Conventional methods are used exclusively or in combination with digital methods, depending on the characteristics of the structure studied. The work on the structures around Erzurum Castle was started in December 2011. The survey of 14 buildings on 22 parcels was conducted using terrestrial laser scanning and conventional methods together. Restoration Specialist Project Manager (1), 6 Architects, 6 Restorers, 2 surveyors and 4 surveyors took part in the project. The field program was carried out by the survey team taking the external measurements with laser and the architect-restorer team measuring with sketches and conventional methods. This method has been followed, considering that the laser scanning device will not work comfortably due to internal debris, furniture, etc. reasons. The digital method was also used in the interior measurements of the buildings where the interior space is empty. Conventional measurements were made with teams of 3 people. Measurement studies in the field have progressed in 3 times with 5-day planning (Figure 11. 12).

Figure 11. Indoor measurement studies with conventional methods.

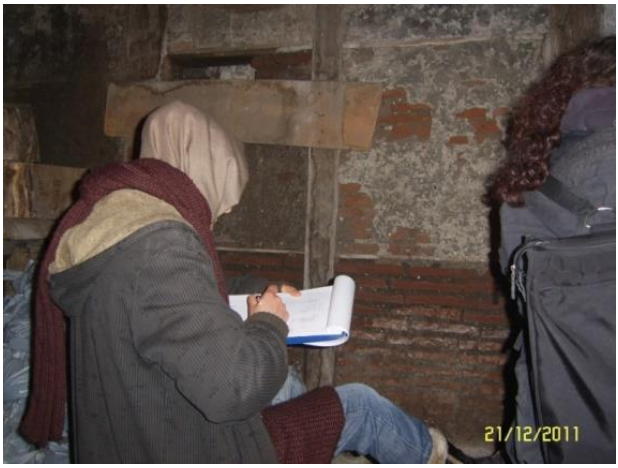


Figure 12. Indoor measurement studies with conventional methods.

Figure 13. Indoor measurement studies with conventional methods.

3.1.2. Digital measurement

Digital documentation methods, which we call advanced documentation methods, have developed with photogrammetry and lidar techniques (Gulec, et al., 2011; Alshawabkeh, et al., 2023). These 3D documentation methods, which enable the virtual transfer of the field to the office, greatly facilitate the work of architects and eliminate measurement errors. With the software developed today, it has become possible to produce and combine the data obtained in both methods as a “3D point cloud". In this way, the data of the field taken from different angles are combined on the same platform and can be vectorised (Figure 14).

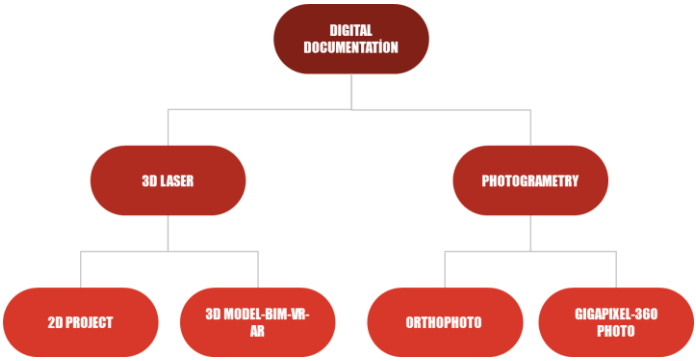


Figure 14. Digital documentation methods

The first field work was started in December 2011 under very unfavourable conditions due to the cold and rainy weather and the general survey of the land (Figure 15, 16).

Figure 15: Terrestrial scanning studies

Laser scanning data was taken with two devices and three-person teams using terrestrial scanning devices with built-in digital cameras. 200

terrestrial scanning sessions were held in the entire field and another 100 sessions were held for coordinating. Photographs were taken with calibrated cameras. Data measurements were made with an accuracy of 2-4 mm.

Figure 16: Terrestrial scanning studies

3.1.3. Data pre-processing

Pre-processing data consists of two stages. The first stage is the stage in which the data obtained from a large number of laser scanning sessions are combined. It is the stage of colorization by the colours assigned from the photographs taken by the camera placed on the top of the laser scanner and laser point clouds are georeferenced and combined with the precision of 2mm (Figure 17-18).

Figure 17: Terrestrial scanning studies (3D Point cloud Data)

Figure 18: Terrestrial scanning studies (3D Point cloud Data)

Figure 19: Terrestrial scanning studies (drawing studies)

The combined point cloud data obtained from laser scanning is saved as.las or other formats, then exported to the software that can be used for CAD drawing phase (Şekil 19).

Vector drawings of 3D point cloud data can be made in AutoCAD today. In the Erzurum project, drawings were performed with a special software developed to make 2 or 3 dimensional drawings from the relief bases point cloud and then exported to the AutoCAD program (Figure 20).

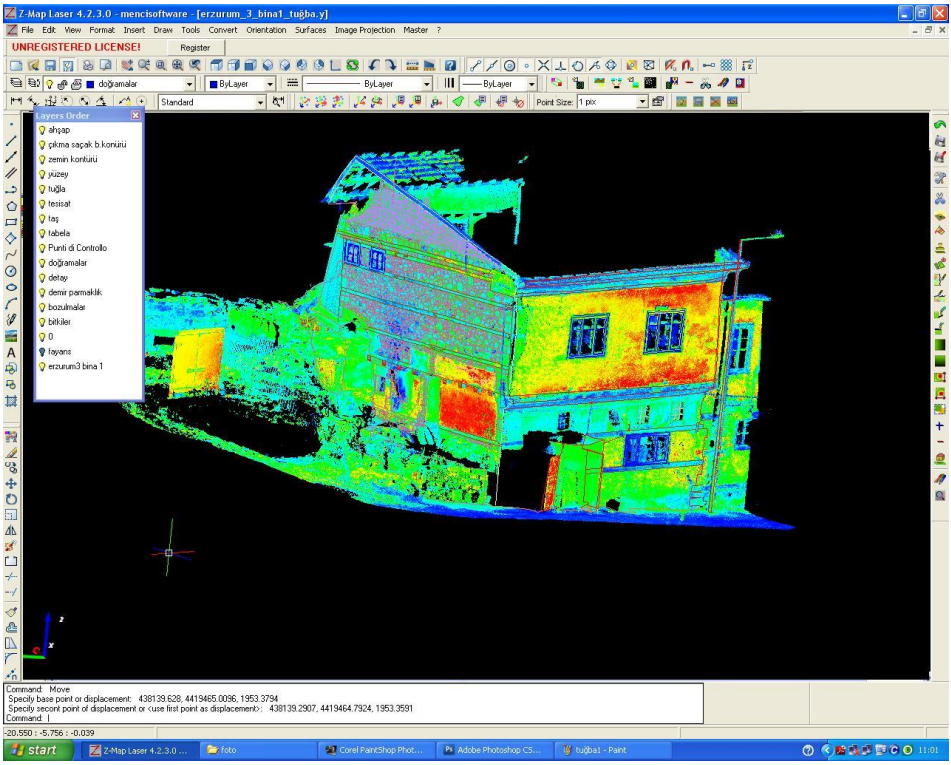


Figure 20: Terrestrial scanning studies (Vector drawing)

3.2. Project Design:

Practices made within the scope of the conservation of cultural heritage are carried out according to the deterioration of the structure by using one of the methods of maintenance, repair, simple repair and fundamental repair (URL 5. principle nr. 660, 1999) Within the scope of the Conservation Development Plan being made in Erzurum Castle and its surrounding area, it was brought to the agenda that the examples of civil architecture should be restored by giving them cultural functions that would increase their value, in the context of the theme of creating a

cultural route together with the monuments in the area (Figure 21). In this context, survey, restitution and restoration projects were conducted in accordance with the “fundamental repair" method.

Figure 21: View of the cultural fabric around from the castle (2012)

General information about the Architectural Cultural Heritage Examples on the 9 blocks located around the Castle, which was studied within the scope of the project, is given in the tables below. The assets in the study area are named according to the lot and parcel numbers and projected. Tables includes the street view, location and ground floor plan of the buildings (Table 2-11).

Table 2: Lot 561

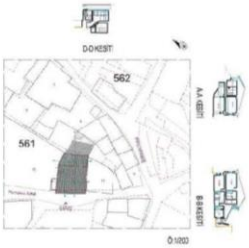
561/8		
		
561/9		
		
561/12		
		

Table 3: Lot 562

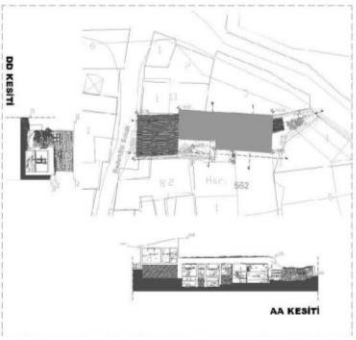
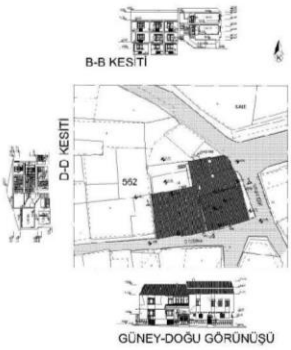
562/4		
		
562/5		
		

Table 4: Lot 566

566/12		
		

Table 5: Lot 567

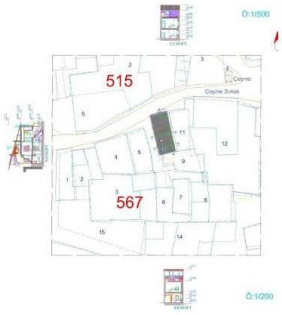
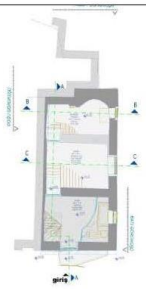
567/10		
		

Table 6: Lot 567

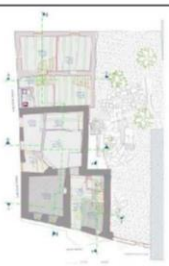
567/ 12	 	
567/13		
		

Table 7: Lot 581

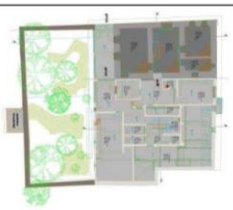
581/7		
		

Table 8: Lot 641

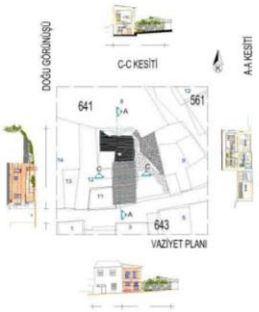
641/10		
		

Table 9: Lot 642

642/1		
		

Table 10: Lot 649

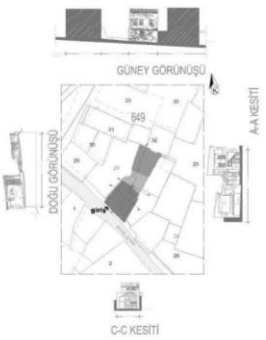
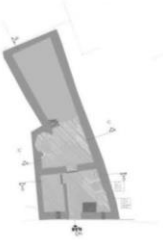
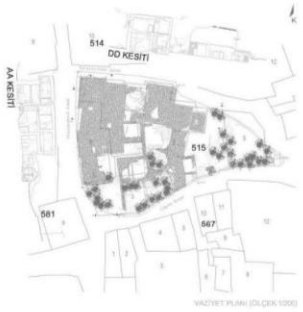
649/27		
		

Table 11: Lot 515

515/1,2,3,4,5,6		
		

3.2.1. Analytical survey

Analytical Survey is the study that shows the material used in the building, the construction technique, the structural features, the deterioration and deformations of the structure and the material, with legends and mapping method, on the drawings designed for the current state of the building (URL 9, Tek Yapı Ölçeğinde Rölöve, Restitüsyon Ve Restorasyon Projeleri Teknik Şartnamesi, 2023).

Analytical survey forms the basis for restitution and restoration studies. This study plays an important role in making restitution decisions and allows for the preservation of authentic parts and the exploration of spaces in restoration work. The area where the study is performed is to house the last remaining examples of a traditional texture. "Analytical

surveys" were carried out by processing the materials and deteriorations on the surveys conducted during the field measurements and office work.

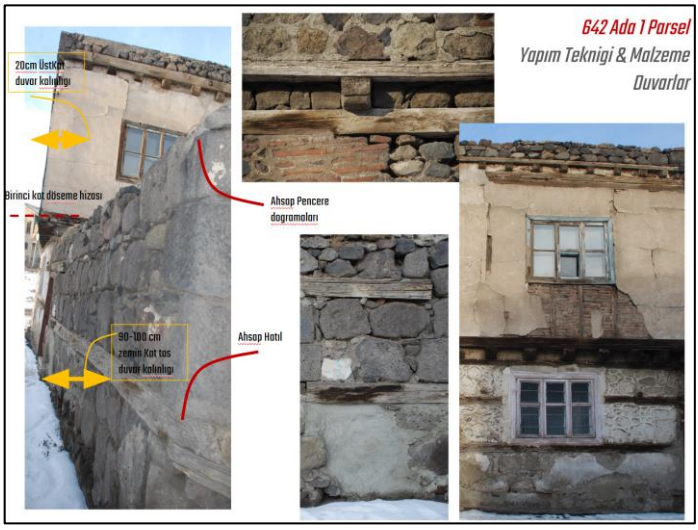


Figure 22: Using digital photos for material analysis (The ground floor of the building in 642/1)

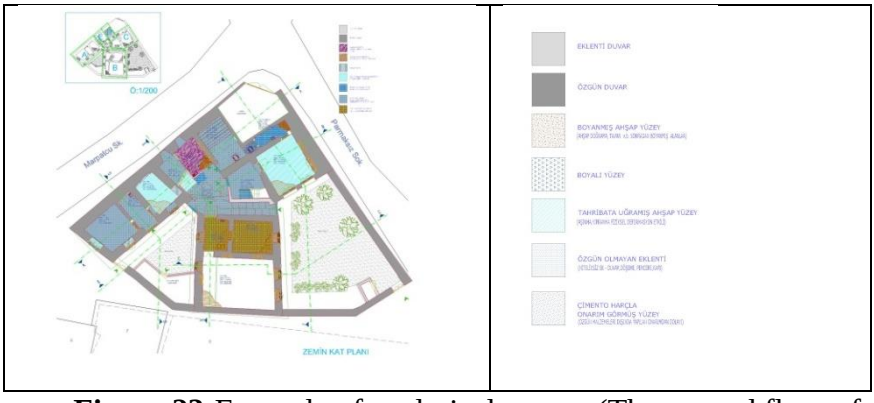


Figure 23: Example of analytical survey (The ground floor of the building in 642/1 parcel)

Authentic and additional walls, materials and distortions were processed on plans and sections in relation to the legend in the analytical

evaluation. The building on block 642, parcel 1, given as an example, consists of two open courtyards and indoor spaces combined with a triangular outer wall.

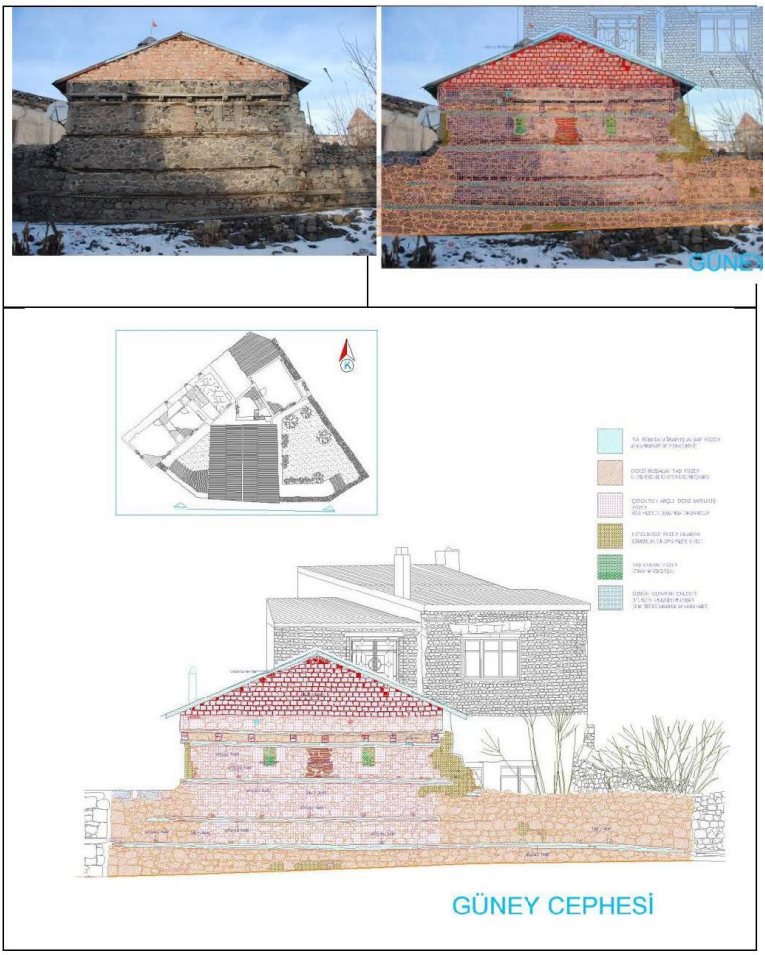


Figure 24: Analytical survey, digital photo, ortophoto, drawing, (642/1)

3.2.2. Pre-restitution surveys

According to Relating to The Conservation and Management of Historic Cities and Urban Areas, the form, appearance, interior and exterior features of the buildings defined by their structure, volume, style, scale, material, color and decoration should be preserved (URL 13, ICOMOS-Valetta Principles, 2011). Conservation of cultural heritage in all its forms and historical periods is rooted in the values attributed to the heritage. Our ability to understand these values depends, in part, on the degree to which information sources about these values may be understood as credible or truthful (URL 14; NARA, 1994).

The analysis of the original parts and the parts added later is an important step in the conservation process. Before the restitution work to be carried out after the survey work, historical research, comparative studies and period analyses are made about the building and its surroundings (URL 9, Tek Yapı Ölçeğinde Rölöve, Restitüsyon ve Restorasyon Projeleri Teknik Şartnamesi, 2023)

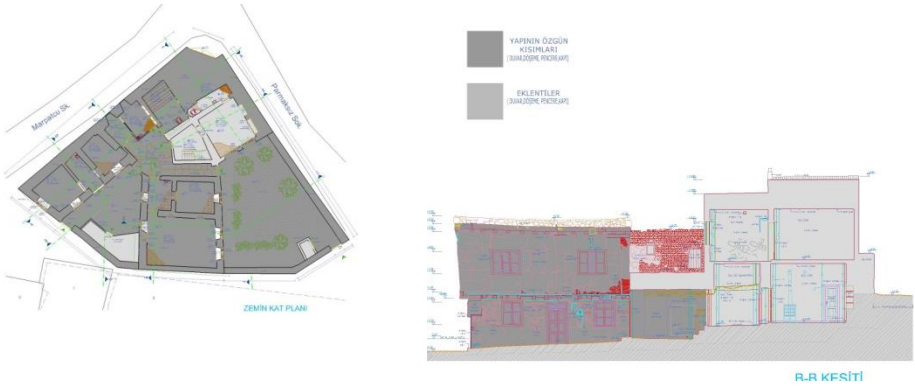


Figure 25: Studies before restitution (data from the property), analytical survey section-view

At this stage, general information such as historical research, archival documents, previous surveys, old photographs, aerial photographs, maps, city plans, engravings and repair records of the building and its surroundings were compiled.

In order to find a solution for the missing parts of the building, a typology was created to analyse it comparatively with similar structures within the scope of the same period/same settlement, different period/same settlement, same period/all settlement.

The most important architectural element of Erzurum houses is the tandirevi (kitchen-like place where households spend most of their time), which is the main place of the building. The buildings are the structures with courtyards whose outer walls and sometimes the upper part are closed. When we look at the plan typology, besides the single-storey houses with fewer examples consisting of a room, tandirevi, courtyard, barn and merek (storage-pantry), two-storey house types with a tandoori

house on the ground floor and many rooms on the lower and upper floors are seen more commonly. There are also courtyard mansions with haremlik and selamlik sections (Karpuz, 1984).

The main plan scheme of Erzurum houses is determined by the relationship between the courtyard and the tandirevi on the ground floor. The courtyard, which is entered from the main space, gives passage to the side spaces, the upper floor and the tandirevi. Thus, it emerges as an important distributive, organizing space.

Depending on the location of the tandirevi in the ground floor plan, the courtyard can be elongated or square. The lighting of the courtyard is provided by the windows above the door. The floor is flagstone paved. While the tandirevi is used in the winter, in the summer people sit in the courtyard and do housework.

The ground floor can also be seen as a service floor. If there are merek, barns and warehouses, these are settled on the ground floor. In addition, the tandirevi is located on the ground floor as a characteristic item in Erzurum Houses. This place, whose upper cover is sort of dome-shaped, has a high volume and no space is placed on it. The tandirevi has a stove, wooden bench, cabinets and shelves.

On the first floor of the houses, there is an ‘iwan room', the main room in the style of the oriel, which dominates the facade and is often defined by a cantilever. The rooms are large in size and high in height. The dominant fiction in the upper floor plans is that there is a sofa that provides access to the rooms. The staircase is usually located in a

separate hall space. If there is a shortage of space, this staircase can be a single-armed staircase in the sofa space (Table 12).

Table 12: General architectural features of Erzurum Houses

Construction system and material	They are mostly masonry structures and cut stone or rubble stone was used on the bearing walls.The load-bearing walls of the houses are supported by wooden beams by making a frame every one meter.
Ground Floor	It spreads over a wide area on the ground and accesses from space to other spaces are quite frequent. Houses usually have barns. It has one or more courtyards. Courtyards are the living space where daily life takes place, there are often a fountain. Courtyards can be covered or uncovered. Access to other spaces is provided here.
Second Floor	Rooms are located on the upper floors. The high dovetail ceiling of the tandoori house, which is the main place, rises on this floor. There is access to the top of the covered courtyards.
Facade features	The entrance to the buildings is from the open-closed courtyard. The ground floors are massive and enclosed. Window spaces are narrow. The upper floors should sometimes emerge along the facade, sometimes in the form of a room. The protrusion depth is approximately 50-70 cm. The window and wall ratios are equal on the upper floor facades.
Interior features	Most houses have a tandoori room, the masonry building with stone walls is covered with a unique wooden beam system defined as the “dovetail roof”. The tandirevi (tandoori room) is the main space.

3.2.3. Restitution

Restitution works are the processes in which the interventions faced by the cultural assets from the time they were built are surveyed and the "authentic" state of the building when it was first built is revealed. This study has been conducted with the help of data obtained from the traces on the building, from sources such as photographs, drawings, documents, narratives belonging to the past periods or by analogy.

Restitution projects of the building were carried out by using data coming from the building itself (additions that are not in the authentic structure of the building and made in different periods, elements in the authentic structure of the building that are not observed today, elements in the authentic structure of the building and observed today but changed during the period, traces of different scales and qualities that cannot be interpreted), archive documents, old documents (if any), typology research (Karpuz, 1984) and comparative studies.

The data traced on the building during the restitution phase are data with a high degree of accuracy. In areas where the working environment is suitable, review essays are performed from various points of the building (ceiling, floor, wall) and it is tried to reach the correct data. In the Erzurum project, it was not possible to carry out such researches due to the negative climatic conditions and the general conditions of the buildings and the time constraint. Through the use of digital documentation methods, it was ensured that the data of the parts of the building that cannot be accessed could be retrieved. Although the

research excavation could not be carried out and even the obstacles such as garbage and furniture in the spaces were not removed, the measurements of the spaces were made. Floor plans could be drawn thanks to the legibility of the foundation and wall traces in the outdoor measurements in the obtained point cloud data. With the support of coordinated data, the connection between the lower and upper floors was established and the typologies of the missing spaces were completed (Figure 26-27).

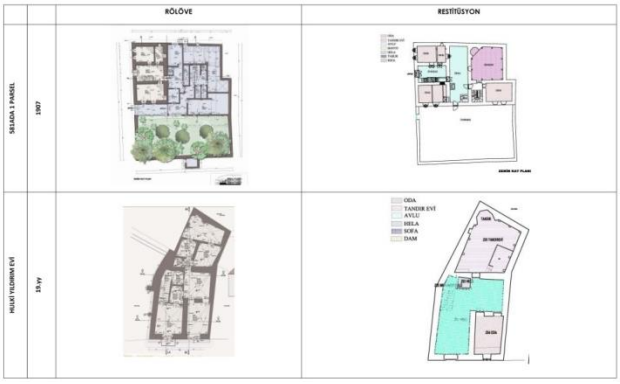


Figure 26. 581/7 and 561/12 survey and restitution projects

Figure 27. 642/1 and 562/5 survey and restitution projects

The data used in restitution studies and their reliability are evaluated according to the fact that the source is concrete and robust in a way that does not allow interpretation.

Low: Data obtained from verbal sources such as title deed registration, description, story, etc. of the building.

Medium: Data such as historical maps, aerial photographs or old cadastral information such as building boundaries, construction materials, entrance and roof can be obtained.

High: Facade and interior photographs of the building itself or the street where it is located, plan sketches or data of a similar structure.

Very high: Data obtained by researching and drilling on the structure or previous surveys and projects of the structure.

Table 13: Datasets used in restitution studies and their accuracy levels

Area in Which Data Provided	Accuracy Level			
	Low	Medium	High	Very high
Traces taken from the building itself			■	■
Archive documents (Photo, Drawing, sketch, map)	■	■		
Previous Projects			■	■
Analogy (via building type, building period typology)		■	■	

The data obtained from the structure appear as the safest data in terms of accuracy (Table13). In this context, it is possible to say that the use of fast and reliable data sets provided by digital documentation methods is

effective in obtaining the autentic plan type. In the work of the project of Zirnikli Mansion, which is the oldest mansion structure studied in the area, this process is explained on the basis of structure (Kan et al., 2017).

4. Conclusions and Suggestions

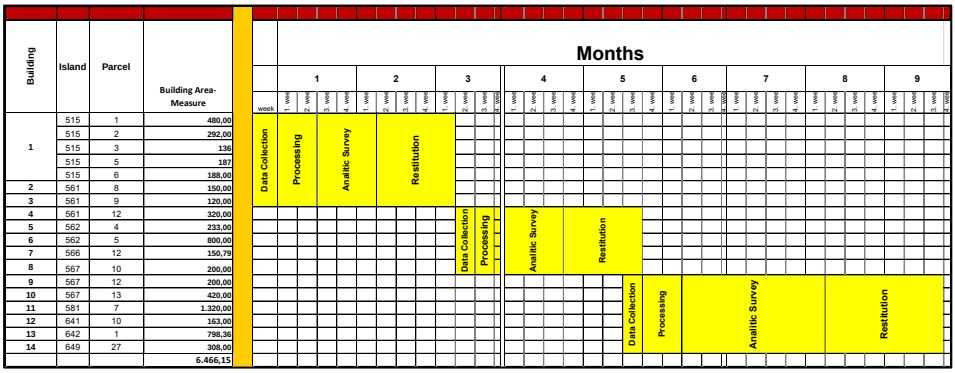
Documentation is the first step in the conservation process. The concern for fast and accurate documentation and the requirements of the age have made digital documentation mandatory. Photogrammetry and laser scanning methods, which are advanced documentation techniques, allow rapid acquisition of reliable data in field studies by producing a 3D digital model of the terrain. These methods, which were first used in the fields of cartography, are used as a safe and fast method within the scope of documentation of cultural heritage, especially in areas that have lost their integrity.

In cultural heritage sites, time is important because of the deterioration processes of the structures to be preserved. It was observed that the buildings measured in Erzurum continued to disappear even during the work. In fact, there were controlled demolitions for security reasons. Therefore, the use of laser scanning and other digital methods is a reliable method in terms of providing fast and accurate recording of data.

In the Erzurum project, the preparation of analytical surveying and restitution projects, including field work, was completed in nine months in a total project area of 6.466.15 m^2 (Table 14). Receipt of buildings from the administration and waiting processes are also included in this.

The realization of these deadlines for a study of this scale was made possible by the use of digital documentation methods.

Table 14. Erzurum survey and restitution studies working periods



Building	Island	Parcel	Building Area-Measure
1	515	1	480,00
	515	2	292,00
	515	3	136
	515	5	187
	515	6	188,00
2	561	8	150,00
3	561	9	120,00
4	561	12	320,00
5	562	4	233,00
6	562	5	800,00
7	566	12	150,79
8	567	10	200,00
9	567	12	200,00
10	567	13	420,00
11	581	7	1.320,00
12	641	10	163,00
13	642	1	798,36
14	649	27	308,00
			6.466,15

Digital documentation methods need equipment, software and hardware support. Such needs require investment. In addition, the fact that the land planning, research team, expert architect and expert mapping teams were involved in the work ensured the effective use of the methods (Table 15).

Table 15. Digital methods used in the study and place of use

Work		**Laser Scanning**	**Digital Photogrammetry**
Survey	**Data collection**		
Analytical Survey	**Visual examination**		
Restitution	**Visual examination, crossreference, comparative analysis**		

The presence of digital methods used in field work in the Erzurum project played an important role for analytical studies and restitution studies (Table 15) (Picture 26).

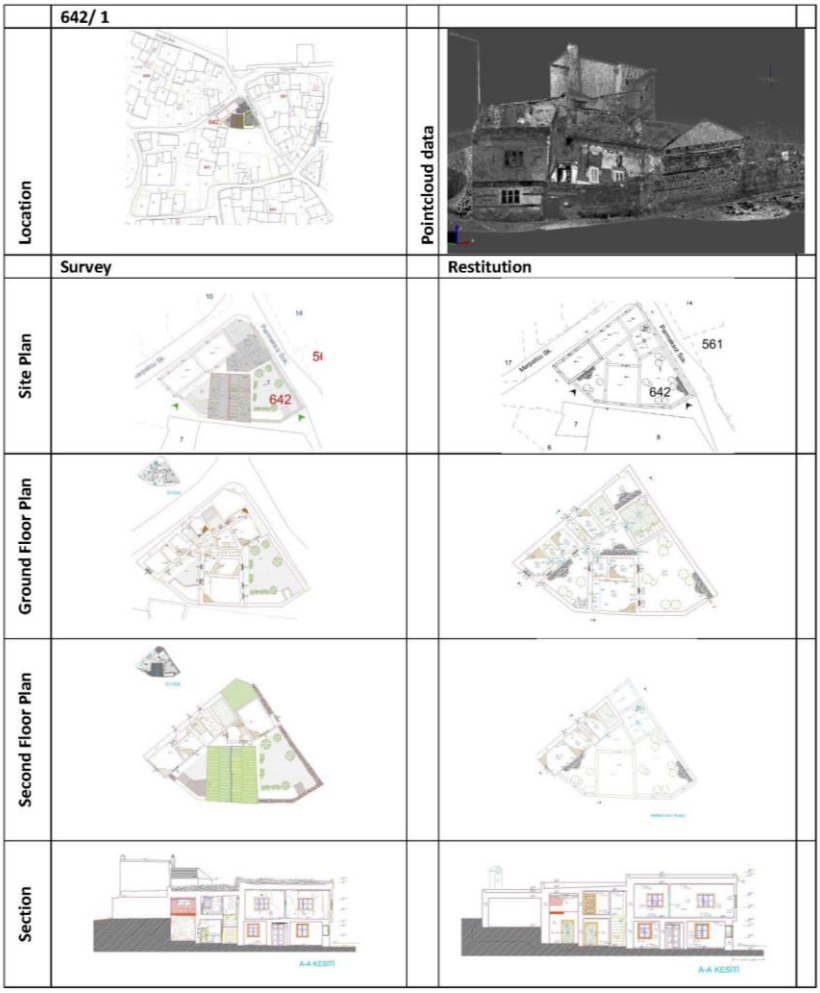


Figure 28. Point cloud, survey and restitutions of the building in block 642, Parcel 1

Table 16. Advantages and disadvantages of digital documentation methods

	Advantage	**Disadvantage**
Terrestrial Scanning	Fine Detail Scanning, interior measuring, high dense data	Insufficient Roof and high-level elements, powerful hardware necessity
Airborne lidar	Site Scanning	Insufficient Detail measuring
Drone lidar	Site scanning, roof scanning	None interior measuring
Mobile lidar	Street and site measuring	Low quality data
Photogrammetry	High resolution data	Interior measuring and background data

It has become possible to process the data collected by different methods at the data collection point, by means of the software developed today, by combining terrestrial scanning methods, airborne lidar, mobile lidar technology and drone or terrestrial photogrammetry methods in the same datasets (Table 16). By using such measurement methods together, the disadvantageous parts can be eliminated.

Depending on the characteristics of the study area, it may be possible to use airborne lidar, mobile lidar and drone technologies as well as terrestrial scanning and terrestrial photogrammetry. This hybrid method, in which all data are integrated with the georeferencing method, enables the holistic digitization of cultural assets or cultural texture (digital twin).

In Architectural Documentation, the processes of documenting, researching, analysing, interpreting and diagnosing the structure should continue during and after implementation (URL 3, ICOMOS Türkiye Mimari Mirasın Korunması Bildirgesi, 2013). In this context, the use of digital methods supports the work of conservation specialist architects, thanks to its capacity to receive and compare data quickly and periodically.

Conservation of architectural heritage is inherently a multidisciplinary field (URL 15, The Washington Charter, 1987). The “architect specializing in conservation” is responsible for the coordination and management of the whole of this multidisciplinary field. Digital documentation techniques are a "measurement" technique and a reliable tool for documentation. The choice of documentation method (laser scanning, photogrammetry), preferences for data acquisition density and shape (terrestrial, aerial, mobile), and interpretation and evaluation of the obtained data must be done by Conservation Specialist Architects with architectural and protection knowledge. The conservation process is completed by restoring and using the building in a way that integrates it with current conditions. It should not be forgotten that the act of conservation the historic environment is a matter of analysis, evaluation and design.

Acknowledgements and Information Note

In this study, the data obtained from the studies we carried out within the Bimtas, one of the subsidiaries of the Istanbul Metropolitan Municipality,

while I was working as the project manager, were used. I would like to take this opportunity to thank all my colleagues who took part in the project.

The project was realized with the cooperation of Erzurum Metropolitan Municipality, North Anatolian Development Agency and Istanbul Metropolitan Municipality (IBB) Bimtas and its implementation processes continue.

References

Alshawabkeh, Y., Haala, N. (2023). Integration of digital photogrammetry and laser scanning for heritage documentation *Herit Sci*,11, 147, https://doi.org/10.1186/s40494-023-00997-2 Access Address (21.08.2023) Integration of photogrammetry and laser scanning for enhancing scan-to-HBIM modelling of Al Ula heritage site | Heritage Science | Full Text (springeropen.com)

Basgelen, N. (2000). *Bir Zamanlar Erzurum*. İstanbul: Arkeoloji ve Sanat Yayınları.

Büyüksalih, G, Kan, T, Özkan, M. & Kersten, T. (2020). Preserving the knowledge of the past through virtual visits: from 3D laser scanning to virtual reality visualisation at the İstanbul Çatalca İnceğiz caves, *Journal of Photogrametry, RemoteSensing and Geoinformation.* 88:133–146, https://doi.org/10.1007/s41064-020-00091-3, Access Adress (21.08.2023),_Preserving the Knowledge of the Past Through Virtual Visits: From 3D Laser Scanning to Virtual Reality Visualisation at the Istanbul Çatalca İnceğiz Caves | PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science (springer.com)

Eldem Sedad, H. (1984), *Türk Evi - Osmanlı Dönemi*. İstanbul: Türkiye Anıt Çevre ve Turizm Değerlerini Koruma Vakfı Yayını.

Evliya Celebi. (2005). İstanbul. Yapı Kredi Publications.

Güleç, A., Dulgerler, O., N., Yakar, M. (2011). "Kültürel mirasın belgelenmesinde dijital Yaklaşımlar*", Selçuk Üniversitesi Mühendislik, Bilim ve Teknoloji Dergisi*, 26 (3), 67-83. ISSN: 1300-5200, ISSN: 1304-8708 (Elektronik) Access Address (21.08.2023) https://dergipark.org.tr/tr/pub/sujest/issue/23235/248066

Karpuz, H. (1984). *Türk İslam Mesken Mimarisinde Erzurum Evleri*. Ankara:Kültür ve Turizm Bakanlığı Yayınları.

Kan, T., Buyuksalih, G., Baskaraca, A. (2017). The importance of digital methods in preservation of cultural heritage the example of Zirnikli

mansion". *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences,* Volume XLII-5/W1, doi:10.5194/isprs-archives-XLII-5-W1-175-2017.

Kersten, T. Büyüksalih, G., Tschirschwitz F, Kan T. et al., (2017). The Selimiye Mosque of Edirne, Turkey—an immersive and interactive virtual reality experience using HTC Vive. *Int Arch Photogramm Remote Sens Spat Inf Sci 42(5/W1):403–409*. https://doi.org/10.5194/isprs-archi ves-XLII-5-W1-403-201

Konyali İ. H. (1960). *Abideleri ve Kitabeleri İle Erzurum Tarihi*. İstanbul: Erzurum Tarihini Araştırma ve Tanıtma Derneği Yayınları s.2

Kuban, D. (1995). *Türk Hayatlı Evi*. İstanbul: Eren Yayıncılık. ISBN 975-7622-13-3.

Küçükerman, Ö. (1988). *Turkish House in Search of Spatial Identity*. İstanbul: Türkiye Turing ve Otomobil Kurumu Yayını.

Sakaoglu, N. (1996). *Osmanlı Kentleri ve Yabancı Gezginler*. İstanbul: Ray Sigorta.

Sezgin, H. (2006). Yöresel konut mimarisi ve Türkiye'deki örnekleri hakkında. *Tasarım Kuram* s.4, 1-20 Access Address (21.08.2023) 209222 (dergipark.org.tr)

Tozlu, S. (2002). Erzurum evleri (Tarihi Kayıt ve Şahitlere gore). *A.Ü, Türkiyat Araştırmaları Dergisi*, S:20, 313-329.

Ulusoy Binan, D. (2017). Tarihi ve mimari kulturel miras alanlarının surdurulebilir korunması. *Şehir and Toplum (9), Aralık 2017-Mart 2018*, ISSN: 2564–7067, pp 23–32. Access Address (21.08.2023) http://www.academia.edu/ Demet Ulusoy Binan

Ulusoy Binan, D. (1993). Güzelyurt Örneğinde Kapadokya Bölgesi Yığma Konut Mimarisnin Korunması için Bir Yöntem araştırması (Phd Thesis). Yıldız Teknik Üniversitesi, İstanbul. Access Address (23.08.2023) http://www.yok.tez.gov.tr

Yilmaz, A. (2010). *Bilinmeyen Erzurum*, Erzurum: Erzurum Ataturk University Publication.

URL 1. ICOMOS, Charter of Traditional Architectural Heritage, (1999). Access Address (21.08.2023): http://icomos.org.tr/tüzükler

URL 2. ICOMOS, Türkiye Mimari Miras Koruma Bildirgesi-ICOMOS Turkey Architectural Heritage Conservation Charter) (2013). Access Address (21.08.2023): https:// www.icomos.org.tr/belgeler

URL 3. ICOMOS, Guidelines on Educaonon and Training in The Conservation of Monuments, Ensembles and Sites (1993). Access Address (21.08.2023): http://icomos.org.tr/tüzükler

URL 4. Operational Guidelines of World Heritage Sites, (1998). Access Address (21.08.2023) http://unesco.org/Operational Guidelines for the Implementation of the World Heritage Convention.

URL 5. Kültür Bakanlığı. (21.07.2023). 660 Sayılı İlke Kararı, (1999). Access Address (21.08.2023): http://ktb.gov.tr/TR44311 İlke Kararı- Karar No: 660 / Karar Tarihi: 05.11.1999

URL 6. 21.7.1983 tarih, 2863 Sayılı Kültür ve Tabiat Varlıklarını Koruma Kanunu.

URL 7. ICOMOS Principles for The Recording of Monuments Groups of Buildings and Sites (1996). Access Address (21.08.2023): https:// www.icomos.org.tr/belgeler

URL 8. ICOMOS Principles for The Preservation and Conservation/Restoration of Wall Paintings (2003). Access Address (21.08.2023): https:// www.icomos.org.tr/belgeler

URL 9. Tek Yapı Ölçeğinde Rölöve, Restitüsyon ve Restorasyon Projeleri Teknik Şartnamesi. Access Address (21.08.2023): https://teftis.ktb.gov.tr/Yönetmelikler

URL 10. The ICOMOS, Charter on Cultural Routes (2008). Access Address (21.08.2023): https:// www.icomos.org.tr/belgeler/

URL 11. Hepworth, H. (1898). Through Armenia on horseback, Vilayet of Erzurum, (11.07.2023): www. Houshamadyan.org.

URL 12. Sekmen, M. (2023). Erzurum Koruma Amaçlı Planı, (22.07.2023): https://Erzurum.bel.tr

URL 13. The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas) (2011). Access Address (21.08.2023): https:// www.icomos.org.tr/belgeler

URL 14. ICOMOS, The Nara Theument On Authenticity (1994). Access Address (21.08.2023): https:// www.icomos.org.tr/belgeler

URL 15. The Conservation of Historic Townsand Urban Areas -The Washington Charter) (1987). Access Address (21.08.2023): http://icomos.org.tr/tüzükler

Dr. Tuna KAN

E-mail: tunakan@topkapi.edu.tr
Educational Status: Dr Academic Member
License: Mimar Sinan Fine Arts University
Degree: Mimar Sinan Fine Arts University
Doctorate: Mimar Sinan Fine Arts University
Professional experience: Istanbul Metropolitan Municipality, Bimtas (2005-2020)

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-11

Synergy of Marketplaces as Public Spaces in the Historical Environment with Heritage Assets: The Example of Niğde Persembe Market Place

Assist. Prof. Dr. İlknur ACAR ATA [1]

[1]Nigde Ömer Halisdemir University, Faculty of Architecture, Department of Architecture, Niğde /Türkiye.
ORCID: 0000-0002-6080-1307
E-mail: acarilknur@ohu.edu.tr

Citation: Acar Ata, İ. (2023). Synergy of Marketplaces as Public Spaces in the Historical Environment with Heritage Assets: The Example of Niğde Persembe Market Place. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 11, 357-387. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Weekly marketplaces in historical city centers are open to the use of people from all walks of life and support regular communication of the citizens with each other and with the historical environment. These weekly markets, which serve as a market place on a certain day of the week, have the potential of public space that can serve the city life as an urban space on the rest of the week. The spaces that are cut off from the urban space and cannot keep up with the idle age due to many reasons such as the attitude of the planners towards the urban space, the privatization of public spaces, the change of large industrial sites and land use, lose their activities (Trancik, 1986). The lack of appropriate planning guidelines and policy is a major problem, as urban voids are viewed as negative spaces on the architectural and urban scale (İmeri, 2019). Urban voids carry potential in the production point of the interior and exterior use of space with the environmental, social, economic, cultural, and visual value it carries (İmeri, 2019; Omar & Saeed, 2019; Yurtseven, 2017). The fact that the use value of the areas that serve as public spaces in the historical texture cannot respond to the citizens with the required quality in today's conditions causes the formation of urban voids with high potential. The use of this potential by planning for public spaces will increase the quality of life of the citizens.

Market places in the historical environment have synergy with cultural heritage assets at the point of creating public space. In this study, in order to examine this situation, an evaluation was made through integrated

solution proposals in the sample of a market place and its surroundings established in the historical city center. The historical city center of Niğde has the common problems seen in many historical city centers in Anatolia, with the loss of its old usage value for the citizens as a region over time, and its idle historical buildings. Perşembe Market in historical city center is an open space (urban void) with the potential to be a designable public space because it is within the boundaries of urban site protection. It is also the intersection point of a region that includes many functions such as inner-city accessibility, education, trade, and housing. Unlike the neighborhood bazaars set up between the streets in the city, the Perşembe Marketplace has a fixed area for its establishment. However, the market is set up in the streets. In fact, in some periods (seasonal) many cultural heritage assets with which the market place is in close spatial relationship are established in the courtyard of the historical building, up to the street where it is located. Solutions to improve the social, economic, and cultural quality of life of the city and its residents have been put forth in accordance with the data gathered for the evaluation of the synergies of creating public space with the historical buildings in the area where the marketplace is located.

1.1. Historical Environment and Public Space

The places where everyone can be included and everyone can be part of a common experience are public spaces in democratic societies (Özgüç & Mitchell, 2000). The spaces we use for common places and common purposes that can be visited and used in the city are described as public spaces (Erdönmez & Akı, 2005; Gökgür, 2008). The basic social and urban

function of public spaces is seen as meeting the needs of the citizens to spend their spare time, relax, breathe, socialize and come together (Özgür, 2018). Planning public spaces with a contemporary and ergonomic design thought will contribute to making them usable for everyone (individuals of different age groups, people with different physical structures, pregnant women, disabled people, children, local and foreign tourists, etc.) (Karayılmazlar & Çelikyay, 2018). Public space refers to recreational and social spaces open to the public, such as parks, gardens, waterfront areas, squares, avenues, and alleys that are open to the public, organized and maintained by the public (Carmona, 2010). Public space is an extremely important element for individuals to come together, to be visible to each other, to share and discuss their ideas with each other, and to make themselves present in society (Uzgören, 2021). Public spaces are the places where diversity and plurality, which is the essence of urbanism, can be experienced most and voluntarily (Özgür, 2018).

The historical environment is defined as the texture consisting of streets in integrity with the historical, archaeological, architectural and artistic values that reflect the life order and traditional life of the society (Ahunbay, 1996; Zeren, 1981). Today's planned cities cannot meet the basic requirements of public space such as randomness, diversity, plurality, heterogeneity (Akaydın & Önal, 2021, p. 675). Contrary to this situation, the historical environment has spontaneous definitions of public spaces that facilitate the gathering of people with the distribution of heterogeneous building groups. Gehl (1987) grouped the user's experience of outdoor space in public spaces as compulsory activities, non-

compulsory - optional - activities and social activities. Mandatory activities in daily life, such as going to school or work, with little participation; non-essential activities such as walking, sitting in the park; social activities, on the other hand, include activities in both categories, as well as activities that bring people together (Akaslan, 2007). Nodes (center and subcenters); In the urban space, which is explained by roads, borders, regions and points of emphasis (reference points), the nodal points can be considered as public spaces where many human activities take place in the city, and the centers of commerce, marketing, recreation and transportation networks (Erdönmez & Akı, 2005, p. 73). If we look at the usage value in the historical environment, the streets shaped under the eaves of the houses are public spaces where children play freely, old people sit and chat in front of the doors, and do collective work of the neighborhood. In addition, the courtyards of historical religious buildings are open to everyone as urban spaces, and they are public spaces where the citizens who come to worship meet, chat and stay in regular communication. The existence of traditional bazaars, covered bazaars and open markets in the historical city center creates public spaces of social and economic value that bring together all segments of society.

1.2. Public Space Potentials of Marketplaces in Historical Environment

"Market", which means an open-top shopping center in Persian, when considered as a concept, expresses the regular encounter of supply and demand and is also used as the equivalent of Piazza, which means bazaar or market in Italian (Aliağaoğlu, 2012). Commercial activities are as old

as settlements (Svizzero, 2014). Since the sale of agricultural products was forbidden in the city walls in the past, sellers from the surrounding rural settlements sold their goods near the castle gates, in places reserved for them, and as the cities grew to include these areas, markets with open shopping malls became social focal points (Öztekin, 2009). Marketplaces are an active public space for initiating radical changes in society (Ceylan & Erdoğan, 2023).

The most important urban spaces that provide social and economic interaction in traditional societies are bazaars and market places with their dynamic structure (Lai, Said, & Kubota, 2013). Özgüç and Mitchell (2000, p. 37), defines the periodic market as "a form of public gathering of buyers and sellers at regular intervals in a place designated by the authorities". Although the fact that commercial activities are predominantly carried out in these market places defines these places as shopping places, the importance of communication-interaction, sharing and cultural exchange in urban life should not be ignored (Uzgören, 2021). The marketplace, which is not just a commercial activity, is the social living spaces and cultural interaction points of the settlements from the agora to the present (Öztekin, 2009). Markets have always been one of the most effective bases of settlements in terms of social, economic and political development (Morales, 2009). In this sense, on a certain day of the week, the market place provides the communication of the whole city with the region; this shows the high potential of public use of these areas for the city and its inhabitants. Markets are places where the lifestyle and culture of the society are shown (Ibrahim, Wahab, & Shukri, 2018).

Market places present very different cultural and geographical views from each other, with the effect of cultural values and the economic and spatial use characteristics of the local (Çalışkan, 2007). The location of the market places in the city, the days of use, the frequency and whether they are designed or not provide a lot of data on the social and economic lifestyle of the people living in a city, the situation in the relationship between production and consumption, and the city administration. In particular, the markets that have been set up for years also showcase the intangible cultural heritage of a community because the daily lives of the inhabitants of a village or city are vividly depicted there (Zandieh & Seifpour, 2020, p. 112). Market places in the traditional fabric are the social life centers of the whole city, important for social, cultural, political and religious activities as well as their economic functions (Rotblat, 1975). At the same time, for many people, shopping at a periodic market is an enjoyable pastime experience due to the sociability of the marketplace (Smith, 1978). Marketplaces are also effective on cities in physical formation. The forms and functions of cities have been shaped by the locations of the marketplaces and their connections to the main access points (Kermani & Luiten, 2010). Marketplaces are places of interaction as spaces that bring together very different socio-economic groups (Çalışkan, 2007). In these areas, all segments of society from different ethnic, age and gender groups interact. In addition to the locality it includes, buyers and sellers from different geographies are included in this gathering, and an environment of intercultural activity and dialogue can be created (Öztekin, 2009). Although the two main actors in the market are seen as the tradesman

(seller) and the visitor (buyer) who come to shop, it is seen that the visitors also maintain the continuity of their social relations with each other. In addition, some of the visitors coming to the bazaars are the tourists coming from outside the city to see the culture, traditional products and productions of that place in addition to meeting their basic food and beverage needs. Marketplaces' unique products, marketing styles, architecture, clothing, scents, all together form a regional identity and clearly represent a cultural region (Tümertekin & Özgüç, 1997). The sounds, colors, smells, movement and traces of the local in the marketplaces reveal an important cultural richness (Çalışkan, 2007). All this diversity adds a memory and identity value to the places where it is located, which gives the market place the quality of a public urban space where people reinforce the communication with the people they meet on certain days of the week. Periodic market; It is a form of public gathering of buyers and sellers at regular intervals in a place determined by the authorities (Verdil, 2006). Market places are the areas defined by the markets established on certain days of the week, and on other days, they are open to the public with different functions as an urban space. The voids are adaptable for the dynamic structure of the city and can change the urban spatial arrangement (Yurtseven, 2017). The designable structure of voids with a changing and transforming structure causes different urban spaces to be defined by people's attitudes towards use. The definition of the city as a “meeting place” that brings people together (Norberg-Schulz, 1980); indicates that urban voids can be an experience area. Urban voids have various functions; public open spaces, parks, social cultural activity

areas such as gardens for the community, recreational activities (Najjar & Ghadban, 2015), social servers such as restaurants, urban agriculture and education centers (Kushwah & Rathi, 2017). Public spaces are expected to allow people to come together, enjoy and interact with safety, so costly complex designs are not required in these urban spaces (Kim, 2016). They also offer venues for activities such as seasonal celebrations, events, trading places, farmers' markets, which have the temporary use value of urban voids (Jégou, Bonneau, Tytgadt, Tabaku & Descheemaeker, 2016).

2. Material and Method

The flow of this study, which examines the potential of the synergy of the cultural heritage assets of the marketplaces in the historical environment and as a public space, consists of the definition of the problem, the hypothesis for the solution, and the analysis of the data obtained as a result of the field study (analysis) (Figure 1).

A field study covering the Thursday Marketplace and its immediate surroundings, which is used as a market place once a week and open to public use on other days with parking service, was carried out. The selected sample area is protected. Therefore, the current situation of heritage assets has been taken into account in the analysis. Visual survey technique was used in field-oriented analyses.

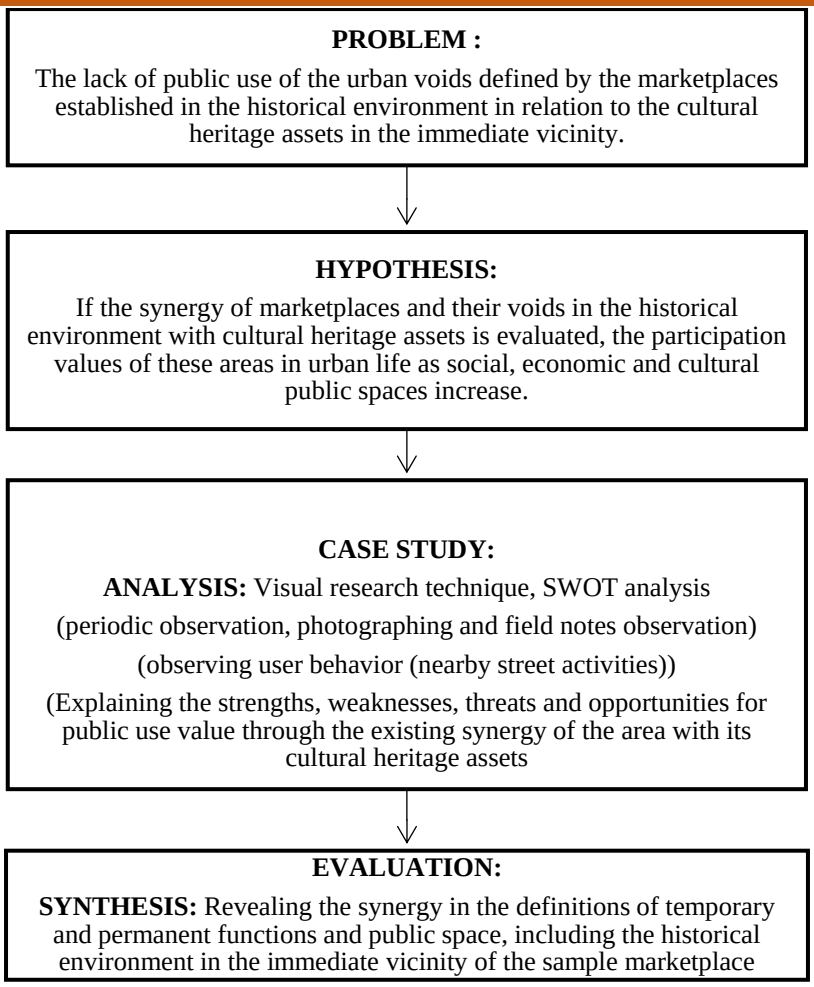


Figure 1. The flowchart of the method followed in the study

The visual survey technique is used to record physical features and attributes in urban environments and to study human activities in urban areas, and this technique includes the type of activities in the city such as street activities, location and conditions, using observation, photographic recording and mapping (Rahman, Ghani, Teh & Ibrahim, 2020). A SWOT

analysis of the current state of the marketplace for public use has been carried out. The data collected for the evaluation of the synergies of creating a public space with the historical buildings in the area where the market place is located have been synthesized in solutions focused on permanent and temporary spatial functioning, suitable for public use, aimed at increasing the social, economic and cultural life quality of the city and its inhabitants.

3. Findings and Discussion

3.1. Public Use of the Perşembe Marketplace in the Historical Environment

As in many castle settlements in the Anatolian geography, the historical city center of Niğde consists of a castle on the hill and important religious buildings, commercial buildings and residences on its periphery. The historical buildings in the protected area with the date and number of 13.07.2000/1305 within the working boundaries according to their proximity to the castle; Nigde Castle, Rahmaniye Mosque, Alaeddin Mosque, Sungur Bey Mosque, Sokullu Mehmet Paşa Vaulted Bazaar Bedesten, Central Greek Church, Dumlupınar Primary School, Armenian Church, Çarşı Hamam (Bath), Kıgılı (Pazar) Mosque, Nigde Ömer Halisdemir University Cullaz Street Guesthouse (Göncü Mansion), Tabal Gastronomy House and Ak Madrasa (Figure 2) .

Figure 2. Protected historical buildings associated with the Marketplace within the scope of the study (marked on Google Earth, 2023).

The market place is located at the foot of Niğde Castle, in the historical city center under protection, where cultural heritage assets are concentrated (Figure 2). Cultural heritage assets that the marketplace is closely related to as of the area where it was established; Sungur Bey Mosque, Sokullu Mehmet Pasa Vaulted Bazaar, Central Greek Church, Kığılı (Pazar) Mosque, Çarşı Hamam (Bath), Armenian Church (Figure 2-3). Sungur Bey Mosque and Bedesten, Niğde Castle, Clock Tower are perceived from the market place (Figure 3). While some of the historical buildings around the market place are used in their original or new functions, some are not. Alaeddin Mosque, Rahmaniye Mosque, Kığılı (Pazar) Mosque, Çarşı Hamam (Bath) and Dumlupınar Primary School continue to be used in their original functions. Sungur Bey Mosque, Sokullu Mehmet Paşa Vaulted Bazaar and Central Greek Church are under restoration and these structures are not open to public use. Ak Madrasa, which is used periodically for different functions, is not used today. In two

historical examples of civil architecture in close proximity to Pazaryeri, one is used by Niğde Ömer Halisdemir University as Göncü Guesthouse, and the other is used as a Tabal Gastronomi house by the municipality, and it is among the important examples of keeping it alive in this region. The Armenian Church is used as an Art Gallery by the Niğde Municipality.

Figure 3. Historical buildings under protection associated with the marketplace within the scope of the study

Commercial units located on Kunt Street at the foot of Niğde Castle do not conform to the historical identity (Figure 3-c). The single-story shops close to the Sokullu Mehmet Paşa Vaulted Bazaar have a makeshift appearance that damages the image of the historical texture (Figure 3-c-d). The appearance of these buildings, which are in the view of the buildings that are identity elements for the city, such as the historical Niğde Castle and the Clock Tower, reduces the urban space quality of this region Figure 3-d).Vehicle and pedestrian traffic not only enables economic and social mobility in the city, but also determines the direction of the design that should be focused on in the urban space. The main axes providing access to the bazaar are designated as Ak Medrese Street and İstasyon Street, which are connected to the busy Dr Sami Yağız Street (Figure 4-5). The boundaries of the market place are linked to Ak Medrese Street and Station Street, and the Kunt Street, where Mehmet Paşa Bedesteni and Sungur Bey Camii are located, is largely determined.

Figure 4. Accessibility of Niğde Perşembe Marketplace

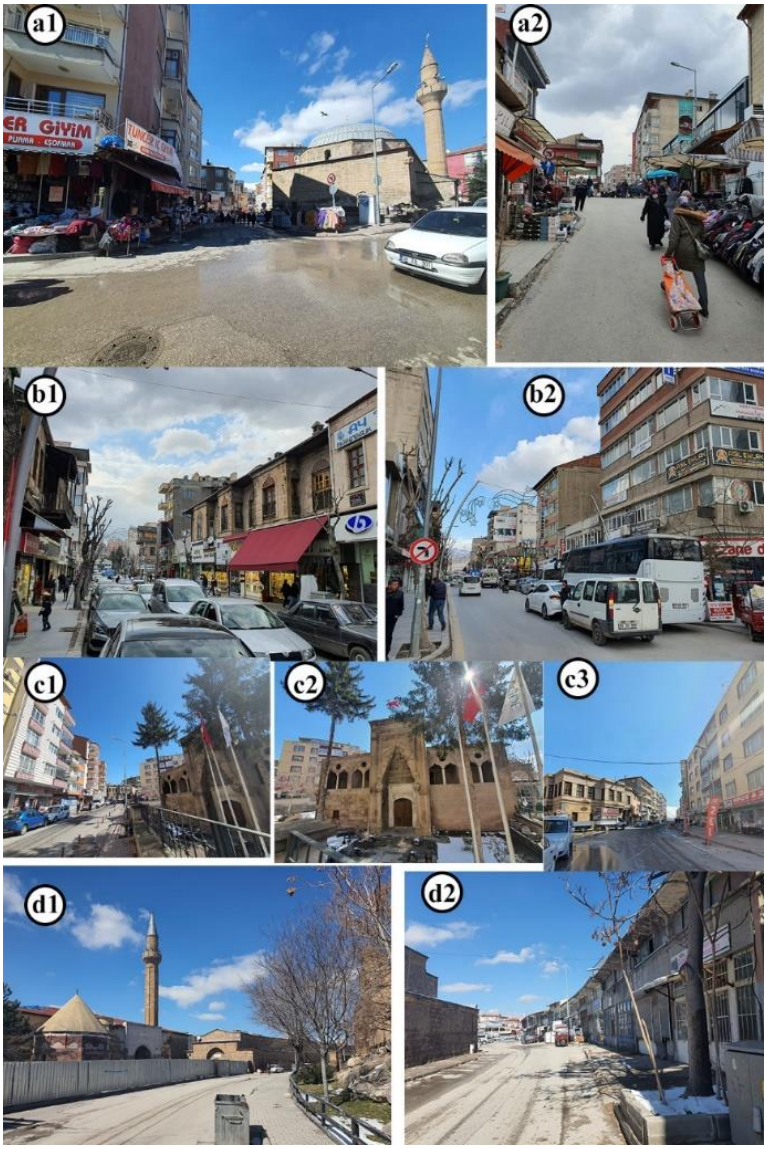


Figure 5. Axes that are busy used in transportation to the marketplace: a) Kulhan Street, b) Istasyon Street, c) Ak Madrasa Street, d) Kunt Street

Although Niğde Perşembe market place has a large area in terms of scale in its historical environment, it is insufficient in using its potential in terms of physical contribution to the region. The establishment of a market where vegetables, fruits and live chickens are sold on Thursdays increases the usage value of the region on weekdays, but this area is used as a parking lot on other days of the week (Figure 5). The establishment of the market place in the commercial zone formed by the existing small shops also provides density for the tradesmen in the region once a week. According to the observations made in the area, the bazaar is the busiest time in the summer season, especially in the months when local vegetables and fruits are sold (July-August), on Thursdays (the day the market is established). On Thursdays, those who are worried that local products will run out quickly (neighborhood residents; retirees, housewives) visit early in the morning and the end of the working day is seen after the work of the civil servants. The market place is used as a parking lot by those who come to shop from the greengrocers and fishermen in the north of the area, the small shops on Kunt, Kulhan Street and the shops (jewellery, nuts, butcher, delicatessen) on Istasyon Street on weekdays (except Thursdays) (Figure 6). The market place has no closed, semi-closed and open arrangement. This undefined situation regarding the market place leaves the historical buildings in its immediate vicinity open to threats that may come from outside in an uncontrolled manner (Figure 6-a). Citizens and villagers who come to the market to shop are experiencing the existing historical texture consciously or unconsciously. Apart from the area reserved for the marketplace, the bazaar is set up especially in the summer months along

the streets where the Sokullu Mehmet Pasa Vaulted Bazaar, Sungur Bey Mosque, the Central Greek Church, Dumlupınar Primary School and the Armenian Church are located. Especially since the walls of the Sokullu Mehmet Pasa Vaulted Bazaar and the courtyard of the Central Greek Church are within the sales areas, it has a direct relationship with the Marketplace.

Figure 6. Public use of the marketplace: a) Market place on Thursday on weekdays, b) Parking lot on other days

Table 1. The SWOT analysis on the evaluation of the potentials of the Perşembe Marketplace as a public space

STRENGTHS	WEAKNESSES
Being in a protected area within the historical environment (The spatial relation of the area with Sokullu Mehmet Pasa Vaulted Bazaar, Greek Church, Sungur Bey Mosque)	Inability to provide comfort conditions for users: top cover suitable for different climatic conditions, uncontrolled pedestrian circulation in the area
Trying to provide a function with a usage value every day by the citizens: Using the market place on Thursdays as a parking lot on other days	Lack of regional categorization in the market
The feature of being an intersection area in an area with urban functional diversity (housing-commercial-worshipping) in the region.	The property of being a market place that spreads uncontrollably for the historical buildings around it.
Having urban memory value	Not having all the service facilities and features required in the market place: see Regulation on Market Places-Article 6-(1) (TCCumhurbaşkanlığıMevzuatBilgiSistemi, 2012)
Its proximity to the developing city center, ease of access for pedestrians	
OPPORTUNITIES	**THREATS**
Potential to provide vertical and horizontal pedestrian circulation in an important historical region in the identity of the city	Disconnection, uncontrolled permeability in the transition between the existing commercial axis and settlement and cultural assets
Reuse potential of cultural heritage assets in the immediate vicinity	Lack of parking in the area

3.2. Routes Determined for Solution-Oriented Synthesis Work

Solution suggestions for the Perşembe marketplace, which is considered as a public space; It was created on the basis of the relationship of the area with its immediate surroundings and today's busiest transportation axes of the city. Three important axes have been determined for solutions for the existing transportation network, landmarks, historical buildings close to

the study area, and commercial units with a focus on the Perşembe Market place (Figure 7).

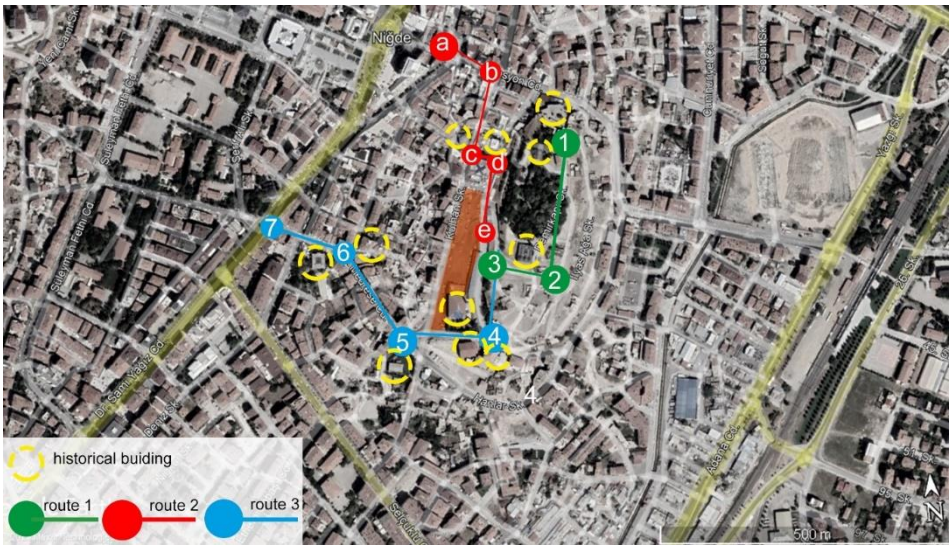


Figure 7. Routes for the axes determined for the solution (marked on Google Earth, 2023).

- **Route 1:** Demirkapi Street (1-2): Niğde Castle, Rahmaniye Mosque -Alaeddin Street (2-3): Alaeddin Mosque
- **Route 2:** Istasyon Street (a-b) -Külhan Street: Kıgılı (Pazar) Mosque (b-c), Hal 4 Street: Çarşı Hamam (Bath) (c-d) -Kunt Street: Sokullu Mehmet Pasa Vaulted Bazaar and shops (d-e)
- **Route 3:** Sungurbey Mosque and Sokullu Mehmet Paşa Bedesteni (3-4), Dumlupınar Primary School - Greek Church - Armenian Church (4-5), Ak Madrasa Street: Ak Madrasa - Tabal Gastronomy House (6), Dr. Sami Yagız Street- Ak Medrese Street (6-7)

Those who come to the castle actively use the green area arranged between route 1 points 1-2 on the route determined, especially visitors entering from Istasyon Street, Kulhan Street can reach the castle directly from the park by stairs. Routes 2 and 3, which provide the transition from Dr. Sami Yağız Street, which has busy pedestrian and vehicle traffic, to the marketplace from the points a and 7 have been determined. Niğde Perşembe Marketplace and its nearby commercial units, which are connected to this route, are valuable for the city in terms of fulfilling the commercial function in this region, which has a social, cultural and religious function. However, over time, the variety of users of the historical center shops has decreased due to the user density of the shops on Dr. Sami Yağız Street, which forms the backbone of the city, and the shops nearby. There are many commercial and social units providing services to the public such as cafes, cultural center and shops on this street. Istasyon Street on route two has many commercial units (jewelers, delicatessen, butcher, nuts, coffee shops, spice shops), transportation with busy pedestrian and vehicle traffic, and a use that meets the daily needs of the urbanites. Tabal Gastronomy House (6) and Armenian Church (5), Sungurbey Mosque (4) and Sokullu Mehmet Pasa Vaulted Bazaar (3) are located at the important points of this route.

4. Conclusion and Suggestions

Every district and building in the city has a variety of functions related to each other. In historical city centers, buildings lose this communication language over time and remain idle and enter the process of not being used together with their surroundings and turning into collapsed areas. In order

to prevent this situation, it is necessary to use the synergy of public open spaces designed for the citizens with the buildings that make up the historical environment. The weekly market places in the historical environment provide an area for the preservation and survival of the historical environment with their open public space potential.

Niğde Perşembe marketplace, which is used extensively by the citizens as a marketplace, has easy accessibility in the city, and is designated as the meeting area no. 13 in Niğde in case of disasters and emergencies, is important in this sense as an open space in the region. Instead of filling this area with building stock, its continuity in this use should be supported by increasing its function in the use of public space. Considering the current location of the marketplace, its relationship with the historical environment and its physical relationship with the walls of the undefined space and its immediate surroundings, its commercial, economic and social contribution, as well as its situation in the city memory, the necessity of both temporary and permanent functionalization emerges from the use of the area. In this context, in the findings of the study, suggestions that support cultural tourism along with historical buildings, which are cultural heritage assets on the determined routes, were put forward for solution proposals to support the public space potential of the marketplace.

Perşembe marketplace and the historical buildings around it reflect the history, architecture, lifestyle, belief style, briefly cultural values of Niğde. At this point, temporary and permanent new function proposals that follow the cultural trace through the route 1-2-3 determined in the study, focused on increasing the use of public space, are planned as follows:

- The green area between Niğde Castle, Rahmaniye and Alaeddin Mosque should be revised and there should be more urban equipment and an information point about cultural heritage assets in the historical environment. The shops that prevent the vertical circulation of the castle and the Perşembe marketplace should be removed.
- The most suitable area for outdoor activities in the region is the market place. Therefore, temporary units should be organized in this area where the products of the local manufacturer of Niğde can be promoted to those who visit the historical region in every season of the year. Therefore, temporary units should be organized in this area where the products of the local manufacturer of Niğde can be promoted to those who visit the historical region in every season of the year. It is recommended to design commercial units and social areas that integrate with the cover design of the market place that can be used as semi-open. Thus, the comfort of both sellers and buyers is ensured in the market place, which shrinks due to winter conditions. In addition, order should be created in line with the needs of the municipal police office, garbage collection place, loudspeaker system, lighting system, security camera, which should be in the market places.
- The Kıgılı (Pazar) Mosque and Carsı Hamam (Bath) function, located on the second route, is active in public use. The surroundings of these two buildings should be rearranged in such a way that a bath can be perceived.

- Sokullu Mehmet Pasa Vaulted Bazaar is located in the area where commercial activities are intense, where the first and second routes intersect. In this area, a function that supports public use is suggested, where the seller (tradesman and craftsman) and the buyer (local, tourist), who are the actors of the shopping action, can communicate easily. Local producers who come to the bazaar on thursdays to sell their own product in the Sokullu Mehmet Pasa Vaulted Bazaar may always have the opportunity to present Niğde-specific products to the visitors. In addition, the promotion of the products of the cooperatives established in the villages of Niğde can take place in the historical building. Urban and tourist can always have the chance to reach the local products unique to Niğde in the authentic environment of this historical building.
- After the restoration of the Armenian Church, it was given the function of an art gallery. This current reuse value can be supported by route 3 and route 2, as well as by transforming the units designed in the market place into exhibition spaces for art events and on the public temporary street. Thus, the public space, where the public can perform activities continuously and share at the same time, works as a whole.
- The Central Greek Church, located on the third route, has undergone restoration work but is not reused. Considering the population density and socio-economic status of the people living in the region, it is recommended that the historical building be used as a public education center. In the public education center, the

products produced by citizens of different ages and education groups can be exhibited and offered for sale in the market area and church courtyard. Training workshops for schools in the region can also be located in the building and the courtyard of the building can be used as a performance area. Thus, the historical building arranged with its close environment, which can have user diversity, may continue to exist as one of the architectural, social and cultural dynamics of the city.

- Niğde Ak Madrasa served the city for many years as a museum. This historical building, which is an important memory value for the city, can be given the function of a living museum where the history of the city and its ethnographic values are taught and transferred. By reproducing interactive areas and values about the city, joint studies can be carried out with the public education center proposed to the Central Greek Church. The resulting works can be presented to the citizens through joint exhibitions to be held in the market place. Tabal Gastronomy House, located on Route 3, promotes the local dishes of Niğde, which is its current new function, and supports the cultural tourism activities suggested in the study.

Acknowledgments and Information Note

The e-book section 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

There is a conflict of interest with the Person(s) named.

References

Ahunbay, Z. (1996). *Tarihi Çevre Koruma ve Restorasyon*. İstanbul: Yapı – Endüstri Merkezi Yayınları.

Akaslan, P. (2007). Etkinliğini yitirmiş kentsel mekanların kent yaşamına katılması. (Master's thesis), İstanbul Technical University. Access Address (30.03.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Akaydın, Ö. E. & Önal, F. (2021). Üstmodern kentteki artık alanın potansiyel kamusallığı: Londra Low-Line tren hattı örneği. *MEGARON, 16*(4), 671-682. E-ISSN 1309-6915. doi: 10.14744/megaron.2021.27443. Access Address (28.03.2023): https://jag.journalagent.com/megaron/pdfs/MEGARON_16_4_671_682.pdf.

Aliağaoğlu, A. (2012). Balıkesir şehrinde haftalık pazarlar: çekicilikler ve sorunlar. *Doğu Coğrafya Dergisi, 17*(27), 43-72. ISSN: 1302-7956. Access Address (11.04.2023): https://dergipark.org.tr/en/download/article-file/26978.

Carmona, M. (2010). Contemporary public space, part two: classification. *Journal of Urban Design, 5*(2), 157-173. E-ISSN: 1469-9664. doi. 10.1080/1357480100363811. Access Address: (08.05.2023): https://www.tandfonline.com/doi/epdf/10.1080/13574801003638111?needAccess=true&role=button.

Ceylan, B. & Erdoğan, A. (2023). Pazar yeri yerseçim-planlama-tasarım ölçütleri ve COVID-19 sonrası için bir ön değerlendirme. *Planlama, 33*(1), 15–39. ISSN: 1300-7319. doi: 10.14744/planlama.2022.98216. Access Address: (10.05.2023): https://jag.journalagent.com/planlama/pdfs/PLAN_33_1_15_39.pdf.

Çalışkan, V. (2007). Kentsel mekan kullanımındaki farklılıklar üzerine bir yaklaşım: Bursa ve Çanakkale'nin periyodik (haftalık) pazarlarından örnekler. *Doğu Coğrafya Dergisi, 12*(18), 49-78. ISSN: 1302-7956. Access Address: (10.05.2023): https://dergipark.org.tr/en/download/article-file/26885.

Erdönmez, M. E. & Akı, A. (2005). Açık kamusal kent mekanlarının toplum ilişkilerindeki etkileri. *Megaron, YTÜ Dergisi, 1*(1), 67–87. E-ISSN 1309-6915. Access Address: (15.04.2023): https://jag.journalagent.com/megaron/pdfs/MEGARON-21939-ARTICLE-ERDONMEZ.pdf

Gehl, J. (1987). *Life Between Buildings*. New York: Van Nostrand Reinhold.

Gökgür, P. (2008). *Kentsel Mekânda Kamusal Alanın Yeri*. Ankara: Bağlam Yayıncılık.

Ibrahim, M. A. Wahab, M. H. & Shukri, S. M. (2018). Revealing Urban marketplace identity: Pudu. *Journal of the Malaysian Institute of Planners, 16*(1), 183 – 192. ISSN 1675-6215. doi: https://doi.org/10.21837/pm.v16i5.422. Access Address: (15.04.2023): https://www.planningmalaysia.org/index.php/pmj/article/view/422/342.

İmeri, M. (2019). The transformation process of community and neighborhood shopping centers into retail urban voids: the case of Ankara. (Master's thesis), Middle East Technical University. Access Address (30.03.2023): https://open.metu.edu.tr/handle/11511/43522.

Jégou, F., Bonneau, M., Tytgadt, E., Tabaku, A., & Descheemaeker, N. (2016). Reuse of vacant spaces as driving Force for innovation on local level: state of the art. Access Address (26.04.2023): https://keep.eu/api/project-attachment/2295/get_ file/.

Karayılmazlar, A. S., & Çelikyay, H. S. (2018). Kentlerde kamusal alanların tasarımı ve önemi. *Bartın Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 9*(17), 83-90. ISSN: 1309-954X. Access Address: (15.04.2023): https://dergipark.org.tr/en/download/article-file/522467.

Kermani, A., & Luiten, E. (2010). Preservation and transformation of historic urban cores in Iran, the case of Kerman. *Wseastransactions on Environment and Development, 6*(1), 53–62. ISSN: 1790-5079.

Access Address (30.03.2023): http://www.wseas.us/e-library/transactions/environment/2010/89-136.pdf.

Kim, G. (2016). The public value of urban vacant land: Social responses and ecological value. *Sustainability, 8*(486), 2-19. ISSN 2071-1050. doi: https://doi.org/10.3390/su8050486. Access Address (15.04.2023): https://www.mdpi.com/2071-1050/8/5/486.

Lai, Y. L., Said, I. B. & Kubota, A. (2013). The roles of cultural spaces in Malaysian historic towns: The case of Kuala Dungun and Taipung. *Procedia—Social and Behavioral Sciences, 85*, 602–625.ISSN: 1877-0428. doi: 10.1016/j.sbspro.2013.08.389. Access Address: (15.04.2023): https://www.sciencedirect.com/science/article/pii/S1877042813025160.

Morales, A. (2009). Public Markets as Community Development Tools. *Journal of Planning Education and Research, 28*(4), 426-440. ISSN: 0739456X, 15526577. doi: 10.1177/0739456X0832 9471. Access Address: (15.04.2023): https://journals.sagepub.com/doi/abs/10.1177/0739456X08329471

Norberg-Schulz, C. (1980). *Genius Loci: Towards A Phenomenology Of Architecture*. London: Academy Editions.

Omar, N. A., & Saeed, E. H. (2019). Urban voids as potentioal resources for the city development. *JES, Assiut University, Faculty of Engineering, 47*(5), 585–600. ISSN : 2356-8550. doi: 10.21608/JESAUN.2019.109853 Access Address: (22.04.2023):https://jesaun.journals.ekb.eg/article_109853_6c22181735a9011a5d66832375a4460c.pdf

Özgüç, N., & Mitchell, W. A. (2000). Şehirlerin alternatif alışveriş mekânları: İstanbul'da haftalık pazarlar. *Tasarım+ Kuram Journal, 1*(2), 35-58. ISSN: 1302-2636. Access Address: (22.04.2023) https://dergipark.org.tr/en/download/article-file/ 209250.

Özgür, E. F. (2018). Kamusal mekânların toplumsal boyutları üzerine bir değerlendirme. *Tasarım+ Kuram Journal, 14*, 113-125. ISSN: 1302-2636. doi:10.23835/tasarimkuram.529960 Access Address: (22.04.2023) https://www.proquest.com/openview/

f30dc6d53f5d06466079752351dca6d5/1?pq-origsite=gscholar&cbl=5571344

Öztekin, T. G. (2009). Eskisehir kent dinamiği içerisinde pazaryeri kavramının incelenmesi. (Master's thesis), Eskişehir Osmangazi University. Access Address (30.03.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp.

Rahman, N., Abdul, Ghani, I, Teh, M. Z., & Ibrahim, K. A. (2020). Rethinking urban public space: physical and functional analysis through visual surveys. Paper presented at the The 1st International Conference on Urban Design and Planning.

Rotblat, H. J. (1975). Social organization and development in an Iranian provincial bazaar. *Economic Development and Cultural Change, 23*(2), 292–305. ISSN: 0013-0079. Access Address (16.04.2023):https://www.journals.uchicago.edu/doi/epdf/10.1086/450789.

Smith, R. H. T. (1978). *Market-place Trade; Periodic Markets, Hawkers, and Traders in Africa, Asia and Latin America*. Vancouver: University of British Columbia.

Svizzero, S. (2014). Pre-Neolithic economy *History of Economic Ideas* (pp. 25-40). Access Address (16.04.2023): https://digital.casalini.it/10.1400/229092

T.C. Cumhurbaşkanlığı Mevzuat Bilgi Sistemi. (2012). Pazar Yerleri Hakkında Yönetmelik -Pazar yerinde bulunması gereken hizmet tesisleri ve özellikleri MADDE 6 – (1). Access Address (25.04.2023): https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=16358&MevzuatTur=7&MevzuatTertip=5

Trancik, R. (1986). *Finding Lost Space*. New York USA: Van Nostrand Reinhold Company.

Tümertekin, E., & Özgüç, N. (1997). *Beşeri Coğrafya: İnsan. Mekân.Kültür*. İstanbul: Çantay Kitabevi.

Uzgören, G. (2021). Semt Pazarlarının Kentsel Yaşamda Sosyallik Temelli Kamusallığın Geliştirilmesindeki Rolü. *Tasarım+Kuram Dergisi, 17*(32), 1-19. ISSN: 1302-2636. doi:10.14744

/tasarimkuram.2020.83702. Access Address (25.04.2023): https://www.proquest.com/docview/2705510175?pq-origsite=gscholar&fromopenview=true.

Verdil, F. T. (2006). Alışveriş mekanlarının oluşumu/ kurgusu üzerine bir değerlendirme. (Unpublished master thesis) Master's thesis), İstanbul Technical University.

Yurtseven, B. (2017). A glance at the spatial interaction of inside and outside: from void to place. (Master's thesis), TOBB University. Access Address (25.04.2023): https://core.ac.uk/download/pdf/275897987.pdf.

Zandieh, M., & Seifpour, Z. (2020). Preserving traditional marketplaces as places of intangible heritage for tourism. *Journal of Heritage Tourism*, *15*(1). ISSN: 1743-873X. doi: 0.1080/1743873X.2019.1604714. Access Address (01.05.2023):https://www.tandfonline.com/doi/epdf/10.1080/1743873X.2019.1604714?needAccess=true&role=button

Zeren, N. (1981). Kentsel alanlarda alınan koruma kararlarının uygulanabilirliği. (Unpublished doctoral thesis), İstanbul Technical University.

Assist. Prof. Dr. İlnur ACAR ATA

E-mail: acarilknur@ohu.edu.tr
Educational Status: The Doctor of Architecture (Ph. D.)
License: Anadolu University Department of Architecture, 2013
Degree: Selcuk University, Department of Architecture, Master, 2017
Doctorate: Konya Technical University Department of Architecture, 2021
Professional experience: Asst. Prof. Dr., Nigde Omer Halisdemir University, Faculty of Architecture, Department of Architecture, 2021-

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-12

The Role of Production Practices in Shaping Traditional Housing Forms in Architecture

Res. Assist. Hande EYÜBOĞLU [1]

[1]Samsun University, Faculty of Architecture and Design, Department of Interior Architecture and Environmental Design. Samsun/Türkiye.
ORCID: 0000-0003-0504-2886
E-mail: hande.eyuboglu@samsun.edu.tr

Assoc. Prof. Dr. Serap FAİZ BÜYÜKÇAM [2]

[2]Ondokuz Mayıs University, Faculty of Architecture, Department of Interior Architecture. Samsun/Türkiye
ORCID: 0000-0003-4263-1671
E-mail: serap.faizbuyukcam@omu.edu.tr

Citation: Eyüboğlu, H. & Faiz Büyükçam, S. (2023). The Role of Production Practices in Shaping Traditional Housing Forms in Architecture. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 12, 388-416. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Cultural heritage is a set of values that have been transferred from previous generations to the present and should be carried to future generations (ICOMOS Turkey, 2013). Cultural heritage, which refers to the sum of the material and spiritual elements that human beings have from the past to the present, is divided into two as tangible and intangible cultural heritage. (Ahmad, 2006). Intangible cultural heritage is one of the components of cultural heritage. Intangible cultural heritage represents a society's connection with its values and past (Dönmez & Yeşilbursa, 2014). These are the traditions, production practices, beliefs, music and handicrafts of the society. The protection of this heritage supports the sense of identity and belonging by preserving the social fabric of societies. It enables the community to share a common past and strengthens social ties. On the other hand, it encourages creativity in areas such as production techniques and traditional arts. It supports the emergence of creative forms by transferring the mastery techniques of the past to future generations (Feilden, 2014). The protection of cultural heritage aims to preserve the cultural diversity and uniqueness of societies and the common heritage of humanity. The loss of this heritage negatively affects the existence of the cultural richness of societies. Therefore, the preservation of intangible heritage benefits societies in many areas such as sustainability, identity, commitment and creativity (Sutherland, 2008). Tangible cultural heritage is another component of cultural heritage. It consists of items that are physically present and can be tangibly experienced. Monuments,

architectural works, building groups, cultural landscapes and archaeological sites are tangible cultural heritage items (Dönmez & Yeşilbursa, 2014). Tangible cultural heritage consists of structures reflecting important events, periods and lifestyles of societies. The protection of heritage is important in terms of carrying the traces of the past to future generations and preserving cultural identity. At the same time, the use of traditional construction techniques and site-specific materials contributes to sustainable development as well as supporting the local economy (Ruggles, 2009). For this reason, the protection of tangible cultural heritage is very important for the continuity of historical and cultural awareness.

Traditional dwellings are an important part of cultural heritage, reflecting the architectural heritage of a society and showing the history, culture and lifestyle of that society. Although dwellings experience changes and transformations from time to time in the process, they preserve their values as a part of cultural heritage. Many factors such as geographical features of the settlement area, climatic conditions, construction techniques and social/socio-economic structure are effective in the shaping of the houses. These dwellings attract attention with their traditional texture, local materials, construction techniques, lifestyle and spatial arrangements reflecting production practices. These region-specific elements are effective in the formation of the traditional dwelling, especially in the way it is used, the way the needs are met and the spatial organisation. Traditional dwellings are a living expression and carrier of a society's

cultural heritage. These dwellings support the preservation of identity as well as transferring past values to future generations.

In this study, socio-economic determinants, which are one of the main actors in the shaping of traditional houses, are emphasised. It is aimed to discuss the reflections of traditional production on the housing space and its presence in the space. Traditional settlements are integrated into different forms of production depending on the geography in which they are located. This study aims to discuss the relationship between production practices and housing in houses located in different geographical and socio-cultural environments as a cultural heritage.

2. Material and Method

This study, which focuses on the reflections of socio-economic factors that are effective in the formation of traditional housing, which is a cultural heritage, on housing design, reveals the application areas of production activities in traditional houses located in different geographical regions. The study is based on document analysis, one of the qualitative research methods. Firstly, a conceptual framework regarding cultural heritage and traditional housing was created. At this stage, the importance of traditional houses, which preserve the identity of the society by carrying the historical, cultural, social and economic values of the region where they were built, in keeping the cultural heritage alive and transferring it to future generations was revealed. Then the sample of the study was determined. In the selection of the sample, regional dwellings with concrete reflections of socio-economic life in housing production were determined and the scope of the study was formed with those with sufficient data from the

literature. Regional differences in production practices have been taken into consideration and attention has been paid to the selection of traditional dwellings located in different regions in order to present the determinants of production practices on housing formation from a broad perspective. In this context, the sample of the study was formed from the traditional houses in the main provinces located in Marmara, Central Anatolia, Black Sea and Southeastern Anatolia regions and their immediate surroundings (Figure 1).

Figure 1. Sample group

The sample group was analysed through various visual documents such as architectural drawings and interior photographs obtained from the literature and written materials such as articles and theses.

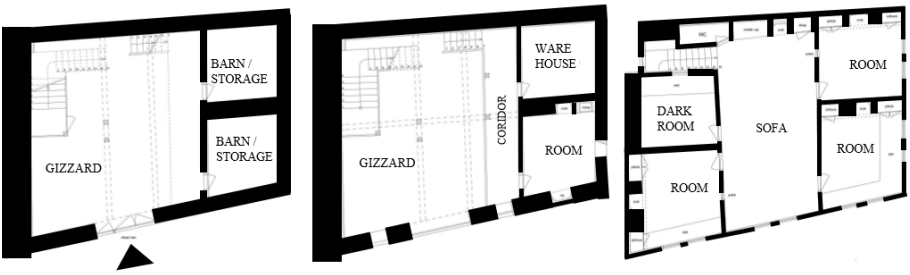
3. Findings and Discussion

In this part of the study, the place of sericulture in Bursa and its neighbourhood, weaving in Gaziantep and Konya, and agricultural products in Niğde and Trabzon are discussed through plan diagrams and other visuals.

3.1. Bursa and Its Neighbourhood

In Bursa, whose traditional economy is based on agriculture and animal husbandry, various production activities such as vegetable growing, fruit growing, viticulture and olive cultivation have come to the fore. Another important production is silkworm farming (Mazlum, Eres, Barlık & Türk, 2004; Hacısalihoğlu Yaşar, 2013, Yıldız & Çobancaoğlu, 2019). In the XVII. century, sericulture, which was the main source of livelihood of the people in Bursa and its neighbourhood, found an application area within the dwellings and affected the interior use of the dwellings. Until the XX. century, the craft of sericulture, which was a production made by the people in dwellings, experienced a serious decline with the Industrial Revolution. Although it has lost its prevalence to a great extent today, sericulture has found its place in traditional dwellings and has played an active role in the shaping of the dwelling. Sericulture, which constituted the main economy of the region until recently, had a great impact on the shaping of the residential space. The houses in the region are generally two or three storeyed, the ground floors are filled with stone, the upper floors are filled with wooden cargas and mudbrick. The basic elements of the traditional houses in the region can be defined as gizzard, stairs, rooms and sofas. The ground floor consists of spaces used as storerooms or stables for various needs and spaces called gizzards where the transition to the upper floor is provided. The upper floors of the houses are usually the living floors where rooms are located. In some houses, storage or room units were created on the mezzanine floors above the ground floor. As in the traditional Turkish House, the rooms, with their movable and fixed

furniture, meet all the basic actions within the building such as eating, sitting, lying, washing (Battalgazi Pamir & Yücel, 2005) (Figure 2).

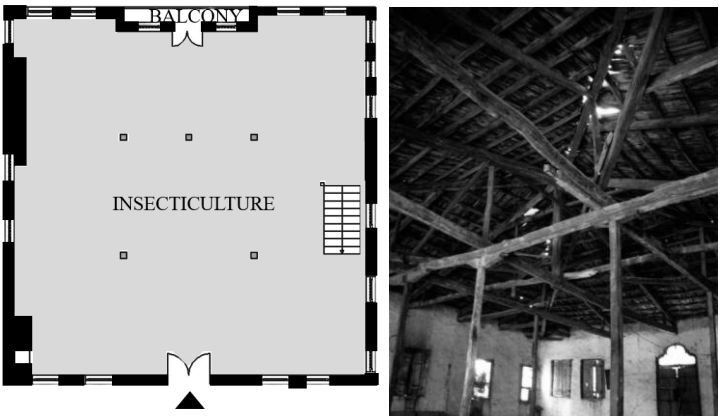


Ground Floor Plan Mezzanine Floor Plan First Floor Plan

Figure 2. Traditional housing plan (Yıldız, 2018)

The necessity of raising silkworms in a home environment has led to the increase in the number of storeys and the size of the internal volumes of the houses. While the deaf ground floors of traditional houses are used as workshops, the upper floors, which are spacious and have overhangs, are reserved for sericulture. While mulberry leaves and branches used in the growth of silkworms were stored on the ground floors of the houses, the upper floors were reserved for silkworm rearing. Silk-making can be carried out in one of the rooms or in the living room, and in some large houses, the entire second floor is allocated for this purpose (Mazlum et al., 2004; Battalgazi Pamir & Yücel, 2005). In some houses, it was observed that rooms for sericulture were created on the mezzanine floors built on the ground floor. On this floor, which is reached by a separate staircase and corridor from the ground floor, there are one or two separate rooms depending on the size of the dwelling and the amount of silkworms grown (Figure 3). While one of these rooms is used for insecticulture, the other room is reserved for living space (Yıldız, 2018). While the necessity of

drying silkworms on the ground necessitated airy and spacious spaces (Yakışık, 2014) the need for a dim and dark environment was met by making small openings in the window shutters (Battalgazi Pamir & Yücel, 2005).



Example of a house with the top floor dedicated to silkworm production (Battalgazi Pamir & Yücel, 2005).

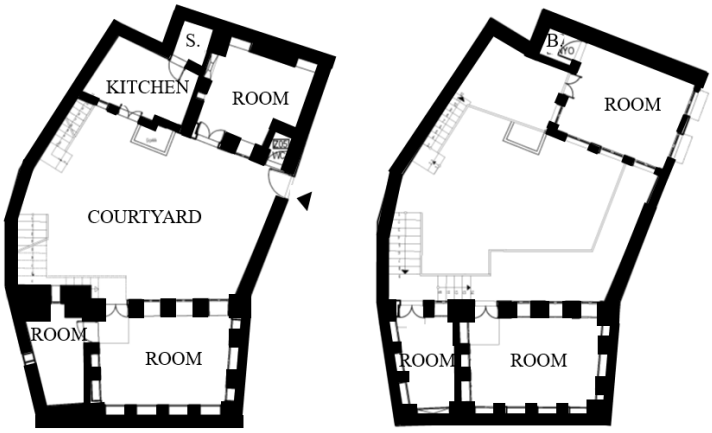
Silkworm room on the mezzanine created above the ground floor (Yıldız, 2018).

Figure 3. The place of silkworms in housing

3.2. Gaziantep and Its Neighbourhood

Gaziantep, which has hosted many civilisations due to its geographical location and shaped by the influence of different cultures; It is located in fertile lands where the main trade routes passing through Europe, Asia and Africa continents intersect (Göyünç, 2000). Agricultural production developed in the city located on fertile soils, while the potential on the transport route facilitated the development of the city and the construction of buildings such as inns and bedestens, as well as the export of products. Although there are various livelihoods from agriculture to handicrafts in the region, one of the most important livelihoods was carpet and rug weaving (Şıvgın, 1997). Throughout the XIX. century, the city was characterised by various weaving activities, and production was carried out in dwellings. Especially the ground floors of the houses were used as weaving workshops. Although the traditional weaving production in Gaziantep continues with machines to a great extent today, weaving looms are used in a small number of traditional houses in the city centre and rural areas (Erman & Geyyas Gören, 2022). Traditional Gaziantep houses are unique examples depending on climatic and socio-cultural parameters and reflect the characteristics of the Turkish house. The houses of the region, which are generally one storey above ground, are in masonry stone construction technique. The main spaces in the traditional Gaziantep house, which is shaped around a courtyard surrounded by deaf high walls, can be listed as courtyard, iwan, rooms and kitchen. On the ground floor, there are usually service units such as kitchen and toilet around the

courtyard, and rooms on the upper floors (Zorkirişçi, 2019; Erman & Geyyas Gören, 2022; Çılğın, 2022) (Figure 4).



Ground Floor Plan First Floor Plan

Figure 4. Plan scheme of a traditional Gaziantep dwelling (Zorkirişçi, 2019)

Weaving, one of the traditional forms of production in the region, has taken place in interior spaces such as rooms, semi-open spaces such as iwans and open spaces such as courtyards in traditional Gaziantep houses. While hand weaving was carried out in the iwan, weaving on looms was carried out in the relatively quiet rooms of the dwelling so that the looms were not set up and taken down during the day. In houses where weaving was carried out, one of the rooms was reserved for this production. However, it was also observed that weaving without the use of looms took place in the courtyard as well as in the iwan (Erman & Geyyas Gören, 2022) (Figure 5).

Figure 5. Weaving at home (Erman & Geyyas Gören, 2022)

3.3. Konya and Its Neighbourhood

Konya is an important element of the transport network due to its location in Anatolian geography. The city has been one of the oldest settlement centres of Anatolia (Öcal, 2006). Its economy is based on agriculture and animal husbandry, especially agriculture. Konya is one of the important cities of Anatolia with its large surface area and weaving is also a traditional form of production. Weaving has found its place in traditional houses. (Keleş, 2019). It is possible to trace the traces of weaving through traditional houses. The dwellings of the region (Karpuz, 2000), which exhibit common features with the Turkish house, are generally single-storey mud-brick buildings with earthen roofs above the ground (Turgut, 2008; Ulusoy & Ulusoy, 2015). Although adobe is the traditional building material of Konya, stone, wood and reed are also used in various parts of the houses. These buildings, whose street facades are deaf at the ground floor level, are open to the front garden called hayat (Berk, 1951). In Konya, with the effect of the climate, the plan type with inner sofas is

generally preferred. In the Konya house, there are places such as flower bed, water well, tandoor roof, barn and haystack in the life entered from the street door. The main house, which constitutes the main space, consists of izbe, 'mabeyn' and rooms. The basement floor under any room of the house is used for storage purposes as a woodshed and cellar. The space used as a sofa in the region is called 'mabeyn'. Since this space is accessed from the living room, it is generally used as a transitional space rather than a living space (Eldem, 1987) (Figure 6).

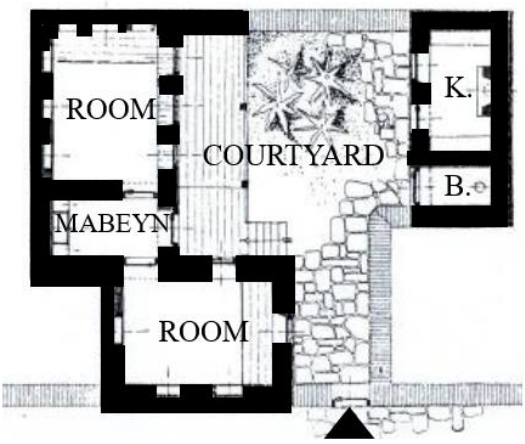
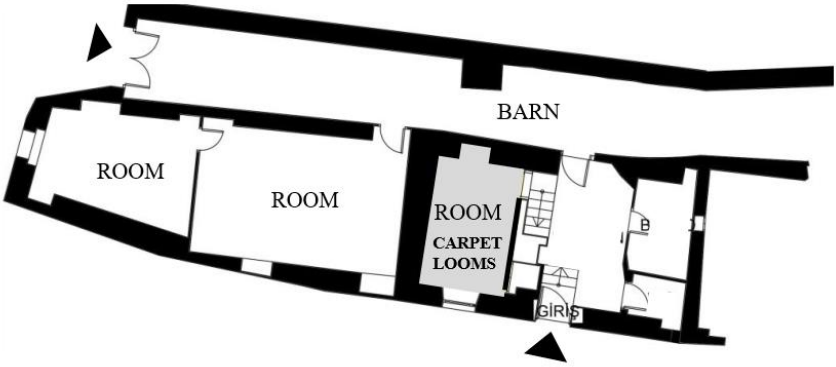


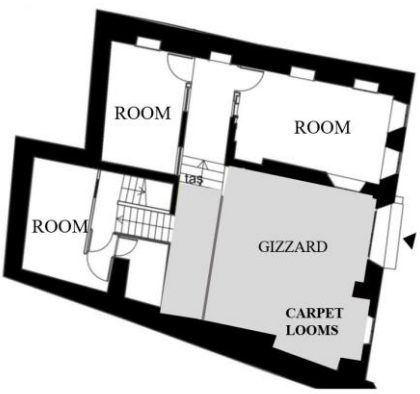
Figure 6. Traditional Konya house with a two-room mabeyni (Berk, 1951).

The economy of Konya region is supported by agriculture and animal husbandry as well as weaving in houses. It is known that it is one of the important livelihoods of the people especially in the Sille region. Carpet weaving was carried out in individual looms in houses as well as in workshops where many people worked. Weaving, which was learnt from family members and passed down from generation to generation, was

carried out in the rooms on the ground floors of the houses or in the looms in the living spaces (Özönder, 1998; Keleş, 2019) (Figure 7).



Carpet loom in the room (Keleş, 2019)



Carpet loom in the gizzard (Keleş, 2019; Özönder, 1998)

Figure 7. The place of the loom in the traditional Konya house

3.4. Niğde and its Neighbourhood

Niğde, which has a rich historical background, is one of the important trade and settlement centres under the influence of various civilisations. Located in the Central Kızılırmak region of Central Anatolia, Niğde has a typical continental climate with hot and dry summers and cold and rainy winters

(Altuncan, 2003). The traditional Niğde dwelling is dated to the late XIX. centuries and early XIX. centuries. The houses in the region have two different plan types, with and without courtyards. The main building material of the houses, which do not differ in terms of construction technology and material preferences, is stone and built with masonry system (Altuner, 2013). The houses generally have one or two storeys and the rooms are generally square and rectangular. In terms of form and function, the houses have similar characteristics with traditional Turkish houses, and an inward-oriented plan understanding is dominant, taking into account the social life of the society and privacy (Özkan Özbek & Özbek, 2015; Efe Yavaşcan, 2018).

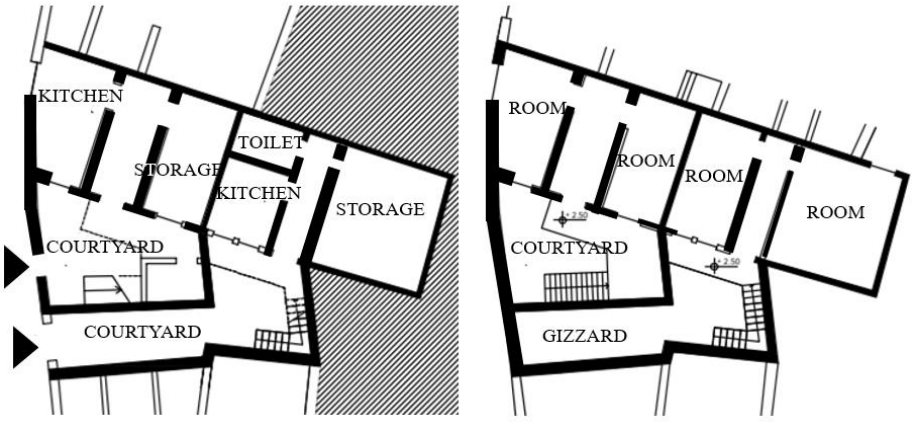


Figure 8. Traditional Niğde house (Özbek, 2010).

Geography, social and cultural life as well as economic activities have been influential in the shaping of the traditional Niğde house. The city is built on a valley surrounded by mountains and has fertile agricultural lands. For this reason, agriculture plays an important role in Niğde's

economy (Ceylan, 2013). In addition to barley, sugar beet, apple and wheat, potato is one of the important agricultural products of the city. Potatoes have an important place in the economic life of Niğde, where potato production is quite common with its climate, arable soils and water resources (Ahiler Kalkınma Ajansı & Niğde Valiliği, 2019). Misli Plain, Melendiz Plain, Altınhisar Plain and Bor Plain are the prominent areas in potato agriculture (Altuncan, 2003).

Potato production, which still continues to exist in the socio-economic life of the region today, has been influential in the shaping of the traditional house of Niğde. There is a storage or warehouse in the dwelling for the temporary preservation and storage of the agricultural product produced. Warehouses are predominantly located in the basement or ground floor of the dwelling (Figure 9). The storages are located close to the entrance of the dwelling. On the other hand, it is important to have controlled natural light in the storages in order not to spoil the potatoes and the temperature of the space is important in order to prevent the potatoes from sprouting (Özbek, 2010). The size of the storage space is directly proportional to the volume of the product to be stored. For this reason, in some houses, the warehouse is solved in one unit, while in others it occupies more than one volume.

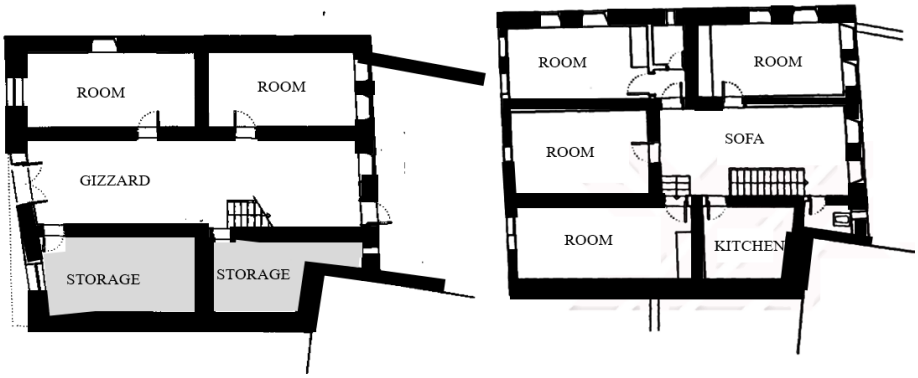


Figure 9. Storages in Niğde traditional housing (Altuner, 2013)

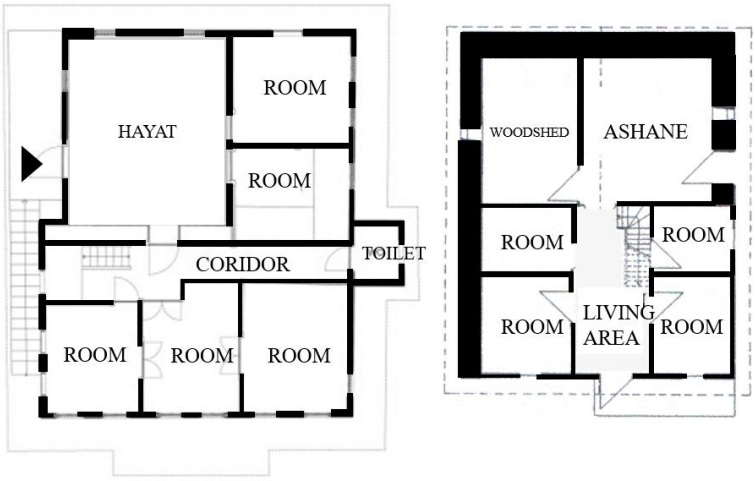
The warehouse is located in the basement of the dwelling or in the annexes built with stone walls to the volume of the dwelling. Harvested potatoes are stored in these units for about 7 to 8 months and then put on the market (Kopar, 2010) (Figure 10).

Figure 10. Traditional Niğde house potato barn (Ceylan, 2013).

3.5. Trabzon and Its Neighbourhood

Eastern Black Sea is a culturally important region that has hosted different civilisations in the historical process. The known history of the region dates back thousands of years (Batur & Gür, 2005). The economy of the Eastern Black Sea region is shaped according to the physical environmental conditions and the economy is largely based on agriculture and animal husbandry. Cattle and sheep breeding is carried out especially

with transhumance. Another important economic resource in the coastal region is fishing. However, wooden boat production has been a common source of livelihood in the historical process (Zaman, 2005; Bayram, 2014). The region differs from other regions with its rainy climate and hilly land structure. Due to the abundant rainfall, excess moisture in the air and soil adversely affects the preservation of foodstuffs such as corn, hazelnuts and beans. The topography and climate, as well as the necessity for the preservation of the products produced, have resulted in highly original architectural products in the Eastern Black Sea region (Eruzun & Sözen, 1993). The basic building materials are stone and wood and the construction system varies as stone masonry, wooden masonry and wooden frame. The houses in the region are generally built on sloping terrain; one side leaning against the upper slope and the other side facing the valley, and have simple forms. These houses, which have two entrances in the east-west direction, consist of a stable floor placed in the space gained from the slope and living floors on the ground and first floors. Traditional local houses are shaped according to 'hayat' and 'living room' spaces. While hayat is home to daytime activities such as eating and cooking, sitting, and entertaining guests, the living room is used as a place where family members come together but do not cook. (Sümerkan, 1990) (Figure 11).



The house with hayat House with living area

Figure 11. Plan scheme of the Eastern Black Sea traditional house (Batur & Gür, 2005).

The drying of agricultural products such as corn and hazelnuts grown in the region, or their storage without spoiling by protecting them from moisture, is provided in various parts of the dwellings or with auxiliary structures attached to the dwelling. The balconies on the south-facing facades of traditional houses are used for drying and storing herbs and vegetables (Sümerkan, 1990; Zorlu & Faiz, 2012). In addition to the dwelling, serenders, which are traditional building types used for storing and storing products, stand out (Al Şensoy & Kukoğlu, 2020). Serenders, a secondary type of building located near the dwelling, are structures where food is protected from rain and moisture and dried and stored (İskender, 2010). Serender are storage spaces raised about 150-200 cm above the ground with poles that are not inhabited and inhabitable inside (Batur & Gür, 2005). Serenders with unique examples in Trabzon, Rize

and Artvin provinces (Aksoylu, 2012; Özgüner, 1970) is one of the characteristic elements of the region (Figure 12).

Drying/storing corn in serenders

Serender and housing relationship

Herb drying in serender

Figure 12. Serender in the Eastern Black Sea (Batur & Gür, 200)

4. Conclusion and Suggestions

Traditional housing in five different regions of Anatolia bears the traces of the production practices of the region. In addition to topography, climate and socio-cultural factors, it is clearly seen that economic concerns are also a factor in the shaping of the traditional. Various livelihoods that support the household economy such as agriculture, animal husbandry and handicrafts are part of the house.

It is clear that these production practices, which are passed down from generation to generation according to the potential of the region, are not considered separately from housing. In the reflection of production practices on the formation of housing, a number of needs brought by production activities are effective. Depending on the nature of the economic value produced, traces of production can be seen on the ground or upper floors of the houses, in semi-open and open spaces, or in spaces separate from the house but related to the house. Sericulture, which is widespread in Bursa and its immediate surroundings, and weaving, which is prominent in Konya, are predominantly carried out in residential interiors. On the other hand, weaving, which is prominent in Gaziantep and its neighbourhood, is carried out in iwan and courtyards in addition to the interior. In Niğde and its traditional housing form, there are storage units located both in the dwelling and in addition to the dwelling for the preservation and storage of local agricultural products. In Trabzon and its neighbourhood, these storage areas are mainly provided by auxiliary structures called serender. Depending on the nature of the economic value produced, traces of production can be seen on the ground or upper floors

of the houses, in semi-open and open spaces, or in spaces separate from the house but related to the house. Although traditional forms of production have largely disappeared in the face of industrialisation today, it is important to know their place and effects in traditional houses in order to protect the economy and architecture of the region and the country.

Traditional production practices can be transferred to the future with the preservation of traditional houses. This situation brings with it an approach towards the preservation of original plan and façade characters and original architectural elements. Obsolescence in traditional houses and changes in production methods have negatively affected the economic indicators in the houses. Although it is inevitable that the production in traditional houses will succumb to industrialisation, it is necessary for the recognition of economic values to be supported and maintained, especially in rural areas.

Acknowledgements and Information Note

Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

All authors contributed equally to the article.

References

Ahiler Kalkınma Ajansı & Niğde Valiliği. (2019). Niğde ili Aktaş yer altı patates depoları projesi fizibilite raporu, Niğde. Access Address (25.07.2023): https://www.ahika.gov.tr/assets/upload/dosyalar/nigde-ili-yer-alti-patates-depolari-fizibilite-raporu.pdf

Aksoylu, K. (2012). Karadeniz deyince. T. Bora (Ed.). *Karardı Karadeniz*, 1. Basım (pp.52-54). ISBN: 9789750510700. İstanbul: İletişim Yayınları.

Ahmad, Y. (2006). The scope and definitions of heritage: From tangible to intangible. *International Journal of Heritage Studies*, 12(3), 292-300. Online ISSN: 1470-3610. Access Address (10.06.2023): https://www.tandfonline.com/doi/full/10.1080/13527250600604639?journalCode=rjhs20

Al Şensoy, S. & Kukoğlu, S. (2020). Research on "serender", rural architecture practices of Eastern Black Sea region, in the context of ecology and sustainability. *İnönü Üniversitesi Sanat ve Tasarım Dergisi*, 10(21), 25-44. Online ISSN: 1309-9876. Access Address (24.07.2023): https://dergipark.org.tr/tr/download/article-file/1165304

Altuncan, M. (2003). Geleneksel Niğde evleri. *Türk Arkeoloji ve Etnografya Dergisi*, (73), 57-64. Online ISSN: 1302-9231. Access Address (22.07.2023): https://dergipark.org.tr/tr/pub/arkeolojiveetnografya/issue/67097/1047929

Altuner, H. (2013). Geleneksel Niğde evleri giriş düzenlemeleri. *Electronic Turkish Studies*, 8(8), 1643-1670. Online ISSN: 1308-2140. Access Address (22.07.2023): https://turkishstudies.net/turkishstudies?mod=makale_tr_ozet&makale_id=16827

Batur, A. & Öymen Gür, Ş. (2005). *Doğu Karadeniz'de kırsal mimari*. İstanbul: Milli Reasürans T.A.Ş.

Battalgazi Pamir, A. & Yücel, A. (2005). Osmaneli'nde sosyo-ekonomik değişimlerin konut tipolojisine etkileri. *İTÜDERGİSİ/A Mimarlık, Planlama, Tasarım*, 4(2),70-78. Online ISSN: 1307-1645. Access Address (05.06.2023): http://itudergi.itu.edu.tr/index.php/itudergisi_a/article/viewFile/934/860

Bayram, Ö. F. (2014). Doğu Karadeniz Bölgesi'nde geçmişten günümüze vernaküler mimari (Yüksek Lisans Tezi). Fen Bilimleri Enstitüsü, Yıldız Teknik Üniversitesi. Accessed from YÖK Ulusal Tez Merkezi Access Address (23.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=NlwYyRAsjwSA9CVCfDOX9Q&no=CVIV9gFNPuR_T8YvYUrKxw

Berk, C., (1951). Konya Evleri (Doktora Tezi). Fen Bilimleri Enstitüsü, İstanbul Teknik Üniversitesi. Accessed from İTÜ Mimarlık Fakültesi Access Address (15.06.2023): https://polen.itu.edu.tr/items/f74c22b8-6b03-4241-a9b0-71386bded774

Ceylan, S. (2013). Misli (Niğde) Ovası'nda mesken tipleri (Yüksek Lisans Tezi). Sosyal Bilimler Enstitüsü, Atatürk Üniversitesi. Accessed from YÖK Ulusal Tez Merkezi Access Address (11.06.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=_O4zHqxIa55WJC9POel8Ag&no=WuOJ3IwRr_jjgeyMNRJAEQ

Çılğın M. (2022). Gaziantep Bey Mahallesi geleneksel konut dokusunun incelenmesi: Abdülkadir Kimya Evi örneği (Yüksek Lisans Tezi) Fen Bilimleri Enstitüsü, Yıldız Teknik Üniversitesi. Accessed from YÖK Ulusal Tez Merkezi Access Address (27.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Dönmez, C. & Yeşilbursa, C. C. (2014). The effect of cultural heritage education on students' attitudes toward tangible heritage. *Elementary Education Online*, 13(2), 425-425. Access Address (12.05.2023): https://www.ilkogretim-online.org/fulltext/218-1596943209.pdf?1690222439

Efe Yavaşcan, E. (2018). Kapadokya bölgesi, Niğde ili, Fertek Köyü'nde yer alan Fertek Evi'nin belgelenmesi ve koruma sorunları. *Niğde Ömer Halisdemir Üniversitesi Mühendislik Bilimleri Dergisi,* 7(1), 451-464. Online ISSN: 2564-6605. Access Address (24.07.2023): https://dergipark.org.tr/tr/pub/ngumuh/issue/35079/387367

Eldem, S. H. (1987). *Türk Evi Osmanlı dönemi/Turkish Houses Ottoman Period I-III.* İstanbul: Türkiye Anıt, Çevre ve Turizm Değerlerini Koruma Vakfı.

Erman, O. & Geyyas, L. F. (2022). Konut ve kültür ilişkisi bağlamında gaziantep geleneksel konutunda üretimin mekâna yansıması. *Milli Folklor Dergisi,* 17(135), 173-189. Online ISSN: 1300-3984. Access Address (02.06.2023): https://dergipark.org.tr /tr/pub/millifolklor/issue/73321/864002

Eruzun, C. & Sözen, M. (1993). *Anadolu'da Ev ve İnsan*. İstanbul: Emlak Bankası Yayınları.

Feilden, B. (2007). *Conservation of Historic Buildings*. United Kingdom: Routledge.

Göyünç, N. (2000). Gaziantep tarihi ile ilgili bazı notlar. Y. Küçükdağ (Ed.) *Osmanlı Döneminde Gaziantep Sempozyumu*, 22 October 2000. (pp. 45-48). Gaziantep: Türkiye. Access Address (10.05.2023): https://books.google.com.tr/books/about/Osmanl%C4%B1_D%C3%B6neminde_Gaziantep_Sempozyumu.html?id=am5tAAAAMAAJ&redir_esc=y

Hacısalihoğlu Yaşar, F. (2013). Bursa çevresi yerleşimlerinde kırsal mimari özellikler bağlamında geleneksel ahşap yapım sistemlerinin irdelenmesi (Yüksek Lisans Tezi). Fen Bilimleri Enstitüsü, Mimar Sinan Güzel Sanatlar Üniversitesi. Accessed from YÖK Ulusal Tez Merkezi Access Address (24.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=-pZjzRJTt5VX9lMcADQNjQ&no=eTMuYhaixtqnrA7gUOGZLA

ICOMOS Turkey. (2013). Mimari Mirası Koruma Bildirgesi. Access Address (26.07.2023): http://www.icomos.org.tr/Dosyalar/ICOMOSTR_tr0784192001542192602.pdf

İskender, M. (2010). Dünyada serander mimarisi. *Karadeniz Hayat*, 6, 70-71.

Karpuz, H. (1999). Osmanlı'da konut mimarisi Konya örneği. *Tarihi Kültürü ve Sanatıyla III. Eyüp Sultan Sempozyumu*, Mayıs 1999, (pp. 391-401). İstanbul: Türkiye. Eyüp Belediyesi Kültür Yayınları. Access Address (11.05.2023).

Keleş, R. (2019). Geleneksel zanaat ve iç mekân ilişkisinin sürdürülebilirliği üzerine bir değerlendirme: Sille Köyü örneği (Yüksek Lisans Tezi). Sosyal Bilimler Enstitüsü, T.C. Selçuk Üniversitesi. Accessed from YÖK Ulusal Tez Merkezi Access Address (08.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=30g07YD2Wl0Gp0ZfYJ6A8Q&no=qkqk0_s6jMcwFDqqxK1dWw

Kopar, İ. (2010). *Melendiz ve Karasu Çayı havzalarının jeomorfolojisi*. Erzurum: Atatürk Üniversitesi Yayınları.

Mazlum, D., Eres, Z., Barlık, T. & Türk, Ş. (2004). Orhangazi Bursa Karsak köyü kırsal mimarlık envanteri. *Tüba Kültür Envanteri Dergisi*, 3, 229-257. Online ISSN: 1304-2440. Access Address (15.03.2023): https://dergipark.org.tr/tr/pub/tubaked/issue/57281/810172

Öcal, T. (2006). Konya şehrinin Selçuklulardan günümüze ticaret fonksiyonu. *Türklük Bilimi Araştırmaları Dergisi*, 19(1), 401-435. Online ISSN: 1300-7874. Access Address (27.06.2023): https://dergipark.org.tr/tr/pub/tubar/issue/16960/177110

Özbek, K. (2010). Geleneksel Niğde evleri mekansal araştırması ve Kale Mahallesi konut yerleşimi ve tipoloji-morfoloji ilişkisi (Yüksek Lisans Tezi). Fen Bilimleri Enstitüsü, Mimar Sinan Güzel Sanatlar Üniversitesi.

Accessed from YÖK Ulusal Tez Merkezi Access Address (25.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=qtZfuGDVRuEumekCbbjjCQ&no=WbUlUPvyc7MtW8ZU-KKdrw

Özgüner, O. (1970). *Köyde mimari Doğu Karadeniz*. Ankara: ODTÜ Mimarlık Fakültesi Yayınları.

Özönder, H. (1998). *Sille (Tarih-Kültür-Sanat).* Konya.

Özkan Özbek, M. & Özbek, M. K. (2015). Defining traditional Niğde house typologies and their morphological language in ancient inner castle area Niğde Turkey. *22nd ISUF International Conference,* 22-26 September 2015. (pp. 217-226). Rome: Italy. Access Address (16.07.2023): https://www.researchgate.net/publication/306359002_Defining_Traditional_Nigde_House_Typologies_and_Their_Morphological_Language_in_Ancient_Inner_Castle_Area_Nigde-Turkey

Özönder, H. (1998). *Sille Tarih-Kültür- Sanat,* Konya.

Ruggles, D. F. & Silverman, H. (2009). From Tangible to Intangible Heritage. D.F. Ruggles and H. Silverman (Eds.). *Intangible Heritage Embodied.* Springer (June 2009). Chapter 1. (pp. 1-14). ISBN: 978-1-4419-0072-2. New York.

Sutherland, W. J. (2008). *The conservation handbook: research, management and policy*. United States: John Wiley & Sons.

Sümerkan, M. F. (1990). Biçimlendiren etkenler açısından Doğu karadeniz kırsal kesiminde geleneksel evlerin yapı özellikleri (Doktora Tezi), Karadeniz Teknik Üniversitesi. Acessed from https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=5yT23snSEPO1bbZ4kmen7g&no=5yT23snSEPO1bbZ4kmen7g

Şıvgın, H. (1997). *19. yüzyılda Gaziantep*. Ankara: Gaziantep Büyükşehir Belediyesi Yayınları.

Turgut, A. N. (2008). Tarih ve Kültür Başkenti Konya. O. H. Zabunoğlu

& M. Birekul (Eds.). *Tarih ve Kültür Başkenti Konya*. Konya Büyükşehir Belediyesi Kültür Yayınları (pp. 169-179). Konya.

Ulusoy, M. & Ulusoy, H. E. (2015). Kültürel değişim bağlamında konut; Konya örneği. *Atrium*, 13(1), 30- 38. Online ISSN: 2147-6683. Access Address (04.07.2023): http://artium.hku.edu.tr/tr/pub/issue/2245/29601

Yakışık, M. (2014). İznik İnikli Köyü'nde geleneksel doku analizi ve rehabilitasyon önerisi (Yüksek Lisans Tezi). Fen Bilimleri Enstitüsü, Karabük Üniversitesi. Accessed from YÖK Açık Bilim Access Address (21.07.2023): https://acikbilim.yok.gov.tr/handle/20.500.12812/98987

Yıldız, F. (2018). Bursa-Keles ilçesi Gelemiç kırsal yerleşmesinin geleneksel dokusunun incelenmesi ve koruma amaçlı değerlendirilmesi (Yüksek Lisans Tezi). Fen Bilimleri Enstitüsü, Mimar Sinan Güzel Sanatlar Üniversitesi. Accessed from YÖK Ulusal Tez Merkezi Access Address (20.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=9IEj0oWRVPQzktLoOupe3A&no=iqFJfdLI5Hg6fI7rnFQ4Ag

Yıldız, F. & Çobancaoğlu, T. (2019). Bursa-Keles ilçesi Gelemiç kırsal yerleşmesi geleneksel mimari dokusunun incelenmesi ve koruma amaçlı değerlendirilmesi, *Türkiye Bilimler Akademisi Kültür Envanteri Dergisi*, 20, 143-174. Online ISSN: 1304-2440. Access Address (12.05.2023): https://dergipark.org.tr/tr/download/article-file/1342953

Zaman, M. (2005). Orta ve Doğu Karadeniz'de balıkçılık. *Doğu Coğrafya Dergisi*, 10(13), 31-77. Online ISSN: 1302-7956. Access Address (25.07.2023):https://dergipark.org.tr/tr/pub/ataunidcd/issue/2434/30921

Zorkirişci, C. (2019). Gaziantep Suyabatmaz Mahallesi'ndeki geleneksel evlerin üç örnek üzerinde değerlendirilmesi (Yüksek Lisans Tezi). Fen Bilimleri Enstitüsü, T.C. Maltepe Üniversitesi. Accessed from

T.C. Maltepe Üniversitesi Kurumsal Akademik Arşiv Access Address (19.05.2023):http://openaccess.maltepe.edu.tr/xmlui/handle/20.500.12415/774

Zorlu, T. & Faiz, S. (2012). Ekolojik mimarlık: Doğu Karadeniz kırsal konutu. *Mimarlık Dergisi,* 367, 56-60. Online ISSN: 1300-4212. Access Address (24.07.2023): http://www.mimarlikdergisi.com/index.cfm?sayfa=mimarlik&DergiSayi=381&RecID=3038

Ress. Assist. Hande EYÜBOĞLU

E-mail: hande.eyuboglu@samsun.edu.tr
Educational Status:
License: Karadeniz Technical University Faculty of Architecture, Department of Interior Architecture (2013-2017)
Degree: Karadeniz Technical University Faculty of Architecture, Department of Interior Architecture (2017-2021)
Doctorate: Karadeniz Technical University Faculty of Architecture, Department of Architecture (2021-…)
Professional experience: Samsun University, Faculty of Architecture and Design, Department of Interior Architecture and Environmental Design (2019-…) (Research Assistant)

Assoc. Prof. Dr. Serap FAİZ BÜYÜKÇAM

E-mail: serap.faizbuyukcam@omu.edu.tr
Educational Status
License: Karadeniz Technical University Faculty of Architecture, Department of Interior Architecture (2004-2008)
Degree: Karadeniz Technical University Faculty of Architecture, Department of Interior Architecture (2009-2012)
Doctorate: Karadeniz Technical University Faculty of Architecture, Department of Architecture (2012-2018)
Professional experience: Ondokuz Mayıs University, Faculty of Architecture, Deparment of Interior Architecture (2019-…) (Assoc. Prof. Dr.)

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-13

A Method Proposal for Conservation of Natural and Cultural Heritage: Route Planning Method

Assist. Prof. Dr. Filiz ÇETİNKAYA KARAFAKI [1]

[1]Ankara University, Beypazari Vocational School, Programme of Tourist Guidance, Beypazari, Ankara/Türkiye
ORCID: 0000-0001-6710-4224
E-mail: fkarafaki@ankara.edu.tr

Assist. Prof. Dr. Çiğdem ÇETİN [2]

[2]Yaşar University, Faculty of Architecture, Department of Interior Architecture, Bornova. Izmir/Türkiye
ORCID: 0000-0002-0585-6989
E-mail: cigdem.cetinkaya@yasar.edu.tr

Citation: Çetinkaya Karafakı, F. & Çetin, Ç. (2023). A Method Proposal for Conservation of Natural and Cultural Heritage: Route Planning Method. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 13, 417-435. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

In recent years, "route planning", which is an approach developed for the protection and promotion of natural and cultural heritage and contributing to the economic potential of these areas, is frequently discussed in the literature. Routes, in general, contain a much more comprehensive character and meaning than just a monument, a historical building or a group of buildings, or a physical landscape area. The routes formed by the combination of many cultural and natural areas gain new meanings as a result of this unity. As a result, it can be said that the route includes a regional integrity. The holistic approach is often overlooked in the conservation, presentation and promotion stages (Görmüş et al., 2016). In this context, the sustainable protection of natural and cultural heritage should not be done with purely protected areas and point decisions. Because the protection of these values cannot be provided only as a result of the physical decisions of the relevant value. On the contrary, it should be accepted as part of the region and conservation should be approached from a holistic perspective. Land use decisions should be added to conservation decisions, coordination should be ensured, and multidimensional cultural, physical and social research and analysis should be added (City Planners Chamber Board of Directors, 2004).

While the route planning approach ensures the protection and re-functioning of these areas in the physical environment, it also paves the way for the people living in the region and the management to work in cooperation. Cultural and natural route planning protects the cultural and

natural heritage along the route in line with a plan and with a holistic approach. Because the concept of protection is not just a method of protection by hiding, an integrated protection should be made by approaching the concept within the scope of "protection-evaluation and development" (Özen, 2005).

Considering that cultural areas are a part of all humanity and that these areas are the present representatives of the past culture, route planning provides important benefits for the effective use and presentation of these values. It is prevented from facing the danger of de-identifying these values, which are constantly in view on the route. The destruction, destruction and improper use of these values, which are considered as immovable heritage, can be prevented by route users and route planners. Route planners, route users and local people raise awareness on the preservation of values along the route. These values on the route are not only local, regional or national, but also important values on a global scale. Therefore, the protection of these values can strengthen effective protection with international protection principles and standards, institutions and organizations (UNESCO- United Nations Educational, Scientific and Cultural Organization, IUCN-International Union for Conservation of Nature, ICOMOS- International Council on Monuments and Sites, Venice Charter, national site decisions, relevant ministries) (UNESCO Turkish National Commission, 1949).

In this study, it is mentioned what kind of benefits the natural and cultural route planning will provide in the sustainable protection of the values on the route.

2. Material and Method

In the study, the method of route planning is discussed as a method proposal in order to sustain natural and cultural values to future generations without deterioration. In order to detail the route planning as a method in the protection of natural and cultural heritage, the study is handled in three parts. In the first chapter, the characteristics of natural and cultural heritages are mentioned, it is emphasized how important the sustainable protection of these heritages is and it is stated that natural and cultural heritages are values with universal qualities. In the second part, the "route planning method" is conceptually approached and the proposed method is explained in detail. In the third chapter, the place and importance of route planning in the sustainable protection of natural values are emphasized and the benefits of this method in the context of benefiting from natural values, promoting and protecting these values are stated. In addition, in this part of the study, the necessity of evaluating cultural heritages within the scope of cultural routes has been revealed, so that the added value that cultural values will gain with a holistic approach as well as their point importance is underlined.

In the study, a detailed literature review was made, especially with the support of the Union of Municipalities of Turkey, on behalf of the Union of Historical Cities, the outputs of the Regional Road Maps with Cultural Priority- 2014 Route Programs carried out by the ÇEKÜL Foundation were used, and also the decisions taken by ICOMOS, IUCN and UNESCO on the subject has been used.

In this study, it is mentioned what kind of benefits the natural and cultural route planning will provide in the sustainable protection of the values on the route.

3. Findings and Discussion

Evaluation of the local potential under the title of protecting the natural and cultural heritage are important studies that support the cultural and economic development of the local. The 'route planning' approach developed within the scope of these studies provides effective benefits to the protection of these values while promoting local values within a plan. The application of route planning principles in the protection of natural and cultural heritage promotes the values on the route as an input to the country's economy, while preserving the natural and cultural heritage in a way that transfers it to future generations. With this method, sustainable protection of routes with high natural and cultural richness and the complete unveiling and promotion of their values can be ensured.

3.1. The Concept of Natural and Cultural Heritage

The concept of natural heritage can be defined as “all of the morphological formations, water riches, soil existence and bio-geographical values on the earth that need to be protected”. Natural heritage is all of the geological, biological, hydrological and hydrogeological formations on earth. The areas where these formations are located are heritage areas not only for the region and country where they are located, but also for the whole world, with their rare features, rare or endangered plant and animal diversity (Doğaner, 1985; Doğaner, 2003; from Gülersoy, 2013).

In today's world, where the world's natural resources are limited but human needs are unlimited, it is a must to preserve natural heritages in a sustainable manner and to leave them to future generations by taking into account the balance of protection and use. The destruction caused by globalization on natural resources is tried to be prevented with recent conservation policies. Among these, one of the most accepted protection methods at the international level is in-situ protection. The protected areas of the IUCN and the biosphere reserves of UNESCO are protected by in situ conservation methods. Natural heritage sites are important areas because they have habitats and natural ecosystems that are rare on earth. Among these, natural heritage sites are important in terms of being rare habitats on earth and reflecting the natural functioning of ecosystems (UNESCO, 2015; IUCN, 2015; from Gülersoy & Gülersoy, 2016).

The concept of cultural heritage is divided into two parts as tangible cultural heritage and intangible cultural heritage. Tangible cultural elements such as historically and archaeologically important areas, urban and naturally protected sites, monuments, ruins, cultural layers, tumuli, mausoleums, and religious buildings constitute cultural heritage (Doğaner, 2003; Gürpınar, 2001; from Çetin, 2010). UNESCO has registered the listed elements as tangible cultural heritage by signing the Convention for the Protection of the World Cultural and Natural Heritage in 1972 (UNESCO, 1972; from Çetin, 2010). Along with the finds belonging to the civilizations that lived in historical periods, these civilizations' lifestyles, traditions, customs, religious rituals, ways of celebration, types of entertainment, traditional handicrafts, food cultures, clothing cultures,

daily habits, etc. form the intangible part of the cultural heritage. Abstract culture is complementary to concrete culture (Emekli 2006; Timothy & Boyd, 2003; Yale, 1991; Emekli, 2003; Oğuz et al. 2005; Arıkan, 2008; Öter, 2010; Çobanoğlu, 1999; Şahin, 2009; Özgüç, 2003; Rogers, 2002; from Çetin, 2010). Cultural heritage can be defined as material and spiritual cultural elements left over from past civilizations and transferred from generation to generation (Şahin, 2009; from Çetin, 2010).

With the "Convention on the Protection of the Intangible Cultural Heritage" signed by UNESCO in 2003, the necessity of preserving intangible cultural heritage for civilizations living today and living in the future has been underlined (UNESCO, 2003).

The "Convention on the Protection of the World Cultural and Natural Heritage" signed in 2009 states that the sustainable protection of natural and cultural values in an area is one of the duties and responsibilities of the state where the value is located (UNESCO, 2009).

The protection of natural and cultural heritages and their evaluation within the scope of sustainable development strategies are very important in terms of local, regional and national development. While the repair of man-made destructions on the natural environment can be done to a limited extent, the destruction of historical and cultural structures that contain many years of experience causes irreparable results. The importance of the protection of natural and cultural heritage for the future of the country is indisputable. Natural and cultural heritages accompany each other at many points as complementary to each other. However, the experiences in the historical journey and the damage caused by human activities to the natural

environment cause the loss of these valuable areas or distance from each other. At this point, it would be appropriate to consider cultural and natural assets as values that support each other, sometimes together and sometimes separately.

In today's world, where natural and cultural resources are rapidly destroyed and their characteristics are differentiated, it is very important to protect these resources, which are valuable for the whole world, with conservation decisions as soon as possible. However, at this point, it should be noted that the concept of protection does not include the concepts of keeping and removing from people. These areas, which are valuable for the whole world, should be open to the controlled use and visit of people, but it is necessary to communicate effectively with human beings by considering the use-protection balance of these important values. At this point, the "route planning method" emerges as a method that provides effective communication of natural and cultural heritage and human beings with these listed features, but does not allow the destruction of these valuable areas during communication.

3.2. Route Planning Method

The concept of route is defined in the Turkish Language Institution as "the way followed, the way to go, the attitude in a job or a subject" (TDK, 2023). The concept of route basically describes a transportation corridor. The way the routes are used may vary depending on the scope and scale of the values found along the corridor and the purpose of the route. For this purpose, routes; They can be very diverse such as walking route, climbing route, vehicle route (Adana Cultural Routes System, 2014). In addition,

the planning of the routes should be made according to the local natural features such as the geography of the route, climate data, as well as the profile of the route users, the period and frequency of use of the route. For this purpose, route planning should be done in a comprehensive way, taking into account local natural features, cultural values on the route and user requests, accompanied by expert opinions. The route planning method that emerged in this direction; it is a method that primarily determines the variable or stationary values and the characteristics of these values that emerge as a result of the analyzes, observations and evaluations of the relevant value or group of values, and which is used to plan these point and/or regional values along a controlled route within the scope of these features. With the route planning method, planning proposals are developed, rules are determined on how to use, promote and control the route. Thus, the sustainable protection and presentation of natural and cultural values are supported and horizontal cooperation for local development on a regional scale is provided. The protection of natural and cultural values requires a strong organization and cooperation power. Especially the fact that these values are spread over a wide area on a regional scale requires the preparation of conservation approaches and application practices with detailed infrastructures.

According to the natural and cultural route planning approach; since the lean content-oriented approach to the relevant values on the route concentrates only on one or a few attributes of the value, it is insufficient in the presentation of the route. The important goal in route planning management is to ensure that the route user and route components can

communicate effectively. This communication may not always be physical. Often, psychological and emotional communication reinforces the importance of the relevant value.

3.2.1. The Role and Importance of Route Planning in Conservation of Natural and Cultural Heritage

In today's world, sustainable conservation policies develop sub-headings not only on the protection of natural and cultural values and leaving them intact for future generations, but also on the promotion and use of the relevant heritage and providing economic input to the region. In this respect, the concept of route planning is frequently addressed in the sustainable development strategies of regions rich in local and local values. Routes that are strong in terms of their natural and cultural characteristics work for the development of use and protection practices in the physical environment with a wide angle at the regional and country scale, while developing a comprehensive cooperation, organization and awareness of protecting owned values at the local scale (Gaziantep Cultural Routes System, 2014).

The "route planning method", which is an effective method for the protection of natural and cultural heritage and leaving it to future generations, is the subject of a sustainable conservation policy, which has natural and/or natural heritage elements and gained its importance through these elements. It is the management of local, regional or national scale transportation corridors developed for local development, presentation of value and development of tourism and similar purposes.

Natural and cultural routes; it can be defined as local, regional and national circulation routes that have natural and/or cultural value and gain their main importance by means of this value, providing regional development, tourism development and a high level of protection (Kelkit Cultural Routes System, 2014). Routes can be used from past to present or routes used in the past but not used today. In addition, cultural routes; they can be formed by cultural assets that are connected to each other by usable lines by considering purposes such as tourism, education, protection and development. These routes alone can connect a natural formation and/or a historical and cultural structure, a group of buildings or ancient assets. The intangible cultural values that lived on these routes in the past and/or are living today increase the importance of these routes. In addition to all these, richness such as the natural environment, wildlife, and endemic species that are still protected increase the value of these routes even more (Adana Cultural Routes System, 2014).

Today, there are many institutions, organizations and professional organizations working on the concept of natural and cultural route. Among these organizations, UNESCO, ICOMOS and the Council of Europe, which carry out extensive studies on the protection of cultural values and very important activities.

The concept of cultural route does not conflict with any of the different types of cultural assets (monuments, cities, cultural landscapes, industrial heritage, etc.) included in the route, and even includes all of these assets. The route brings all these values together in a controlled system that will increase their importance (ICOMOS, 2008).

Cultural routes; is planned by considering variables such as the characteristics of the people using the route, their special wishes and interests, the usage period of the route, and the difficulty level of the route (Niksar Cultural Routes System, 2014).

Another issue that is taken into consideration while planning the route is whether the routes to be planned were used in the past. Cultural routes may have been used at a particular time in history. Silk Road, Spice Road, King's Road can be given as examples of these routes. In addition, the route to be planned may connect point cultural values for various reasons today (Adana Cultural Routes System, 2014).

With the method of cultural and natural route planning, significant contributions are made to conservation strategies at national and international level. With route planning, conservation strategies are technically beneficial, cultural preservation is emphasized as one of the main objectives of urban design by approaching the main conservation topics holistically, local people, local government and national government are encouraged to work in cooperation, protection activities can be financed and direct or direct it is seen that public participation is provided indirectly (Resuloğlu, 2005).

Considering the examples of cultural routes in Turkey and in the world, it is seen that they are generally planned on two main groups. The first of these is the transportation corridors formed by individual (such as Evliya Çelebi route, St. Paul route) or mass (such as the King's Road, Silk Road) human movements used in the past, and the second was formed due to some needs (alternative tourism, local development, natural and cultural

such as heritage protection) transport corridors. These cultural corridors may have been supported by rare natural beauties and different landscapes. In short, cultural routes can be in the form of systems that contain more than one cultural, historical and natural value. These routes may be of rural and/or archaeological nature. Natural and cultural route planning can be used as a tool for the sustainable preservation of all these values. The rural settlements on these routes also contribute to the cultural perception of the route. In addition, the natural environment of rural settlements supports the route. The fact that rural settlements benefit from the economic inputs that the route will provide has a great impact on the sustainable protection of the route. While the rural settlements on the route are developing, the rural settlements that benefit from the human mobility on the route cooperate in the effective protection of natural and cultural values (Yeşilırmak Cultural Routes System, 2014).

The routes used by people who were displaced for a certain period in the past due to reasons such as exploration, worship, famine, war, and trade have been the scene of important cultural interactions. The planning and management of the routes with traces of these interactions or thematic routes serving a specific purpose (such as for gastronomy purposes, for worship purposes) within a certain planning will ensure the promotion of the values on the route, their use for tourism purposes and the provision of local development, while also ensuring that these values are protected in a controlled manner.

4. Conclusion and Suggestions

As a result, route planning for the protection of natural and cultural heritage; environmental-cultural, social-physical and economic benefits in the protection of the heritage on the route (Niksar Cultural Routes System, 2014).

Benefits of Route Planning Method in Conservation of Natural and Cultural Heritage;

Environmental and Cultural Benefits;

• It helps to protect natural resources,

• It helps to improve the cultural heritage,

• It helps to change the distorting results of tourism activities.

Social and Physical Benefits;

• Controlled recreational activities increase on the route.

• Health, education, etc. in rural life, as it will be beneficial for rural development. Improvements are observed.

• Efforts are made to conduct continuous research to improve the route.

Economic Benefits;

• An economic development is observed in the region where the route is located.

• It helps rural development.

• Opportunities for alternative economic activities arise along the route and at secondary stops associated with the route.

With the route planning method, these routes are promoted while protecting the natural and cultural heritage. Routes are opened to controlled human use. A tourism activity starts in the region and horizontal

cooperation platforms are created. This supports local and regional development. In addition, many natural or cultural values of point importance are valued among other values along the route. Because there may be point or regional areas with natural and/or cultural heritage formed in different cultural layers. These areas may be supported by many tangible and intangible reinforcements to form the conceptual dimension of culture. Buildings, façades, natural or man-made landscapes, food, clothes, music, dance, and different livelihoods can be given as examples of these cultural reinforcements. Considered reinforcements are heritage components. The high number of heritage components, their rarity in the world, their special importance for a certain population will make the relevant natural and/or cultural heritage valuable. It is important to perceive a cultural value through the analysis of its historical background.

Acknowledgements 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. There is no conflict of interest.

References

Adana Kültürel Rotalar Sistemi, (2104). www.tarihikentler.org. 07.05.2023.

Arıkan, M. (2008). Küreselleşme ve millî kimlik açısından somut olmayan kültürel mirasın korunması, *Ege Üniversitesi Türk Dünyası Araştırmaları Enstitüsü Türk Dünyası İncelemeleri Dergisi*, 2, 1-8.

City Planners Chamber Board of Directors. (2004). *Journal of the Chamber of Planners*, 4.

Çetin, T. (2010). Cumalıkızık köyünde kültürel miras ve turizm algısı, *Millî Folklor*, 2010, 22(87), 181-190.

Çobanoğlu, Ö. (1999). Halkbilimi açisindan gelenek, turizm ve icad edilmis gelenek bağlaminda Ayvalik Şeytan Sofrası. *Millî Folklor*, 43, 7-12.

Doğaner, S. (1985). Turizmde doğanın önemi ve Türkiye'de doğayı koruma çalışmaları, *İÜ Deniz Bilimleri ve Coğrafya Enstitüsü Bülteni*, 2 (2), 117-124.

Doğaner, S. (2003). Miras turizminin coğrafi kaynakları ve korunması, E.Ü. Coğrafya Sempozyumları 2, Coğrafi Çevre ve Koruma Sempozyumu, 16-18 Nisan 2003, İzmir.

Gaziantep Kültürel Rotalar Sistemi, (2014). www.tarihikentler.org. 01.05.2023.

Görmüş, S., Özkazanç, N. K., Günşen, H. B., Artar, M. Atmiş, E. (2016). *Ekorota Bartın: Mapping of Natural and Cultural Corridors*. Bartın: Bartın University Publications, 26.

Gülersoy, A. E. (2013). Doğal mirasın korunması açısından sosyal bilgiler (ortaokul) ve coğrafya (orta ve yükseköğretim) müfredat programlarının değerlendirilmesi, *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 6 (14), 315.

Gülersoy, A. E. & Gülersoy, Ö. (2016). Hitit başkenti Şapinuva perspektifinde Ortaköy (Çorum)'un doğal, sosyo-kültürel miras değerleri ve turizm potansiyeli, *Gaziantep Üniversitesi Sosyal Bilimler Dergisi*, 15(2), 485-530.

Gürpınar, E. (2001). Kültür ve tabiat varlıklarını koruma üzerine, *İstanbul Üniversitesi Siyasal Bilgiler Fakültesi Dergisi*, 23-24, 185-193.

Emekli, G. (2003). Bergama ve Selçuk'un İzmir'in kültürel turizmindeki yeri, *Ege Coğrafya Dergisi*, 12, 39-50.

ICOMOS, (2008). International Council on Monuments and Sites, Kültür Rotaları Bildirgesi, www.icomos.org.tr. 15.07.2023.

Kelkit Kültürel Rotalar Sistemi, (2014). www.tarihikentler.org. 03.07.2023.

Niksar Kültürel Rotalar Sistemi, (2014). www.tarihikentler.org. 25.06.2023.

Oğuz, Ö., Yeliz, Ö. & Pulat, T. (2005). UNESCO (17 Ekim 2003) somut olmayan kültürel mirasın korunması sözleşmesi, *Milli Folklor*, 65, 163-171.

Öter, Z. (2010). Türk el sanatlarının kültür turizmi bağlamında değerlendirilmesi, *Milli Folklor*, 86, 174-185.

Özen, S. L. (2005). "Integrated conservation" approach- Trabzon case study, Karadeniz Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Urban and Regional Planning, Trabzon.

Özgüç, N. (2003). Turizm Coğrafyası Özellikler ve Bölgeler. İstanbul: Çantay Kitabevi.

Rogers, S. (2002). Which heritage? nature, culture, and ıdentity in French rural tourism, *French Historical Studies*, 25(3), 63- 162.

Şahin, H.İ. (2009). Dalyan ve Köyceğiz çevresinde gelenek, turizm ve folklorizm, *Milli Folklor*, 82, 50-58.

TDK. (2023). Türk Dil Kurumu, https://sozluk.gov.tr/. 10.05.2023.

Timothy, D. & Stephen, B. (2003). *Heritage Tourism*. (First edition). Harlow: Pearson Education Limited.

Resuloğlu, S. (2005). Koruma olgusu ve kültür ve tabiat varlıklarını koruma kurullarının yaklaşımları, Dokuz Eylül Üniversitesi, Fen Bilimleri Enstitüsü, İzmir.

UNESCO. (1972). United Nations Educational, Scientific and Cultural Organization, Dünya Kültürel ve Doğal Mirasın Korunması Sözleşmesi, http://www.unesco.org.tr. 10.07.2023

UNESCO. (2003). United Nations Educational, Scientific and Cultural Organization, Somut Olmayan Kültürel Mirasın Korunması Sözleşmesi, http://www.unesco.org.tr. 10.07.2023.

UNESCO. (2009). United Nations Educational, Scientific and Cultural Organization, Dünya Kültürel ve Doğal Mirasın Korunmasına Dair Sözleşmesi, http://www.unesco.org.tr. 08.07.2023.

UNESCO. (2015). United Nations Educational, Scientific and Cultural Organization, http://www.unesco.org. 13.07.2015.

UNESCO. (1949). Türkiye National Commission. Recommendations on the preservation of historical and traditional sites and their role in contemporary life. https://www.unesco.org.tr/pages/96/2/unesco. 15.07.2023

IUCN. (2015). International Union for Conservation of Nature and Natural Resources, www.iucn.org.tr. 20.07.2023

Yale, P. (1991). *From Tourist Attractions to Heritage Tourism*, Huntingdon: ELM Publications.

Yeşilırmak Kültürel Rotalar Sistemi, (2014). www.tarihikentler.org. 23.06.2023.

Assist. Prof. Dr. Filiz ÇETİNKAYA KARAFAKI

E-mail: fkarafaki@ankara.edu.tr
Educational Status: Asst. Prof. (PhD)
Undergraduate: Ankara Univercity
Master:
Doctorate:
Professional experience: Urban Design, Ecology, Cultural Heritage, Sustainability

Assist. Prof. Dr. Çiğdem ÇETİN

E-mail: cigdem.cetinkaya@yasar.edu.tr
Educational Status: Asst. Prof. (PhD)
Undergraduate: Yasar Univercity
Master:
Doctorate:
Professional experience: Perception, Adaptive Reuse

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-14

Natural and Cultural Landscape Identity Values and Analysis of Hisarardı Village (Yalvaç-Isparta)

Dr. Çağla AYDEMİR [1]

[1] Süleyman Demirel University, Faculty of Architecture, Department of Architecture, Planning and Design, West Campus, Isparta/Türkiye.
ORCID: 0000-0003-3575-8957
E-mail: caglabostan15@gmail.com

Prof. Dr. Atila GÜL [2]

[2] Süleyman Demirel University, Faculty of Architecture, Department of Landscape Architecture, West Campus. Isparta/Türkiye
ORCID: 0000-0001-9517-5388
E-mail:atilagul@sdu.edu.tr

Citation: Aydemir, Ç. & Gül, A. (2023). Natural and Cultural Landscape Identity Values and Analysis **of** Hisarardı Village (Yalvaç-Isparta). Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 14, 436-478. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

Rural areas are settlements that contain most of the world's population, are outside urban settlements, are shaped by their unique natural and cultural landscape values, and have an integrated structure with their unique daily lifestyles (Gül et al., 2019; Erdem Kaya, 2020; Aydemir & Gül, 2023). However, rural settlements are considered as settlements that are part of rural areas and have a large number and dispersed structure in our country, have a small population, are based on the livestock and agricultural sector, where the natural environment is dominant, land structure, soil, water resources, climate, vegetation, etc. natural structure features and economic activities, traditional housing architecture, gastronomy, etc. social and cultural structure values (Tütengil, 1979; Kabataş & Kiper, 2021).

The natural and cultural landscape values of rural settlements are character-defining and distinctive, and they create a sense of characteristic and belonging in the place and the person (Topçuoğlu & Kiper, 2020). The natural and cultural landscape identity values of rural settlements vary from region to region, even in rural settlements in the same region. Thus, this diversity and richness brings with it unique space and identity values (Gül et al., 2019).

Although each rural settlement differs in terms of landscape identity, it is seen that as a result of the relationship and interaction between nature and local culture, these values have been carried from the past to the present and transformed into knowledge, traditions, cultural habits, behaviours and

lifestyles with sanctioning power (Erdem, 2012; Köse & Şahin, 2017; Gül et al., 2019).

Today, the existing natural and cultural landscape identity values of rural settlements are changing and being negatively affected by multifaceted factors in social, cultural, economic, technological, and political dimensions.

These factors can be listed as the increase in migration from rural to urban areas for economic reasons, the decrease in the young population, the aging of the rural population, the unplanned and excessive use of natural resources, the change in agricultural and animal production methods, the inadequacy of local services in terms of quality, the change in agricultural activities with climate change, the increase in rural tourism activities, the acceleration of the search for space, the pressure on rural landscape identity, the rapid growth of urban areas, the increase in structural pressure, the inadequacy of the laws and regulations followed, etc. (Duxbury & Campbell, 2011; Köse & Şahin, 2017; Erdem Kaya, 2020; Aydemir & Gül, 2023).

Especially with the Law No. 6360 (*On Üç İlde Büyükşehir Belediyesi ve Yirmi Altı İlçe Kurulması İle Bazı Kanun ve Kanun Hükmünde Kararnamelerde Değişiklik Yapılmasına Dair Kanun*) enacted on 6 December 2012, villages were brought to the status of neighbourhoods and their legal personality was abolished, paving the way for uniform construction with the zoning plan understanding applied in urban areas and bringing multidimensional negative situations towards the loss of traditional life and local identity (Öğdül, 2013; Yenigül, 2017; Görgün &

Yörür, 2018; Aydemir & Gül, 2023). All these problems affect the natural and cultural landscape identity values of rural settlements and even cause them to disappear.

The main purpose of this study is to reveal the natural and cultural landscape identity values specific to Hisarardı village of Isparta-Yalvaç district and to record these values before they are lost. In this framework, maps were produced and analyzed within the framework of ArcGis 10.6 program using GIS for the natural and cultural landscape identity values of Hisarardı village based on literature data and field studies. In addition, the local identity values of Hisarardı village were determined by conducting a questionnaire survey of the village people and as a result, suggestions for local landscape identity values were developed.

2. Material and Method

2.1. Material

The main material of the study is Hisarardı village in the Yalvaç district of Isparta province. Hisarardı village is a small settlement located on the foothills of Sultandağı with a total population of 291 (Türkiye Population Provincial District District Neighbourhood Village Population, 2020), 3 km from Yalvaç district. Antiokheia Ancient City is located to the north of the settlement and the Temple of Men is located to the southwest. Since it is located behind these ancient settlements, it was named Hisarardı, meaning "behind the Hisar". The surface area of the settlement is 236.06 km² and the altitude is 1.276 m. Hisarardı village is located between 38° 18' north and 31° 12' east latitudes. Hisarardı village is a settlement that contains many natural and cultural landscape values such as registered

buildings, broad-leaved, coniferous, and mixed forests, water resources, etc. (Figure 1) (Aydemir, 2022).

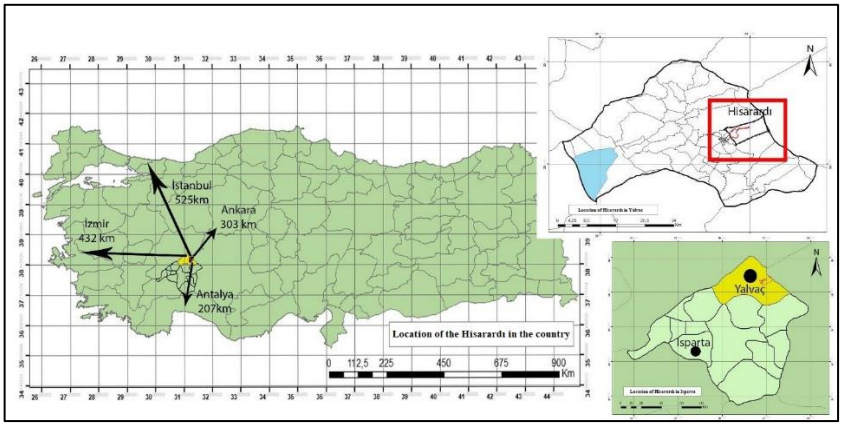


Figure 1. Location of Hisarardı Village in Türkiye, Isparta, and Yalvaç District (Aydemir, 2022)

2.2. Method

1. Literature review and data collection phase: This stage was carried out in two separate processes literature and survey. Articles, theses, reports, etc. related to the subject of the study were analyzed and the conceptual part, purpose, and importance of the study were revealed. In the inventory and survey study of the study area, preliminary interviews with local people and village headmen, field observation, inspection and photography studies, reports, and maps obtained from institutions and organizations were obtained.

2. Spatial context and data analysis phase: It includes mapping, digitization, and processing of the data identified for the natural and cultural landscape identity values of the study area. Natural and cultural landscape identity values were constructed and interpreted according to

the titles of natural and cultural resource values that can create local identity proposed by Gül et al., (2019). Accordingly; Natural landscape identity values: Data analyses of elevation, slope, aspect, hydrology, geology, soil, land cover, erosion, biodiversity, and vegetation cover were made. Cultural landscape identity values; Tangible cultural values: Historical structure/ object/ events, spatial values, architectural structure/ object/ events, social value, economic value, etc. Intangible cultural values: Gastronomy and food values, traditions, customs and traditions, artistic and literary values.

3. Identification and evaluation of local landscape identity values: The natural and cultural landscape identity values of Hisarardı Village were determined and evaluated through a survey of 23 households (n: 58 people).

4. General Evaluation and Conclusion Phase: Within the scope of all the data and findings obtained, general evaluation and suggestions regarding the results were made.

3. Findings and Discussion

3.1. Natural Landscape Identity Values and Analysis of Hisarardı Village

For the natural landscape identity values of Hisarardı Village, data on climate, elevation, slope, aspect, hydrology, geology, soil, land cover, erosion, biodiversity, and vegetation cover were analyzed and evaluated.

a. Climate Values*:* It is a settlement with a continental climate. Compared to summer months, winter months receive more precipitation and the annual average temperature is 10.6 ^{o}C. Annual precipitation is 529 mm.

The hottest months are July and August, with an average of 22.2. The coldest months are January and February, with an average of 0.9 (Climate-data.org, 2023).

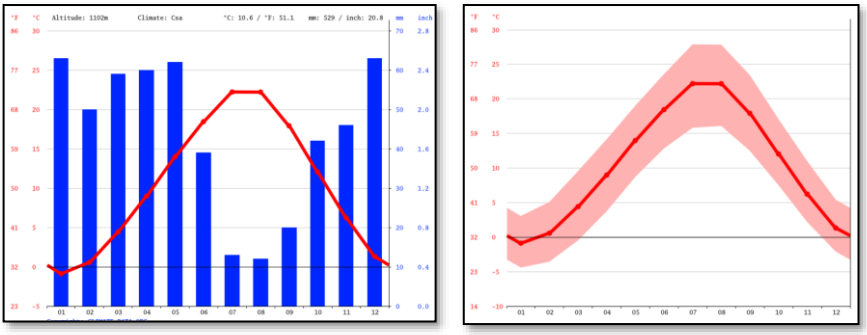


Figure 2. Clımate and temperature graph (Climate-data.org, 2023)

b. Elevation data analysis: The lowest and highest altitude range of Hisarardı Village is between 1121 m and 2094 m. The highest elevations in the settlement are Doruk Hill in the south and Sivri Hill in the east. The lowest elevations are in the north and south where the stream beds are located. The elevation range of the village between 1122 m and 1200 m constitutes 14,53% of Hisarardı village, while the elevations between 1401 m and 1600 m constitute 36,96 % of the village (Figure 3 and Table 1).

Table 1. Elevation groups of Hisarardı Village and their percentages in the area

Elevation groups (Meters)	Areas (Ha)	Percentages (%)
0-1121	0,05	0,01
1122-1200	578,03	14,53
1201-1400	1.470,02	36,96
1401-1600	950,35	23,89
1601-1800	526,94	13,25
1801-2094	451,97	11,36

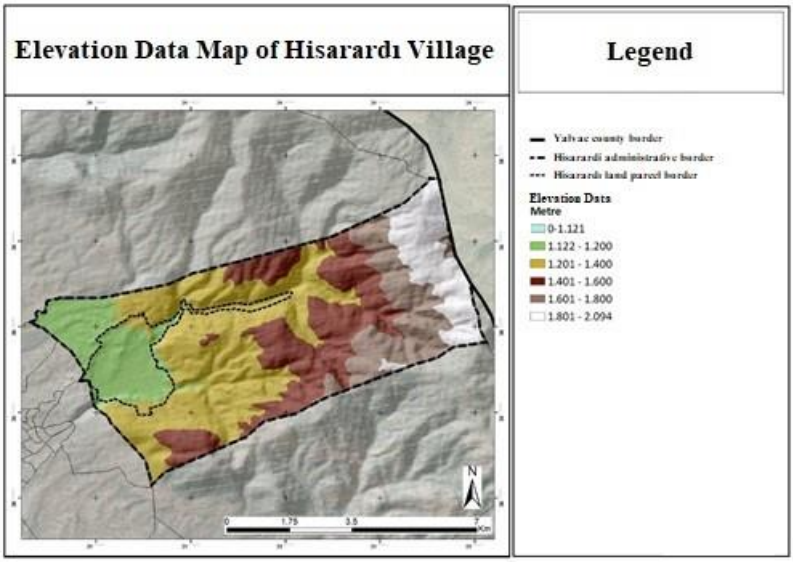


Figure 3. Elevation data map of Hisarardı Village (Aydemir, 2022)

c. Slope data analysis: Hisarardı Village is a settlement established on the slopes of Sultan Mountain. As a result of this, the settlement is seen among the slope groups with a rate of 63,60%, which are rugged and costly for settlement. The structural settlement is located on the slopes of hills with a slope range of 2,1-6% and 6,1-12% and constitutes 33,72% of the total village. Areas with slopes of more than 20,1 % generally contain maquis, scrub, or mixed forest areas rather than settlements (Figure 4 and Table 2).

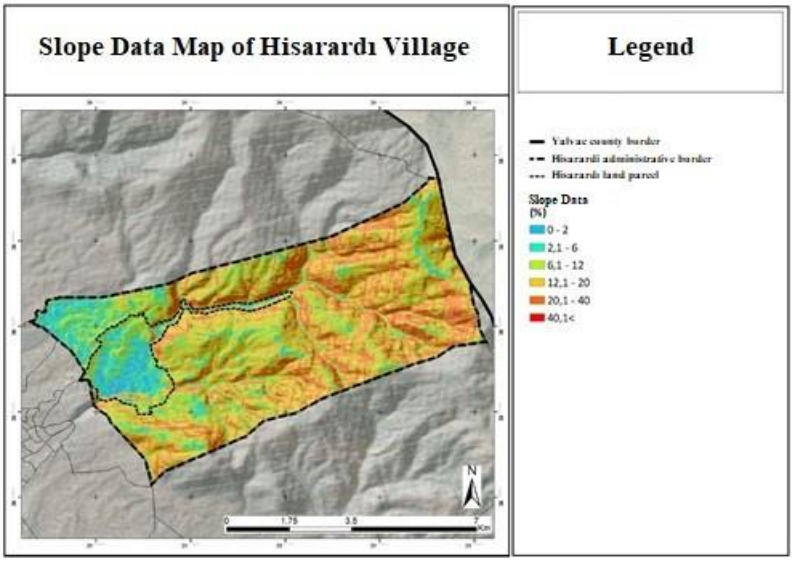


Figure 4. Slope data map of Hisarardı Village (Aydemir, 2022)

Table 2. Slope groups of Hisarardı Village and their percentages in the area

Slope groups (%)	Areas (Ha)	Percentages (%)		Percentages of Distribution according to settlement problem (%)
0-2	98,49	2,53	2,53	Infrastructure problem
2,1-6	427,25	10,96	33,72	Suitable settlement
6,1-12	887,4	22,76		
12,1-20	1.472,84	37,77	63,60	High-cost areas for settlement
20,1-40	1.007,27	25,83		

d. Aspect Data Analysis: Because the village is built on the foothills of Sultan Mountain, there is diversity in the aspect groups. The aspect data is important in determining the direction of insolation of the settlements. The areas shown in blue on the aspect map are weak in terms of insolation, while the areas shown in orange and green indicate strong areas in terms

of insolation. Hisarardı village has 32,11 % of the highest aspect ranges in terms of settlement suitability, while 17,39 % of the village has the highest aspect groups (North-Northwest). Most of Hisarardı Village has an area suitable for settlement in terms of sunbathing (Figure 5 and Table 3).

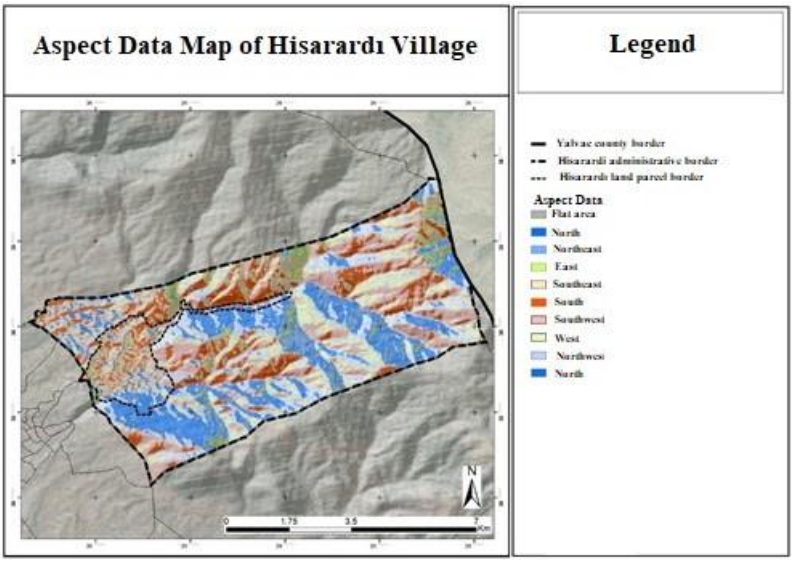


Figure 5. Aspect data map of Hisarardı Village (Aydemir, 2022)

Table 3. Areal ratios of the aspect groups of Hisarardı Village and the degree of settlement suitability

The Aspect Groups	Areas (ha)	Percentages (%)	Percentage of Settlement Suitability (%)	
Flat area	276,06	6,96	The best	6,96
Southeast	295,47	7,45	Good	32,11
South	399,09	10,06		
Southwest	579,43	14,6		
West	708,86	17,86	Moderate	23,18
East	211,14	5,32		
North	808,28	20,37	Poor level	20,37
Northeast	159,45	4,02	The worst	17,39
Northwest	530,67	13,37		

e. Water resources and hydrology value analysis: Hisarardı Village has two important streams (Suçıkan and Killet) and a pond. The Suçıkan stream, which is fed by the Suçıkan spring, which provides the drinking water needs of Hisarardı Village and Yalvaç district, is located in the northwest and southeast directions of the settlement and there are agricultural areas along the land. Killet stream is a branch of Hisarardı Pond and separates the settlement in the east and west and there are residential areas and agricultural lands along the stream. The Hisarardı water channel, which was created to prevent floods during excessive rainfall, which divides the settlement into two in the north and south directions, played an important role in the shaping of the settlement. There are also irrigation channels for gardens and fields in the settlement of the villagers. Hisarardı pond is located in the northwest of the settlement and has an area of approximately 1.340 ha and constitutes the important water surface of the village (Figure 6)**.**

The water of the Suçıkan spring was divided as 55% of Yalvaç and 45% of Hisarardı Village with the court decision of the Yalvaç Asiye Civil Court on 1971/70 main, 1976/552 decision number on 07.10.1977. On 29.07.2021, based on the decision of the Yalvaç District Public Hygiene Board, 45% share was claimed again. This situation has caused the local people and Yalvaç Municipality to be in litigation.

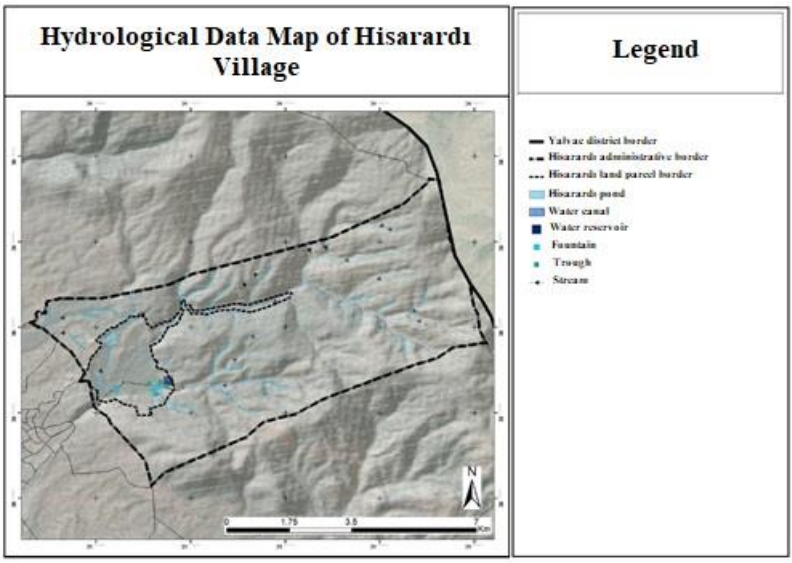


Figure 6. Hydrological data map of Hisarardı Village (Aydemir, 2022)

f. Land Capability Classification Data Analysis: 95,16% of the total area of the village has Class VII land capability. It is generally sloping, bare surface or covered with maquis and forest vegetation. Approximately 4,4% of the village has Class 1 land capability and it is seen that there are generally agricultural uses close to the village settlement (Table 4).

Table 4. Land Use Capability Data and Areal Ratios of Hisarardı Village

Land use capability	Areas (ha)	Percentages (%)
I. Class	176,28	4,42
VI. Class	6,68	0,17
VII. Class	3.793,84	95,16
Settlement	10,13	0,25

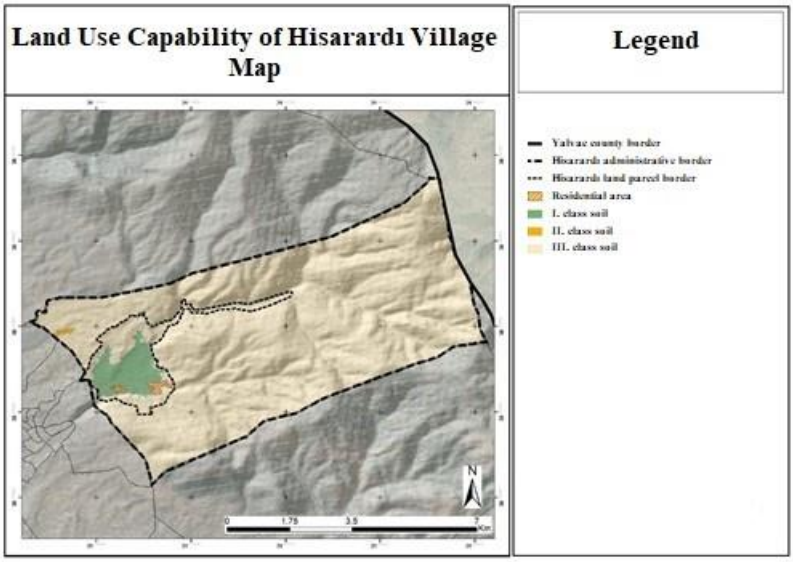


Figure 7. Land use capability of Hisarardı Village map (Aydemir, 2022)

g. Soil data analysis: Hisarardı Village, a maximum of 83,06% non-calcareous brown soil and a minimum of 0,38% chestnut brown soil are observed. Lime-free brown soil natural vegetation is shrub, mixed forest, or heather. Natural drainage is good. Collivial soil is dominant at the settlement land parcel boundary. It is efficient for agricultural activities (Figure 8 and Table 5).

Table 5. Soil data and areal ratios of Hisardı Village

Soil Groups	Areas (ha)	Percentages (%)
Brown Forest Lands	332,29	8,36
Chestnut Soil	15,06	0,38
Limeless Brown Forest Soil	32,87	0,83
Limeless Brown Soil	3.302,61	83,06
Red Mediterranean Soil	44,25	1,11
Red Brown Mediterranean Soil	62,99	1,58
Colluvial Soil	174,54	4,39
Residential area	10,13	0,29

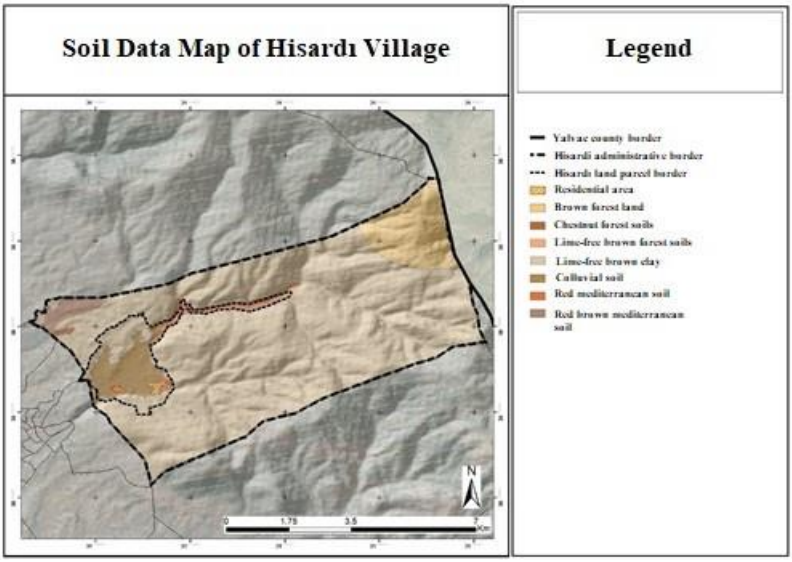


Figure 8. Soil data map of Hisardı Village (Aydemir, 2022)

h. Natural vegetation data analysis: Due to the high elevation of the village surroundings, the areas of sparse plants and treeless forest soil have a rate of 48,16%. In addition, the areas covered by black pine + cedar mixture and pure black pine forests constitute 33,72 % (Table 6).

Table 6. Hisarardı Village natural vegetation map and percentage values

Natural Vegetation Data	Code	Areas (ha)	Percentage Values (%)
Juniper- Oak mixture with gaps	BArM	145,68	3,81
Treeless forest soil	OT	1.839,68	48,16
Cedar+Black pine mix	SÇka0	448,58	11,74
Black pine +Cedar- mix	ÇkSa0	782,44	20,48
Agriculture + pasture	Z	233,3	6,11
Swamp oak forest	BMBt	275,47	7,21
Treeless forest soil + Rocky	OT-T	7,28	0,19
Settlement	İs	20,48	0,54
Water resources (Lake)	Su	9,36	0,25
New Black Pine reforestation area	Çka0	7,97	0,21
Black Pine reforestation area	Çka	49,34	1,29

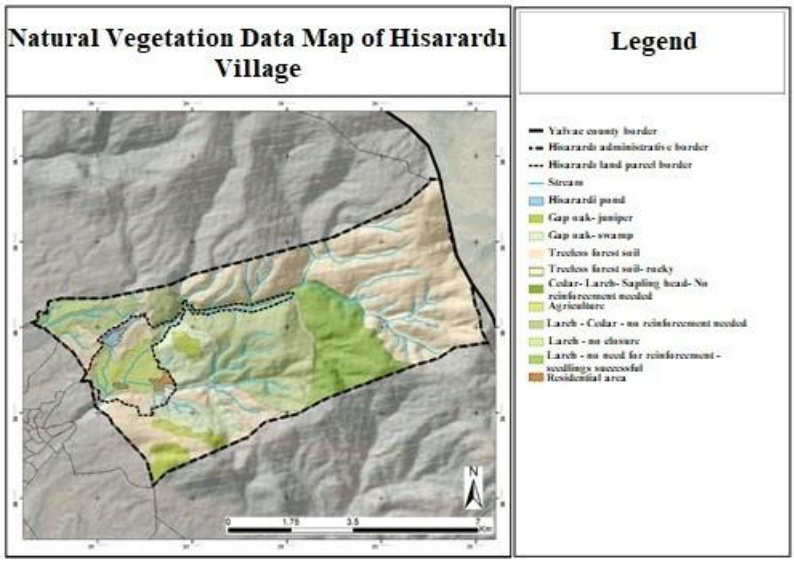


Figure 9. Mescere data map of Hisarardı Village (Aydemir, 2022)

j. Monument trees: There are monumental chestnut (*Castanea sativa* Mill.) trees in Hisarardı Village. Chestnut trees have not been registered as monumental trees (Figure 10). It is necessary to carry out necessary maintenance and improvement works for these trees and to take them under protection with registration works.

Figure 10. Monumental chestnut trees in Hisarardı Village (Original, 2022)

k. Endemic and Endangered Species: Endemic and endangered plant species studies in Hisarardı village do not have any data specific to the settlement. Since Hisarardı village is located on the foothills of Sultan Mountain, studies carried out throughout Sultan Mountain are examined under this heading. According to Özçelik (2023), in his study titled "Important Plant Areas and Features of Isparta Province", he emphasized that Sultan Mountain has a very rich flora structure in terms of plant species, with 735 conduction bundle plant species registered. Especially in the region, which shows diversity in terms of endemism; *Comperia comperiana, Cyclamen mirabil* and *Teucrium lamiifolium*, which are included in Annex List 1 of the Bern Convention, are home to these 3 species.

Globally endangered 10 plant species are distributed in this area. These taxa are: *Acer hyrcanum* subsp. kechianum, *A. hyrcanum* subsp. *sphaerocaryum, Allium sieheanum, Cyclamen cilicicum* var. *cilicicum, C. mirabile, Glaucium grandiflorum* var. *torkuatum, Olymposciadium caespitosum, Saponaria syrica, Thymus leucostomus* var. *argillaceus, Velezia pseudorigida.* These species are also endemic, vulnerable (VU) endangered, and rare plants. Intensive agriculture, animal husbandry, and forestry activities in the area pose a threat to endemic plants and endangered species. Illegal logging is also seen as another problem in the region (Özçelik, 2023).

l. Erosion analysis: Due to the elevated and sloping land structure of the village and the intensity of the treeless soil structure, 73,74% of the village has very severe erosion. While there is no or little erosion in the cultivated

agricultural lands, in the areas where the forest structure is dense, erosion is dominated by moderate erosion.

Erosion analysis: Due to the elevated and sloping land structure of the village and the intensity of the treeless soil structure, 73,74% of the village has very severe erosion. While there is no or little erosion in the cultivated agricultural lands, in the areas where the forest structure is dense, erosion is dominated by moderate erosion (Figure 11 and Table 7).

Table 7. Hisarardı Village erosion level and percentage values

Erosion Level	Areas (ha)	Percentage Values (%)
Out of evaluation	317,39	7,99
None or very little	231,4	5,82
Medium level	109,81	2,76
Severe	385,31	9,69
Very severe	2.931,43	73,74

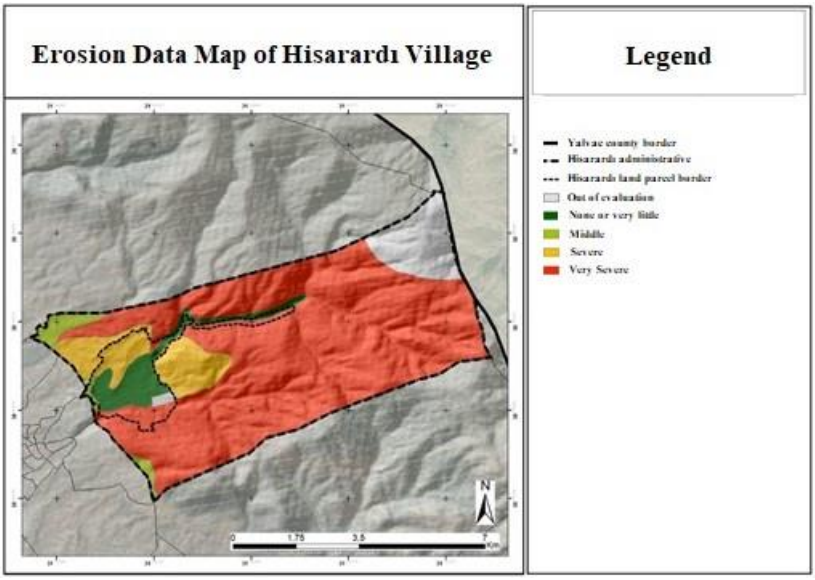


Figure 11. Erosion data map of Hisarardı Village (Aydemir, 2022)

3.2. Cultural Landscape Identity Values and Analysis of Hisarardı Village

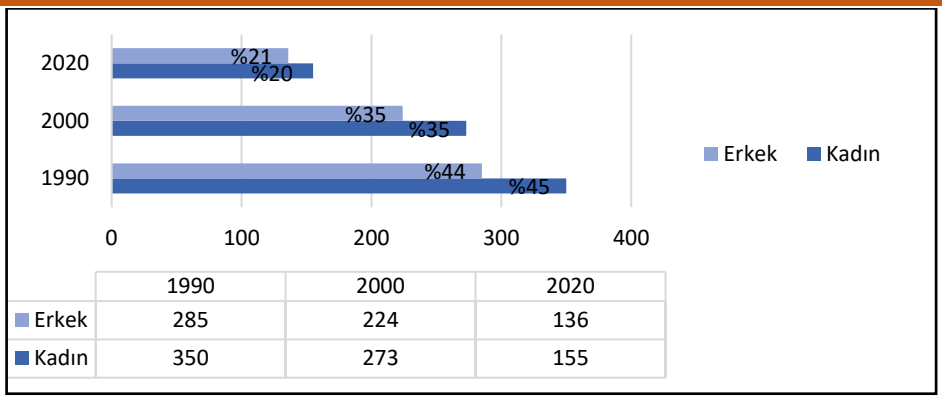
3.2.1. Tangible cultural values

a) Social values

a.1. Demographic structure and analysis*:* In 2020, the total population of the settlement was 291. 155 (53%) of the population are female and 136 (47%) are male. Hisarardı village has a small population today and its population is decreasing every year. The total population of the village has decreased by 54,17% in the last 30 years. As a result of the preliminary interviews and surveys conducted in the village, the main reason for the population decrease is the migration movement for work and better living conditions. In the 1990s, the young and middle-aged group was dense, while in the 2000s, it is seen that the population of the young and middle-aged group decreased by 44% due to education and work-related migration (Table 8).

Table 8. Population changes of Hisarardı Village according to years

Yerleşimler		**Population and Gender Percentages**				**Annual Population Percentages (%)**		
		1990	**2000**	**2015**	**2020**	**1990-2000**	**2000-2015**	**2015-2020**
Hisarardı Village	**Total**	635	497	324	291	21,73	34,80	-10,18
	Female	350	273	166	155			
	Male	285	224	158	136			



	1990	2000	2020
Erkek	285	224	136
Kadın	350	273	155

Figure 12. Percentage of population by gender in Hisarardı Village (TUİK General Population Censuses, 2022)

a.2. Education situation analysis: The number of people who can read and write in the settlement is 82%. The highest level of education is primary school graduates with 48,6%. Since 1990, the level of education has been in a downward trend (Figure 13). The main reason for this is the migration of the young population in the village.

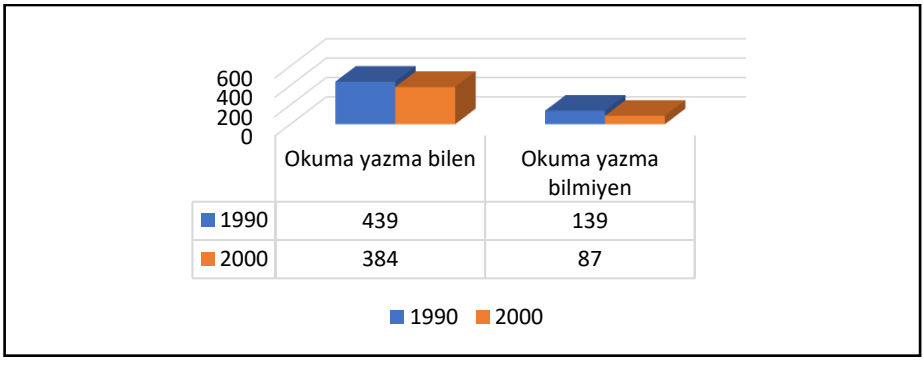


Figure 13. Literacy status of Hisarardı Village by years (TÜİK General Population Censuses, 2022)

b) Economic values: The main source of livelihood of the village is agriculture and animal husbandry, but due to migration over time, it has fallen into the background and production has decreased. The main source of livelihood of the households has become the pensions of those who work as labourers or civil servants with the increase in the age ratio and the average income level of the village is concentrated between 2500-5000 TL per month. The contribution of the households to the economy is in the form of products grown in the vineyard and garden and is seen as domestic activities.

c) Architectural structure/object/events

***c.1. Traditional building (housing) character*:** The traditional housing architectural texture of the village has been preserved until today. 87,64% of the buildings are detached houses made of mudbrick + wood. Generally, the houses have two floors and the first floor is used for purposes such as storage, stables, etc., while the second floor is used as living space. The foundations of the buildings are covered with stone material up to the flood level. The exterior is plastered with adobe mortar or mud.

The main entrance doors usually open to the ground floor, which is paved with stones called "Stones". There are two rooms and a staircase reaching the upper floors in the gizzard. One of these rooms is used as a barn and the other as a hayloft. The floors of these rooms are compacted soil. The area between the "gizzard" and the boundary walls of the houses is the garden. On the upper floors of the houses, there is a large sofa in the centre and rooms opening to it. The rooms are equipped with decoration elements such as hearths, load-bags, shelves, and cupboards. The wooden elements

used in the houses are made of juniper, willow and poplar trees. The buildings are covered with hipped roofs covered with tiles.

The plaster is painted over. A total of 14 buildings in the village have been included in the protection area and registered by the “Antalya Regional Board for the Protection of Cultural Assets” (Figure 14). Most of the traditional houses are empty and idle. As the village is very close to Yalvaç city centre and as a result of the increase in land sales, it is seen that new reinforced concrete villas have increased intensively in the southwest of the village.

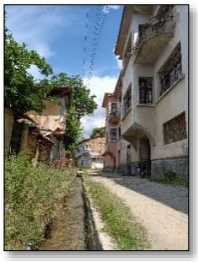
Door #:81

Door #:101

Door #:103

Door #:91

Door #:110



Door #:201-202

Door #:280

Door #:207

Door #:281

Door #:203

Door #:94

Door #:83

Door #:107

Figure 14. Traditional registered houses of Hisarardı Village (Original Photo, Aydemir, 2022)

Figure 15. Building materials in the traditional houses of Hisarardı Village (Original Photo, Aydemir, 2022)

The total number of traditional houses in the village is 462 and 66% of them are usable and in good condition, 28% are at moderate level, and %6 are destroyed or poor level (Figure 16).

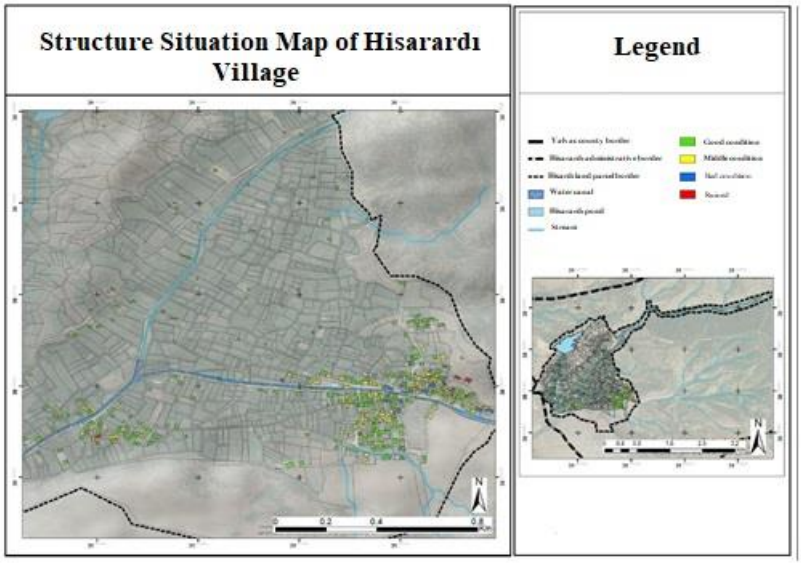


Figure 16. Structures situation in Hisarardı Village (Aydemir, 2022)

63% of the traditional houses are two-storey, 35% are single-storey and 10% are 3-storey buildings. In the preliminary interviews, it was stated that the former three-story buildings were converted into two-story buildings as a result of damage and destruction due to the natural conditions of the settlement over time (Figure 17).

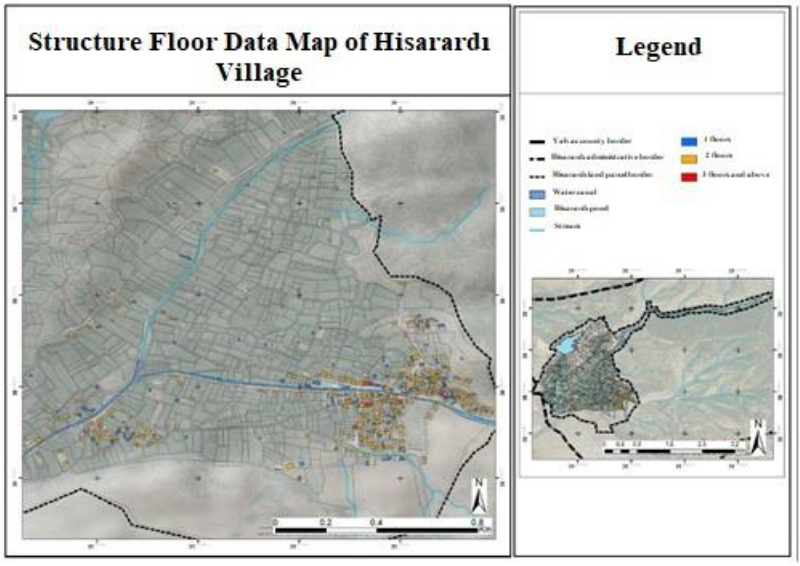


Figure 17. The number of storeys of the existing structures in Hisarardı Village (Aydemir, 2022)

d) Spatial values

d.1. Current land use status*:* The village was established on the foothills of the Sultan Mountains and it was determined that it has bare or grass-covered land surfaces (48,16%) due to excessive slope and elevation. 22,48% red pine forests, 11,74% cedar forests, 6,11% agricultural areas are observed. The area covered by the village settlement constitutes 0,54% of the total area. In addition, 1st class agricultural lands cover 6,11% of the total area.

There is one primary school in Hisarardı village, the school building is in good condition and has a large garden. However, the school is not active and has been closed. Village children are educated in schools in Yalvaç centre. Health services are provided by doctors and nurses who visit the settlement every Thursday. People in the settlement benefit from state

hospitals in Yalvaç or Isparta. There is a mosque, cemetery, fountain, masjid, Quran Course building, and village mansion in the centre where the houses are clustered. The village mansion, which is a mudbrick structure, has been renovated and can provide accommodation for visitors. The village is a very poor settlement in terms of trade. Young and old men living in the settlement spend most of their time in the village coffee house in summer and winter (Figure 18).

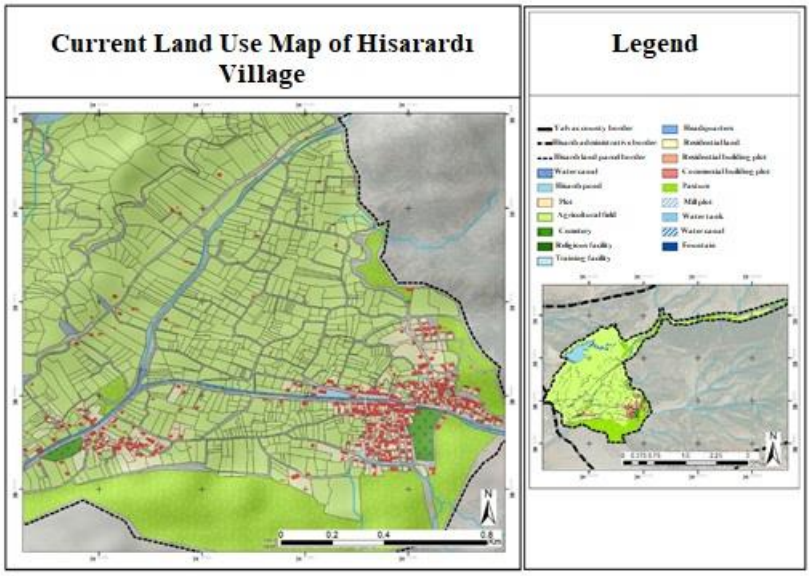


Figure 18. Current land use map of Hisarardı Village (Aydemir, 2022)

d.2. Transportation status: The village is 84 km to the Isparta city centre and 3 km to the Yalvaç district centre. There are road connections to Konya, Akşehir, Senirkent, and neighboring settlements. The settlement is connected to Yalvaç district centre by an asphalt road. This road is also the main road axis of the settlement and divides the settlement into two north and south and there is a water channel parallel to the road. This water canal

divides the settlement into two parts and bridges were built from the main points to reach the houses in the north of the village. The roads within the settlement area are generally paved with cobblestones, while in other places they are dirt roads (Figure 19).

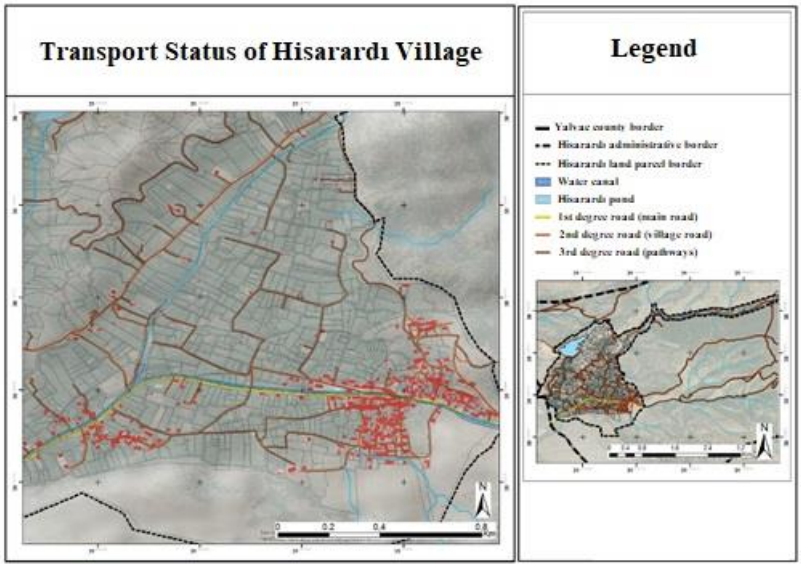


Figure 19. Transport status of Hisarardı Village (Aydemir, 2022)

***e) Political and famous people*:** The prominent and well-known person of Hisarardı Village is H. İbrahim Yalvaci. H. Ibrahim Yalvaci, who was born in Hisarardı Village, lived from 1814 to 1876 and was an Ottoman scholar known for his personality, his works and works, and his translations of poems from Arabic. He was nicknamed "Iẖbâr billezî" because of his Risāla fī bābi'l-iẖbâr bi'lleẕî. Ibrāhim Effendi is buried today in the village mosque (Figure 20).

H. Ibrahim Yalvaci cemeter

Signboard showing the graveyard of H. İbrahim Yalvaci in Hisarardı Village

Figure 20. H. Ibrahim Yalvaci's Tomb and artifact sample (Original, 2023) (Aydemir, 2022)

f) Historical and archaeological values: Located between Yalvaç city centre and Hisarardı village, Pisidia Antiokheia Ancient City and Temple of Men are considered the most important cultural heritage value.

f.1. Pisidia Antiokhela Ancient City: The ancient city was built on a sloping and partly rocky land. Hisarardı Road passes to the north and west and Antiochos (Hisarardı Stream) passes to the southeast. The city, which can be defined as a trapezoidal plan, has building remains belonging to the Roman and Byzantine Periods. The excavations (1914-1924) and surveys (1982-1983) completely identified the places where the city walls passed. The main entrance gate of the city is located in the west. In the north of the city, there are remains of structures such as Aqueducts, Nympheum, Bath, Palestra. In the centre are the Theatre, Tiberius Area, Propylon, and the Temple of Augustus. The places where St. Paulus visited and spread Christianity were accepted as pilgrimage centres. For this reason, the Church of St. Paul in Pisidia Antioch is also one of the pilgrimage centres. Today, many foreign tourists belonging to the Orthodox sect fulfil their

pilgrimage duties by performing rituals here. (Isparta Provincial Dıırectorate of Culture and Tourism, 2023)

f.2. Temple of Men (Men Sanctuary): The sanctuary was built in the name of "Men, the Moon God" and dates back to the 4th century BC. The hills and skirts of the area consist of many buildings. The Temple of Men is located on the highest hill in the south. The temple was built on a platform with many stairs. There is a Temenos Wall surrounding the temple. To the north and east of the Sanctuary of Men are the remains of some houses and to the far north are the remains of a stadium. There are also the remains of a small temple and andron on a certain elevation a little further east. There are also the remains of a Byzantine church on the north side of the sanctuary (Türkiye Culture Portal, 2023).

In addition, the biggest historical value of Hisarardı village within the plan boundaries is the aqueducts built to carry water to the city of Antioch in the Roman Age. These aqueducts, which are connected to the Suçıkan spring of the settlement, are approximately 10 km long. Today, some of them have survived (T.C. Ministry of Culture and Tourism, 2023) (Figure 21). In addition, it was determined that historical materials and objects from the ancient city were used to decorate the village settlement buildings (Figure 22).

Figure 21. Aqueducts built for the Roman City of Antioch (Original, 2023) (Aydemir, 2022)

Figure 22. Historical objects and materials belonging to the ancient city used in Village Buildings (Aydemir, 2022)

3.2.2. Intangible cultural values

a) Traditions and customs*:* The same traditions and customs of the Yalvaç region are also found in the village. The circumcision wedding, one of the most deeply rooted traditions of the society, is usually held on Sundays in the village. The day before (on Saturday), a drum is brought in front of the family's house at noon, games are played and money and gifts are given to the circumcised child. The next day, the people of the village go to the house of the family where the circumcision will take place at around noon, food is eaten and games are played with drums. In the afternoon the child is circumcised. The circumcised child and his friends play a game called "çörek kapma" (Şenol, 2022).

a.1. Wedding*:* If we list the traditions in the custom of marriage, firstly there is the ceremony of "asking for a girl". The ceremony of asking for a girl is to get the approval of the families of the individuals who will marry. The party who goes to ask for a girl does not respond immediately and the girl is not given in the first ceremony. If the family approves of the second

girl's request ceremony, the girl is given. Weddings are usually held on Sundays. When permission for the wedding is obtained, the parties go to the hammam on Wednesday, the girl's side on Wednesday, and the boy's side on Thursday. On Thursday, "henna night" is held on the girl's side. On the henna night, henna is burnt on the girl to be married and her friends and laments called "girl caress" are sung. On Friday, the drummer comes, and all the young people of the village play games until the evening. On Saturday, relatives from Yalvaç and other provinces come and the wedding continues until late. The wedding ends after the song "Play Cezayiri" is played. On Sunday at dawn, the men's side plays games with drums, and food is distributed. Afterward, the horse is decorated to take the bride and goes to the girl's house. The ceremony of "taking her out of the girl's house" is performed. The girl, who is put on the horse, is taken to the male side by singing the hymn "Even the Moon, even the Sun". As the girl enters the house, cookies and coins are thrown on her head (Şenol, 2022).

a.2. Hıdırellez: It is the celebration of "Hıdırellez", which is known as "the beginning of the summer period", starting on 6 May, which is considered the end of winter, and continuing until 8 November. On the day of Hıdırellez, the food made by the women of the village was gathered at the place where the celebration was held and eaten, kites were flown and swings were ridden (Şenol, 2022).

b. Art and literary values: Sports and art activities: In 1961 the play "Köroğlu" was performed. The second play "Justice of the Conqueror's era" and "Atak Ali" plays were performed in 1965. "Wrestling", "football", "horse riding" and "hunting" were among the most popular sports activities

in the village (Şenol, 2022). However, due to the migration in the village, sports and art activities no longer take place.

c. Dishes for gastronomy and food purposes: Traditional food culture in Türkiye society is a combination and result of natural and cultural lifestyles with regional differences. The richness and diversity of traditional food in various regions of Türkiye can also be seen in Yalvaç's traditional food (Öncü, 2011). Gastronomy values (Local Cuisine) of the Yalvaç District were examined in 7 different categories. Meat and Dough Meals, Soups, Salad Types, Vegetable food, Beverages (Non-Alcoholic), Desserts (Öncü & Gül, 2022). The local cuisine in Hisarardı village is the same as Yalvaç Cuisine. "Keşkek, Hamırsız, Pastırma, Kesmik Baklava, Sülüklü Soup, Bean Boranası, Bulamaç (Slurry) Soup, Ovmaç Soup, Yufka Katmeri, etc." are the main local specialties (Öğe, 2022).

3.3. Survey Study on Local Landscape Identity Values of Hisarardı Village

A total of 23 households (n: 58 people) were surveyed for the natural and cultural landscape identity values of Hisarardı village. In the survey, 54,3% of the participants were women and 45,7% were men. While 60% of the participants are in the 36-65 age group, 31,4% of them are over 65 years old. 68,6% of the participants reside in Hisarardı village, 33,8% in other villages, and 8,6% in Yalvaç Centre.

Table 9. Percentage prioritisation and opinions of local identity values of Hisarardı Village

Local Identity Values of Hisarardı Village	Disagree +Strongly Disagree	Partly Agree	Agree+ Strongly Agree	Percentage of Accepted Identity Value Prioritisation (%)
The village is a calm and quiet place	0	0	58	100,0
Presence of Original Traditional Houses	2	0	56	96,6
Good social relations (Imece Culture)	0	2	56	96,6
The village is Close to Yalvaç Centre, Antiokheia Ancient City, and Temple of Men	1	2	55	94,8
Productive agricultural areas and product diversity	1	3	54	93,1
Having H. Ibrahim Yalvaci graveyard	3	3	52	89,7
Presence of pasture areas for animals	9	5	44	75,9
The presence of water resources such as pond, Suçıkan, and Killet streams in the village	45	5	8	13,8
Having a fish farm	54	0	4	6,9

According to the survey results, 100% of the residents of Hisarardı Village accept that the village is a calm and quiet place. Due to the high migration from the village, this feature can be considered the most important identity value that can be used within the scope of tourism in accordance with the "slow city title" and "slow food" concept of Yalvaç City.

Traditional houses specific to the village were identified as an important identity value by 96,6%. However, as a result of the preliminary interviews

and observations, it was determined that the traditional houses have become idle due to the lack of necessary maintenance and repair work and the lack of ownership. It will be of great benefit to utilize these houses within the scope of tourism to transfer them to future generations, protect them as heritage values, and keep them alive.

The imece culture, which has been going on in the village for a long time, has been identified as an important identity value by 96,6%. Due to the middle-aged and elderly population in the village, it is an important value that strong social ties and traditions such as helping each other, uniting and solving problems, etc. continue.

The fact that the village is 3 km away from Yalvaç city centre and that the village is very close to the ancient city of Psidia and the Temple of Men was accepted by 94,8% of the village residents. Therefore, it should be accepted as an important identity value in terms of tourism. It is possible to associate the village with cultural heritage value

The fact that the agricultural areas close to the village settlement are fertile and the variety of products is high is accepted as an important identity value by 93,1% of the village residents. The cultivation of various products specific to the village, especially walnut and chestnut cultivation, is an important wealth. It is possible to associate it with gastronomy tourism and the slow food concept. Due to the migration in the village, agriculture and animal husbandry, which are the main sources of livelihood in the village, have fallen to the second plan. Especially due to the increasing elderly population in the village, agricultural labour has become an activity carried out in the garden of one's own house. Another problem is the sale of

agricultural lands that are no longer used for agricultural activities and new constructions on these lands have the risk of damaging both natural and cultural landscape identity.

H. İbrahim Yalvaci, a prominent and famous personality of Hisarardı Village, was identified as an identity value by the residents of the village (89,7%). In addition, the fact that the graveyard is located in the village is also seen as an important value. However, the fact that such a personality is not promoted and that the graveyard remains neglected today is seen as an important deficiency.

4. Conclusion and Suggestions

Landscape identity values of rural settlements represent the structure formed by the natural structure together with the cultural structure over time (Erdem Kaya, 2020). Landscape is a structure formed by daily life, production, land use, and human relations as a result of human interaction with nature over time (Köse & Şahin, 2017). In this respect, it is possible to protect, improve, and ensure the sustainability of the landscape with good spatial planning. To achieve this, it is necessary to identify the natural and cultural landscape values that constitute the landscape identity values of a place and to develop spatial, social, and economic strategies and policies by associating them with the relevant sectors (agriculture, animal husbandry, tourism, etc.) for the future.

Yalvaç region is an important destination area in terms of cultural tourism due to its tangible and intangible riches such as historical and archaeological sites, being an important pilgrimage centre for Christianity and having high potential in terms of faith tourism (Pisidia Ancient City,

Temple of Men and Saint Paul Road), natural and cultural values, traditional handicrafts, local food culture and having the title of Cittaslow (Kılınç et al., 2019; Öncü & Gül, 2022).

In this context, Hisarardı village, which is described as the backyard of Yalvaç city, is located between the ancient city of Psidia and the Temple of Men, has natural and cultural landscape values and can play an important role in the diversification and capacity building of Yalvaç cultural tourism.

However, the most important problem in Hisarardı Village is the continuation of the migration process and the gradual decrease in the population due to many reasons such as better living conditions, education, health, employment, etc. every year. Because of the high tendency to migrate out of the village, the increase in the elderly population and the decrease in the youth negatively affect the village life. In particular, the emptying and idling of registered and locally specific houses, the decrease or end of agriculture and livestock production, the decrease in all kinds of services and investments, the decrease and forgetting of existing traditions and customs, etc. cause problems. As a result, the natural and cultural landscape identity values of the village as a whole are also damaged and lost.

Actionable recommendations for the protection and sustainability of the natural and cultural landscape identity values of Hisarardı Village can be listed as follows.

- The natural and cultural landscape values of Hisarardı Village, which is described as the backyard of Yalvaç City, should be taken

into consideration in the planning and management of Yalvaç cultural tourism and should be organized holistically.

- In order to develop Hisarardı Village in terms of socio-economic and environmental aspects, strategies should be developed in such a way that the tourism and agriculture sectors undertake a locomotive role. "Yalvaç Tourism Corridor" should be declared between Hisardı village and the city centre, where the road passing through the ancient city of Pisidia and the Temple of Men meets, and its physical connection with each other should be established.
- Since it is the same as Yalvaç gastronomy culture, the village should be given the concept and image of a calm city and slow nutrition.
- Maintenance, repair, and renovation works should be carried out for the traditional houses, which have become idle and ruined, and the empty traditional houses should be restored and restored to cultural tourism by giving different functionalities (pension, cafe, local restaurant, museum, bakery, etc.) and should be encouraged.
- The typologies of the local housing architecture should be determined by scientific studies and survey studies should be carried out.
- New constructions contrary to the local architectural typology of the village and the use of reinforced concrete materials other than traditional building materials should not be allowed. The sale of land which is first-degree agricultural land and opening it for construction should be prevented. On the sold lands, construction contrary to the architectural identity of the village should not be allowed.

- Scientific researches should be conducted and written and visual materials should be produced to introduce the personality and works of H. İbrahim Yalvaci. His graveyard should be opened to visitors by carrying out necessary maintenance, repair, and landscaping work.
- Public areas such as squares, children's playgrounds, streets, street equipment, and furniture, etc., which are common areas of the village, should be reconsidered with spatial landscape planning and design studies and should be put into practice by associating them with the identity of the village.
- Landscape equipment elements (dustbins, street lighting, signs, etc.) in the village should be renewed with materials compatible with the character of the village.
- Maintenance, repair, and renovation of existing roads in and around the village should be carried out and the use of natural granite stone should be preferred.
- The existing water resources of the village should be protected and water usage rights should be improved.
- Monumental chestnut and walnut trees should be identified and registration works should be carried out.
- The accumulation of materials that cause pollution such as visual and odor pollution on the roadsides should be prevented.

In conclusion, the human factor should be well evaluated to turn Hisarardı village into a living village. However, to protect the natural and cultural landscape identity values, to ensure sustainability and development, it will

be possible to make integrated planning and investment policies with the tourism and agriculture sectors specific to the locality.

Acknowledgements and Information Note

This article is the Sustainable Village Design Guidelines Model, completed in 2022, at Süleyman Demirel University, Institute of Science, Department of Architecture, Planning and Design; It was produced from a part of his doctoral thesis named "The Example of Hisarardı Village". His doctoral thesis was supported within the scope of Süleyman Demirel University BAP (the project numbered SDU-BAP / FDK-2020-7491 and named "*Sustainable Village Design Guides Model; Hisarardı Village Example"*). 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. There is no conflict of interest.

References

Aydemir, Ç. (2022). *Sürdürülebilir köy tasarım rehberi modeli; Hisarardı Köyü örneği.* Doktora Tezi, Süleyman Demirel Üniversitesi, Fen Bilimleri Enstitüsü, Isparta.

Aydemir, Ç. & Gül, A. (2023). Köylerin mekânsal planlama ve tasarım süreçlerinin mevcut mevzuata göre irdelenmesi. *Planlama Dergisi.* 33(2), 205-217.

Climate-data.org. (2023). Yalvaç iklim. Access Date: 10.06.23, https://en.climate-data.org/asia/turkey/isparta/yalvac-15762/

Duxbury, N., & Campbell, H. (2011). Developing and revitalizing rural communities through arts and culture", *Small Cities Imprint*, 3 (1), s.111-122

Erdem Kaya, M. (2020). Kırsal alanı peyzaj kimliği ile okumak. *Müzeleştirilen Köylerden Çağdaş Mimariye Kırsalda*, 52.

Erdem, M. (2012). Kırsal yerleşim peyzaj kimlik özelliklerinin tespiti, korunması ve geliştirilmesine yönelik değerlendirme matrisi önerisi. Doktora Tezi, Fen Bilimleri Enstitüsü, İstanbul.

Görgün, E. K. & Yörür, N. (2018). Kırsal yerleşmelerde özgün dokunun korunmasında bir araç olarak köy tasarım rehberleri: Ödemiş Bademli örneği. *Kültür Envanteri,* 17 (17).

Gül, A., Bostan, Ç. & Akın, T. (2019). Kırsal yerleşimlerde yerel kimlik ve mekânsal tasarımın önemi. III. Congress of International Applied Social Sciences Uluslararası Uygulamalı Sosyal Bilimler Kongresi C-İASOS 2019. ISBN: 978-606-94423-1-9, 04th-06th April 2019, p.377-388. Çeşme- İzmir.

Isparta Provincial Directorate of Culture and Tourism, (2023). Access address: https://isparta.ktb.gov.tr/Eklenti/9094,envanter2-2pdf. pdf?*0* Access date: 20.06.2023.

Kabataş, E. & Kiper, T. (2021). Kırsal yerleşimlerin doğal ve sosyo-kültürel peyzaj değerlerinin belirlenmesi: Kırklareli Kocayazı ve Kula Köyü örneği. *Journal of the Institute of Science and Technology*, *11*(3), 2328-2341.

Kılınç, O., Ongun, U. & Kılınç, U. (2019). Sakin şehir, inanç ve kırsal turizm üçgeni: Yalvaç İlçesi'nin turizm potansiyeline yönelik SWOT analizi. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *24*(2), 199-213

Köse, Y. & Şahin, Ş. (2017). Bir kırsal yerleşim olarak Evciler Mahallesi peyzaj özellikleri. *Ankara Araştırmaları Dergisi, 5*(2), 257-272.

Öğdül, H. (2013). Kırsal mekân politikalarında yeni dönem. *Mimarlık*.371. 44-48. Access Date: (02.02.2022): http://www.mimarlikdergisi.com/ index.cfm?sayfa=mimarlik& DergiSayi=385&RecID=3153

Öğe, A. (2022). Yalvaç Hisarardı köyü sakini, (Sözlü görüşme).

Öncü, F. & Gül, A. (2022). Gastronomy tourism and culinary culture of Yalvaç (Isparta) region. In H. B. Türker, & A. Gül. (Eds.) Architectural Sciences and Urban Agriculture (398-441). ISBN:978-625-8213-84-3. Ankara: Iksad Publications.

Öncü, F. (2011). *Local Yalvaç Dishes*. Yalvaç: Yalvaç Municipality Culture.

Özçelik, H. (2023). Isparta ilinin önemli bitki alanları ve özellikleri: Important plant areas and their characteristics in Isparta Province. *Journal of Protected Areas Research, 2*(1), 26-62.

Şenol, A. (2022). Yalvaç Hisarardı köyü sakini, (Sözlü görüşme).

T.C. Ministry of Culture and Tourism, (2023). Isparta Provincial Directorate of Culture and Tourism. Access address: Isparta (ktb.gov.tr). Accessed on: 18.06.23.

Topçuoğlu, S. & Kiper, T. (2020). Kırsal alanlarda yerel kimlik özelliklerinin belirlenmesi: Tekirdağ ili Saray ilçesi örneği. *Journal of Forestry, 16*(1):73-104

TÜİK. (2022). General Population Censuses. Access date: 02.06.22. https://biruni.tuik.gov.tr/nufusmenuapp/menu.zul.

Türkiye Culture Portal. (2023). Access date: 02.06.2023. https://www.kulturportali.gov.tr/turkiye/isparta/gezilecekyer/pisidia-antiokheia

Tütengil, C. O. (1979). *100 Soruda Kırsal Türkiye'nin Yapısı ve Sorunları* (Vol.45). Gerçek Yayinevi.

Yenigül, S. B. (2017). Kırsal kalkınma politikalarında yeni yaklaşımlar ve bu yaklaşımların Türkiye'nin kırsal kalkınma politikalarına etkisi. *Planlama Dergisi, 27*(1), 16-25

Prof. Dr. Atila GÜL

E-mail: atilagul@sdu.edu.tr

Educational Status

Undergraduate 1: Istanbul University, Faculty of Forestry, Department of Forestry Engineering (1986).

Undergraduate 2: Anadolu University Education Faculty of Business Administration, Department of Business Administration (2020).

Master: Yıldız Technical University, Science Institute, Landscape Planning (1988).

Ph.D.: Ege University, Science Institute, Field Crops (1998).

Associate Professor: UAK Landscape Architecture (2008).

Professor in Landscape Architecture (2013-..)

Professional experience:

• Süleyman Demirel University, Faculty of Architecture, Department of Landscape Architecture (2014-……...),

• Süleyman Demirel University, Faculty of Forestry, Department of Landscape Architecture (1999- 2014),

• Researcher, Aegean Forestry Research Directorate, İzmir (1993-1999).

Dr. Çağla AYDEMİR

E-mail: caglabostan15@gmail.com

Educational Status

License: 2010-2015 Süleyman Demirler University, Faculty of Architecture, Landscape Architecture Department

Degree: 2015-2018 Süleyman Demirler University, Faculty of Architecture, Landscape Architecture Department

Doctorate: 2018-2022 Süleyman Demirler University, Faculty of Architecture, Architecture, Planning and Design Department

Professional experience: In 2014-15 (Undergraduate Term), she carried out studies with the support of TUBITAK 2209 University Students Domestic Research Projects Support Program. Then, in 2015-16 (Graduate Term), she worked as a TUBITAK 1001 project assistant named "Culturing Some Plant Species Belonging to the Ballıbabagiller (Lamiaceae) Family in the Lakes Region and

Determining Their Use in Landscape Architecture". In 2016-17, she took classes (Land Arrangement, Climate Information and Landscape Architecture, Environmental Impact and Evaluation, Materials Science, Plant Design, Project I –IV) as a contracted lecturer at SDU Vocational School, SDU Faculty of Architecture, Department of Landscape Architecture. SDU YÖK 100/2000 Architecture, Planning, and Design received a PhD scholarship in the she. She is currently working as a contracted lecturer at SDU, Faculty of Architecture, Department of Landscape Architecture.

Architectural Sciences and Cultural Heritage
Historic Matter

CHAPTER-15

Comparison of Three Educational Buildings Dated Between 1914-1951 in Kayseri City Center

PhD. Candidate Seda IŞILDAK [1]

[1]Erciyes University, Faculty of Architecture, Department of Architecture, Kayseri/Türkiye.
ORCID: 0000-0001-6636-8973
E-mail: sedakucukkatrc@gmail.com

Citation: Işıldak, S. (2023). Comparison of Three Educational Structures Dated Between 1914-1951 in Kayseri City Center. Günçe, K. & Kozlu, H. (Eds.). **Architectural Sciences and Cultural Heritage – Historic Matter.** 2023, Chapter: 15, 479-517. ISBN: 978-625-367-258-4. Iksad Publications.

1. Introduction

The aim and scope of this study revolve around the development of modern education structures, starting from the late Ottoman Empire and continuing into the Republic era, as conveyed through three educational buildings in Kayseri. By investigating the state-focused approaches in the architectural formation of educational buildings during the Republic period, the study explores the historical significance of the subject. The goal is to provide a perspective on the existence of neoclassical, 1st National Architecture, and 2nd National Architecture styles, reflecting modernism in the Anatolia city of Kayseri. Despite being dated to the first half of the 20th century, these structures present three distinct architectural potentials. The study employs comparative analysis to reveal both the similarities and differences among these buildings. The architectural features of the three structures are evaluated comparatively through historical and contemporary photographs and plans, shedding light on the architectural style of the period. Additionally, architectural analyses will be employed to identify the transformations these buildings have undergone since their construction to the present day. The current state of the buildings will be documented on plans to understand their original forms and provide insights. The interpretations of reinforced concrete in local architecture are thoroughly examined, highlighting the significance of details on both macro and micro scales.

Efforts to regulate and develop the structure of educational institutions, which can serve as a source for the educational buildings of the Republic

era, started as early as the beginning of the 1700s in the Ottoman Empire and continued until the First World War. The establishment of "Hendesehane" in Istanbul, dated back to 1734 by Mahmud I, and its commencement of contemporary education in 1775 as "Mühendishâne-i Bahrî-i Hümâyûn", the first military naval school; "Mühendishâne-i Berrî-i Hümâyun", founded in Istanbul in 1795 to train artillery and fortification officers (military engineers); "Mekteb-i Harbiye", established in 1835 to train officers; and "Menşe-i Küttâb-ı Askerî", established to train military clerks, all contributed to the modernization of the Ottoman military. The most significant change during this period was observed in the field of health, with the establishment of "Tıbhâne-i Amire" in 1827 to meet the medical needs of the army (Taştekin, 2019). Until the first half of the 19th century, education was predominantly provided through (elementary schools) and madrasahs. In the second half of the 19th century, with the reforms introduced, along with primary and middle schools, various vocational schools started operating (Satoğlu, 2002). The schools, i.e., "iptida mektebi, rüşdiye mektebi, and idadi", corresponded to today's elementary, middle, and high schools, respectively, in the Ottoman era. Thus, the current educational system in Turkey is based on the late Ottoman period (Özbek, 2013). After the proclamation of the Republic in 1923, new steps were taken in a manner that supported the modern ideology of the new state through administrative and legal regulations, emphasizing progressiveness (Bozaslan, 2015).

During the early years of the Republic, the Ministries of Nafia and Maarif were responsible for the project control processes of public and

monumental buildings, including educational structures. They developed some rules and recommendations concerning the architectural features of educational buildings. Within the context of modernization efforts, some foreign architects involved in the urban development of Turkey during the Republic era participated in the design of educational buildings. Ernst Egli, serving as a consulting architect in the Ministry of Maarif, played a guiding role in the designs of educational buildings. Egli and the foreign and local inspection board under his leadership diligently supervised the construction processes from the project stage to the building phase to ensure accurate implementation. The understanding embraced by the Ministry of Maarif emphasized the significance of questioning the applicability of local references in design. By utilizing local architectural elements and materials, the ministry encouraged the creation of buildings that draw from urban architecture and depart from a standardized design approach. Additionally, the architectural styles employed in educational buildings during the late Ottoman era transformed and evolved into different design concepts during the Republic era. Thus, unique designs emerged in Anatolia cities, allowing for diversification based on functional needs (Tonguç, 1947; Akçaözoğlu, 2019). The Ministry of Maarif, established in 1926, gained full functionality in the 1930s and, in previous years, utilized plan types employed by the Ottoman Empire (Kul, 2011).

The projects selected by the Ministry of Maarif are subject to variation based on the socio-economic structure of the area where they will be constructed. For instance, in villages with limited resources, some school projects have been built as single-story structures, and they lack the

grandiosity in terms of architectural features (Kul, 2011). In the 1926 law, constructing schools outside the plans sent by the Ministry of Maarif was prohibited. In this regard, the Ministry of Maarif required its branches to select appropriate projects from a wide range of prototype designs it had developed and tailor them to the specific project areas (Url-2; Atıcı, 2021). The Ministry of Maarif's branches are responsible for choosing the most suitable prototype project for their designated areas. Selected elementary school projects in towns and cities were constructed by provincial administrations, with the construction costs funded by taxes collected from the public. However, in village elementary schools, according to Article 12 of the 1924 Village Law, villagers were expected to provide financial support for the construction expenses and actively participate in the construction process. During this period, the increase in literacy rates paralleled the construction of elementary school buildings in settlements. To avoid errors during the construction phase, the Ministry of Maarif provided detailed architectural projects, including material combinations, to prevent misapplications (Kul, 2011).

The projects initiated by the Ministry of Maarif in 1927 remained unfinished due to Egli's death in 1938. These projects were later completed by Şinasi Lügal (Demir, 2008; Akçaözoğlu, 2019).

The Ministry of Nafia, which started its activities in 1934, developed recommendations similar to prototype designs, which were applied to rural and urban areas. Diverging from the Ministry of Maarif, Nafia showed a lack of interest in selecting unique designs with local architectural elements specific to the regions where schools would be constructed

(Bozdoğan, 2002; Özbek, 2019). The Ministry of Nafia avoided prototypical projects only in cities like Istanbul and Ankara, allowing the possibility of seeing the same educational buildings in other Anatolia cities. As a result, while the prototype projects of the Ministry of Maarif were mostly limited to rural areas due to financial constraints, those of the Ministry of Nafia encompassed a broader area (Bozdoğan, 2002). Early Republic era prototype projects were observed to be similar to the Late Ottoman period projects. Buildings with "I, H, U and A" forms, commonly achieved through orthogonal intersections, were frequently seen in cities (Kul, 2011; Akçaözoğlu, 2019).

For example, the Gazipaşa Elementary School, which is similar to the Ankara Gazi and Latife schools constructed in 1924 and now known as Ulus Primary Council Anatolia Imam Hatip Elementary School, exhibits plan and facade characteristics highly reminiscent of the Gazipaşa Elementary School investigated in this study. The architect of this building, Mukbil Kemal Taş, designed it as the first prototype elementary school project in the Republic era, contributing to the architectural literature of the period (Yaldız, 2018). The resemblance of these two buildings indicates the continuity and development of Ottoman architecture. Another example is the Gazipaşa Elementary School, which retained the "H" plan type, but with a different plan and facade arrangement, despite being constructed 33 years after the İmam Hatip High School building. This plan type is frequently encountered in Anatolia cities. In these buildings, entrances are generally located on the long sides of the structures. They are generally two-story buildings with symmetrical

compositions. The influence of modernism, starting with the 1st National Architecture Movement, is evident in the design of long eaves structures and architectural elements such as rhythmic windows, reflecting a turn towards modern architecture (Akçaözoğlu, 2019).

With the adjustments made at the beginning of the Republic era, the educational buildings constructed during this period can be characterized as transitional structures between Neoclassical and modern styles. The impact of the modernism movement continued to grow in the early Republic era and beyond. Education structures blend local materials with contemporary architecture, and they have left their mark on the urban memory. Various architectural experiments were conducted, particularly in urban areas, leading to the construction of buildings characteristic of the era. A significant part of the early Republic era architecture that emerged around the periphery of Kayseri comprises educational structures.

2. Comparison of Old-Current Conditions of Buildings

The three historical buildings, representing the architectural styles of their respective periods, have been generally well-preserved and hold significance due to their references to the past. They date back to the first half of the 20th century, specifically 1918, 1938, and 1951, respectively, showcasing original features, being situated in the city center, and catering to different educational levels (elementary school and high school), allowing for meaningful comparisons. Therefore, the architectural choices in these buildings will be analyzed to understand how the characteristics and trends of each period have been reflected in them. While additions were made to serve the purpose of the building on the rear facade of

Gazipaşa Elementary School and the Girls' Institute building, the original plan and facade layout of the Anatolia İmam Hatip High School have been preserved.

Photographs from the early period have been found for these three buildings representing the first half of the 20th century. When examining the black and white photograph of Gazipaşa Elementary School of unknown date and the outdoor photograph from 2009, it is observed that the general appearance of the building has been well-maintained. In the old photograph, it can be seen that the windows on the western facade, which were later closed off, remain closed even today. In the 2009 photograph, high plinths were added along the facade walls to protect the facade stones, although these non-original details have since been removed. Additionally, the iron railings visible in the 2009 photograph, not present in the old photograph, have been rightfully removed in modern times to preserve authenticity (Figure 1,2).

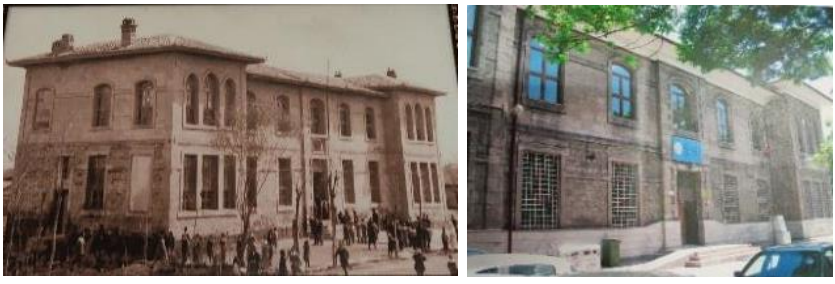


Figure 1-2. Gazipaşa Primary School old period photos, respectively ?-2009, (“Koruma Kurul” archive)

In the example of the Anatolia İmam Hatip High School, the black and white photographs show that the general appearance of the building has

been well-preserved. However, in a color photograph from 2000 (Figure 3,4), it is observed that the facade stones on the first floor of the building were painted (Figure 5). These paints have been removed in the present time to restore the original state of the building. Unfortunately, in both the Anatolia İmam Hatip High School and the Girls' Institute examples, incorrect practices have been observed, such as replacing the windows with PVC windows and not renovating them in accordance with their original size, leading to deviations from the authentic design.

Figure 3-4. Anatolia Imam Hatip High School old period photos (Url-1)

Figure 5. Anatolia İmam Hatip High School old north facade photo, before 2000 (Url-1)

In the case of the Girls' Institute building, it is evident that the overall exterior appearance has been preserved, but the negative impact of

painting all facades in pink color can be observed. The addition of non-original spaces to the eastern (back) facade is not present in the old photograph (Figure 6). This additional space is visible from the northern facade and harms the original state of the building. Such modifications are detrimental to the authenticity of the structure.

Figure 6. Girls' Institute old north facade photo, before 2000 (Nihat Karakaya's archive, Işık, 2010)

3. The Importance of Three Educational Buildings Dated to 1914-1951 in Kayseri City Center

During the early years of the Republic, the traces of the modernism movement can be seen in the construction of educational buildings. This influence continued to grow throughout the early Republic era and subsequent periods, as these structures merged local materials with contemporary architecture, becoming integral parts of the urban memory as public spaces. In this context, three buildings with diverse and rich architectural experiments located in the central region of Kayseri will be examined.

3.1. Gazipaşa Elementary School

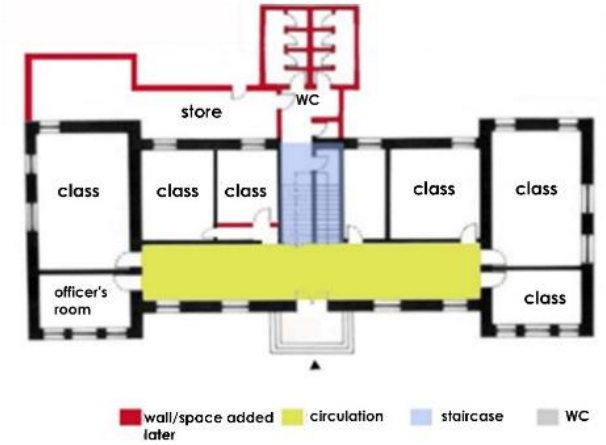
Among the researched buildings, Gazipaşa Elementary School stands out as the oldest and the only Ottoman-era structure. It was constructed between 1914 and 1918. Due to the wartime circumstances, the construction process was prolonged, and the building was not fully completed until 1918. It is known to have been used as a military hospital between 1918 and 1922 (Satoğlu, 2002). After serving this purpose, it began its primary function as an educational facility. Positioned in an urban location, facing the Osman Kavuncu Boulevard, Gazipaşa Elementary School is situated opposite another researched building, the Anatolia İmam Hatip High School, with its garden facing the boulevard (Figure 7), (Satoğlu, 2002).

Figure 7. Gazipasa Primary School location

3.1.1 - Plan features

Gazipaşa Elementary School, just like the Anatolia İmam Hatip High School, extends in an east-west direction parallel to the Osman Kavuncu Boulevard (Plan-1). The main entrance of the building is accessed through three-flight stairs and leads to a horizontal circulation space. Opposite the entrance, there is a two-flight staircase serving as a vertical circulation element. The building follows an "H" plan type, and its facade and layout are symmetrically designed with respect to the entrance axis. The circulation corridor has an "I" form and opens to the classrooms. The classrooms are arranged in three directions: east, west, and north. This arrangement ensures that the corridor receives natural light from the south facade, creating a spacious and well-lit atmosphere.

An additional reinforced concrete annex building houses the restrooms. The exact location of the original restroom space is not fully known. Access to the restroom area is provided through an under-stair passage. The restroom area and staircase are designed in an integrated manner, functioning as a cohesive core. Another addition to the building is a wall that was later added on the ground floor to convert the teachers' room into an interior space (Plan 1).



Plan 1. Gazipaşa Primary School ground floor plan (Satoğlu, 2002)

The building incorporates cut stone material in its exterior, while the structural system is made of reinforced concrete. The use of lemon-shaped beam flooring in the staircase is a characteristic detail commonly found in many buildings dating back to the 20th century, reflecting the architectural style of that period (Figure 8, 9). The two-winged, large-sized rectangular windows, like the staircase, also represent the architectural orientation of the era. The building's design ensures that each classroom has at least one window.

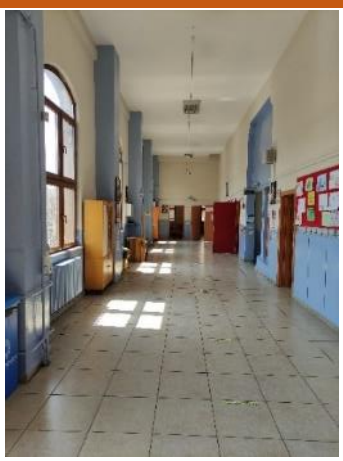
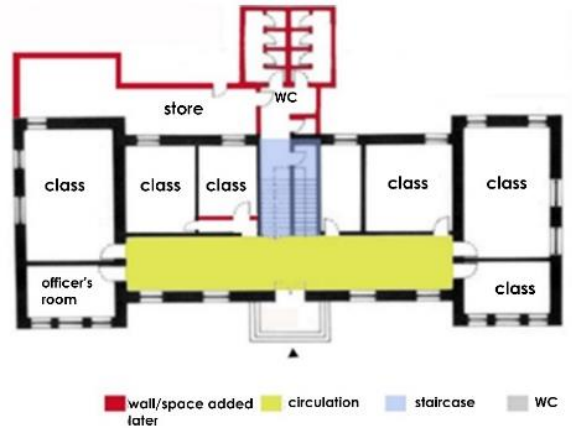



Figure 8. From the top floor to west view, **Figure 9.** Ground floor WC place

On the first-floor plan, a simple layout continues, and the general original configuration of the first floor has been preserved (Plan 2). According to oral accounts, the roof structure, which was originally supported by wooden beams, was replaced with reinforced concrete material during the building's restoration in 2005. It is also mentioned in oral sources that reinforced concrete columns were added later (Figure 11). The circulation space is still illuminated by large-sized windows on the first floor (Figure 12), continuing to enhance the building's aesthetic appearance towards the city. Additionally, the grid-like window arrangement reflects the traces of Neoclassical architecture.



Plan 2. Gazipaşa Primary School 1st floor plan (Satoğlu, 2002)

Figure 11. 1st floor west view

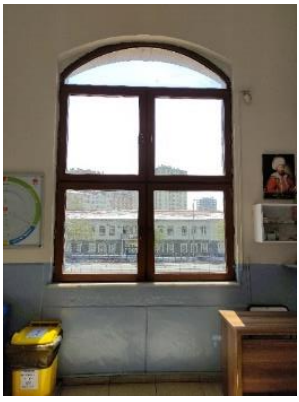


Figure 12. 1st floor window

3.1.2- Facade features

Gazipaşa Elementary School's facade design consists of two rows of windows. The vertical reference lines of the windows continue on the ground and first-floor facade sections. Additionally, the ground floor ceiling decoration extends as a horizontal band across the facade, creating divisions. The second-row windows are designed in a flattened arch form, reflecting the influences of the First National Architectural Movement.

Moreover, on the east and west sides of the building, facing the street, the windows are grouped into triplets with close proximity. This design choice of triplet windows can also be seen in Ottoman architecture, used by Mimar Sinan in structures such as Süleymaniye Mosque and Mihrimah Sultan Mosque. In these triplets, the middle window is larger compared to the side ones, creating an aesthetic balance on the facade. The ground floor windows of the school are rectangular in shape, and triplet window groups can also be observed on this facade.

Another characteristic of the period that stands out on the facade is the long eaves design, considered a contemporary interpretation of Turkish architecture and frequently encountered in buildings of the Republic era. While the Girls' Institute slightly protrudes from the body wall, the other two educational buildings prominently display the long eaves design. The original Gazipaşa Elementary School had a load-bearing structure made of cut stone with wooden beam roof structure, but today, all traces of the wooden skeleton are gone, and the restoration has been completed using reinforced concrete.

The south facade of Gazipaşa Elementary School, which serves as the entrance facade, also faces the city (Figure 13). Cut stone, a local material, dominates all facades. The windows are used in large dimensions throughout all facades, harmonizing proportionally with the long surface of the building. Grid-like arrangements are maintained in the railings of the ground floor windows. The long eaves encircling all facades add to the architectural richness. The west and east facades are symmetrically arranged. The north facade, just like the south facade, is interpreted as an

"H" plan type through the outward movement of the facade from both ends. However, a concrete WC area has been added later to this facade. Additionally, a one-story storage area, accessible from the garden, has been added as a reinforced concrete structure. These added elements significantly compromise the building's original facade appearance and overall architectural integrity (Figure 14). Furthermore, in the north facade, similar window arrangements as the south facade have been closed off later, resulting in further damage to the original appearance. The same situation can be observed on the east and west facades, where certain windows have also been closed off over time.

Figure 13. Gazipaşa Primary School south facade, **Figure 14.** Gazipaşa Primary School north facade

3.2. Anatolia Imam Hatip High School

The second structure examined within the scope of the research is Kayseri Anatolia Imam Hatip High School, dating back to the year 1951, located on the opposite side of Gazipaşa Elementary School, across Osman Kavuncu Boulevard. The mutual positions of the two educational buildings create coherence in the area. Both structures have their entrances

accessed from Osman Kavuncu Boulevard. Additionally, Anatolia Imam Hatip High School has a second entrance on the southern side, providing access from the garden. The garden has been expanded later to include new educational buildings, creating a more private and tranquil space for the student (Figure 15).

1-İmam Hatip high school
2-Gazipaşa primary school
3-İmamhatip secondary school
4-Old industrial area
5- Public education center
6- Lodging area
7-Melikgazi Security Directorate

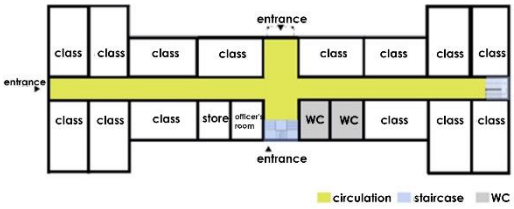
Figure 15. Anatolia İmam Hatip High School location

3.2.1. Plan features

The main entrance of Anatolia Imam Hatip High School faces north towards Osman Kavuncu Boulevard; however, this entrance is not actively used nowadays. Access to the building is provided from the garden on the south facade, and the entrance door is located under the stairs. Similar to Gazipaşa Elementary School, the facade and plan layout are symmetrically designed based on the entrance axis. The staircase reflects the architectural style of the era and has a 'U' shape (Plan 3), (Figure 16). The high-rise

section at the eastern end of the building has three floors and houses the classrooms. Vertical circulation between the floors in this section is provided by a two-arm staircase located adjacent to the eastern facade wall. The presence of three floors in this section resulted in variations in floor levels, and staircases were used for inter-floor transitions.

Like the other two examined examples, the plan layout follows a grid structure. The horizontal circulation space forms a 'plus' shape (Figure 17). Despite being constructed 33 years after Gazipaşa Elementary School, the expansion of the eastern and western ends of the plan in both the north and south directions and the choice of a two-arm staircase show similarities. While most spaces on the ground floor are used as classrooms, the first floor plan includes administrative areas in addition to classrooms. On the second floor plan, four spaces are also used as classrooms.



Plan 3. Kayseri Anatolia Imam Hatip High School ground floor plan

Figure 16. Ground floor stairs

Figure 17. Entrance hall

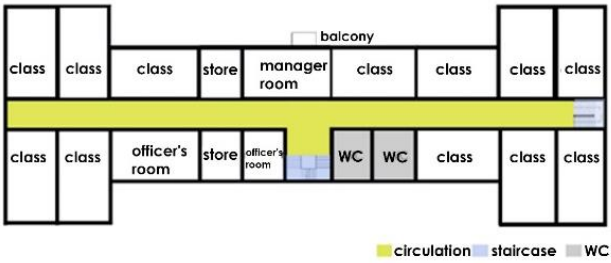
On the first floor plan, unlike the ground floor, there is a principal's office located above the entrance hall, which results in the circulation space having a 'T' shape (Plan 4). Additionally, this area includes a balcony. However, the larger size of the principal's office compared to other spaces and the positioning of the balcony opposite the staircase suggest that in the original design, the balcony space might have been accessible from the circulation area. Considering this, it is reminiscent of the practice of highlighting the traditional Turkish house typology known as "orta sofa" (central hall) plan by projecting a "cumba" (balcony) from it. Thus, the balcony space in the building can be interpreted as a derivative of the "orta sofa" plan typology adapted to 20th-century educational structures. Furthermore, the floor plan retains the arrangement of the staircase and toilet areas together, as seen in the ground floor. Unlike Gazipaşa Elementary School, the classroom spaces on the first floor have greater ceiling heights. The rhythmic arrangement of windows on the staircase walls continues, and a separate window group has not been created on the staircase.

The building exhibits a rhythmic arrangement of two rows of windows on all facades. In the three-story section, there is a three-row rhythmic window arrangement. The windows are designed in a rectangular form, smaller in size, and more closely spaced compared to Gazipaşa Elementary School. In the old photographs, it can be seen that the windows were originally designed as multi-panelled and equally divided wooden windows, commonly seen in the 1st and 2nd National architectural movement. However, the current PVC windows have deviated the building

from its original state. The long roof eaves observed on all facades of the Anatolia İmam Hatip High School, though not as long as those of Gazipaşa Elementary School, reflect the influence of the 1st National architectural movement by embracing the structure.

The original entrance facade of Anatolia İmam Hatip High School, which faces north, features concrete balcony slabs and round-sectioned concrete columns that represent contemporary architectural details. The balcony is used as an extension of the main entrance and also functions as a window opening to the cityscape. On the south facade, the entrance is defined by the addition of a canopy roof. The eastern part of the building is three-storied, resulting in two different roof levels. This dynamic creates movement on the facade. On the north facade, the arrangement of triple windows is intentionally interrupted, leaving a blank section on the facade. On the south facade, the triple window arrangement is continued with two different sizes of windows along the three-story portion of the facade. The placement of these different-sized windows symmetrically with the blank section of the north facade suggests that they might have been added later, although there is no concrete evidence about this. Additionally, old photographs do not conclusively provide information about the existence of these windows.

As in the Girls' Institute building, the predominant structural system of the building is reinforced concrete. Moreover, the decision to use local stone material only on the north facade facing the city is a noteworthy design choice, indicating the importance given to local materials by architects in the mid-20th century.



Plan 4. Kayseri Anatolia Imam Hatip High School 1st floor plan

3.2.2- Facade features

The building exhibits a rhythmic arrangement of two rows of windows on all facades. In the three-story section, there is a three-row rhythmic window arrangement. The windows are designed in a rectangular form, smaller in size, and more closely spaced compared to Gazipaşa Elementary School. In the old photographs, it can be seen that the windows were originally designed as multi-panelled and equally divided wooden windows, commonly seen in the 1st and 2nd National architectural movement. However, the current PVC windows have deviated the building from its original state. The long roof eaves observed on all facades of the Anatolia İmam Hatip High School, though not as long as those of Gazipaşa Elementary School, reflect the influence of the 1st National architectural movement by embracing the structure.

The original entrance facade of Anatolia İmam Hatip High School, which faces north, features concrete balcony slabs and round-sectioned concrete columns that represent contemporary architectural details. The balcony is used as an extension of the main entrance and also functions as a window opening to the cityscape. On the south facade (Figure 18), the entrance is

defined by the addition of a canopy roof. The eastern part of the building is three-storied, resulting in two different roof levels. This dynamic creates movement on the facade. On the north facade, the arrangement of triple windows is intentionally interrupted, leaving a blank section on the facade. On the south facade, the triple window arrangement is continued with two different sizes of windows along the three-story portion of the facade. The placement of these different-sized windows symmetrically with the blank section of the north facade suggests that they might have been added later, although there is no concrete evidence about this (Figure 19). Additionally, old photographs do not conclusively provide information about the existence of these windows.

As in the Girls' Institute building, the predominant structural system of the building is reinforced concrete. Moreover, the decision to use local stone material only on the north facade facing the city is a noteworthy design choice, indicating the importance given to local materials by architects in the mid-20th century.

Figure 18. Imamhatip High School South Facade

Figure 19. Imamhatip High School North Facade

On the west facade, the double window arrangement continues, and there is a non-functional entrance door in the middle. The eastern facade is connected to an adjacent building in a contiguous manner.

3.3. Girls' Institute

The 3rd educational building under investigation is currently named in turkish "Kocasinan Kız Mesleki ve Teknik Anadolu Lisesi," but its original name was in Turkish "Kız Enstitüsü ve Akşam Sanat Okulu." The institute building commenced its educational activities in 1939-1940. Initially designed as a primary school, it was later converted into a high school. The Evening Girls' Art School focused on handicrafts and production-based activities such as sewing, fashion, flower arranging, and embroidery. On the other hand, the Institute Section provided students with technical infrastructure in specific crafts (Satoğlu, 2002). The school is located on İstasyon street, an urban axis, directly across from Hacı Kılıç Mosque, making it a notable part of the urban memory, similar to the other two schools examined (Figure 20).

Figure 20. Girls' Institute location

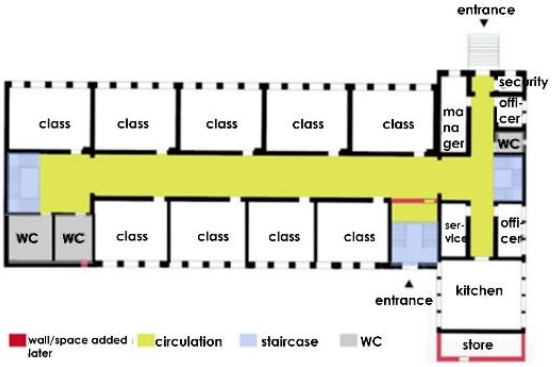
3.3.1. Plan features

The building of Girls' Institute is oriented along the south-north axis and has a rectangular plan. In 1984, four classrooms, a two-flight staircase, and WC facilities were added to the north facade of the building, without compromising the character of the facade and plan (Işık, 2010). This additional construction was completed to accommodate a larger number of users. As with the other two buildings under investigation, the entrances are provided from the long facades, and the building has two entrances. However, unlike the other two buildings with symmetric entrance axes, in this example, the entrance is located at the west end of the building, breaking the symmetry of the plan.

The internal space features a horizontal circulation area in the shape of a 'T.' The general plan of the building forms an "L" shape, created by the combination of two rectangular units in a perpendicular manner. The entrance unit serves as the administrative section, while the other rectangular unit forms the educational section, thereby ensuring functional separation within the building. There are three staircases in the building. The staircase added later on the east facade is two-flighted and connects the two different levels between the two entrances, while the other two primary circulation elements, the staircases, are three-flighted and equal in size. The 'U' shaped staircase, which was commonly used during its construction period, reflects the characteristics of the era (Plan 5). Indeed, this type of staircase (Figure 21) can also be seen in the Kayseri Anatolia

Imam Hatip High School built in 1951. The integration of the staircase and WC areas can also be observed in this building.

The ground floor plan includes added parts to the original structure. These additions consist of a reconstructed area attached to the kitchen with an entrance from the back garden, a structural wall added to separate the two-flight staircase providing access between different levels, and a WC window that disrupts the dimensional alignment of the facade's window sequence (Figure 22).



Plan 5. Girls' Institute floor plan

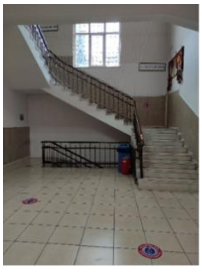


Figure 21. View towards the south staircase

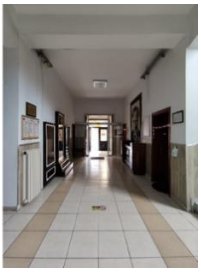
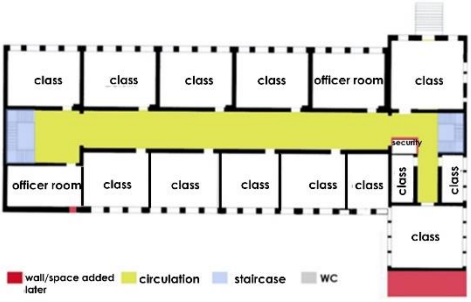


Figure 22. View of the main entrance

On the first floor plan (Plan 6), the circulation area that continues from the ground floor opens up to the classroom spaces, maintaining the grid pattern. In addition to the classrooms, there is an teachers' room on the first floor. Different interpretations of reinforced concrete can be seen in the classroom and circulation areas. The use of reinforced concrete in the building allows for various contemporary applications in the interior spaces. The use of ribbed slabs creates an original touch that strongly emphasizes the presence of reinforced concrete. The angled beams at the beam-column junctions in some classrooms and in the corridor are other distinctive features. In the staircase area, unlike the Anatolia Imam Hatip High School, a different architectural approach is created by using large-scale windows (Figure 23, 24).

On the first floor plan, the added sections to the original structure are the guidance counselling room window and the security area encountered when exiting from the south staircase. These additions significantly narrow the circulation space and detract from the original perception of the building, hindering the appreciation of the plan characteristics.



Plan 6. Girls' Institute 1st floor plan

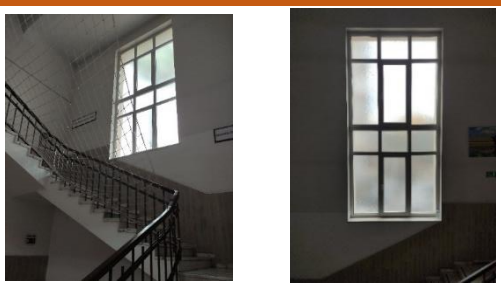


Figure 23-24. North staircase and window

The Girls' Institute differs from the other examined structures in another architectural feature, which is the elevation of the ground floor level above the garden level to create a basement floor plan. The basement floor of the building is constructed with cut stone masonry, while the upper floors are made of reinforced concrete (Işık, 2010). In the basement, there is a conference hall and technical spaces, as well as archives and storage areas. Access to the conference hall is provided through the western staircase, while the eastern staircase leads to the basement storage spaces.

3.3.2. Facade features

The Girls' Institute has distinct facade features that add character to the building. The east-facing entrance section expands in the east-west direction, creating a defined and inviting entrance design. Access to the main entrance is provided through stairs (Figure 25). The facades predominantly exhibit a two-row window arrangement, and due to the raised ground level, the windows are positioned higher. Similar to the Anatolia Imam Hatip High School, the window surrounds (söve) add distinctiveness to the facade.

The basement floor windows are present on all sides, ensuring natural lighting in the building. The presence of a front garden, similar to Gazipaşa Elementary School, helps the building distance itself from the main road. The trees lining the front garden further enhance this separation, providing a sense of privacy. The spaciousness of the rear garden is emphasized by tall walls, giving the building a personalized touch.

The roof of the building features projecting eaves, as seen in other examples. The windows of the main staircase on the north facade break the rhythm of the window arrangement, adding variety to the facade. On the other hand, the south wall is designed as a blind facade to cut off visual relations with adjacent structures.

The north facade of the building faces the main road, allowing the building to interact with pedestrian and vehicle traffic (Figure 26). However, this interaction is limited by the high-positioned windows, creating a sense of abstraction and privacy within the interior spaces.

Figure 25. West (entry) facade

Figure 26. North facade

4. Conclusion and Suggestions

During the Ottoman period, new educational initiatives were introduced through “zaviyes” (small Islamic religious schools) and medreses (Islamic higher education institutions), and later expanded with rüştiye (secondary

school) and sıbyan mektepleri (primary schools). In the Republic era, educational reforms emphasized the importance of education, giving significance to both the architectural qualities and modernity of buildings. As a result, until the mid-20th century, structures reflecting the late Ottoman architecture and early Republican period's Neoclassical style educational buildings were constructed in Kayseri city center, as in many other Anatolia cities.

Within Kayseri city center, various public buildings with architectural features reflecting the 20th-century style can be found. The historical city center, known as the inside of the rampart region, formed an urban border and expanded during the Republic era, incorporating Neoclassical architectural examples. Among the educational buildings that have become part of the urban memory, the Kayseri High School building stands out. Dating back to 1893, it represents the late Ottoman period and has been repurposed as a museum in contemporary times. The architectural language of Kayseri High School is reminiscent of Gazipaşa Primary School, while also incorporating innovations from the Republic era. Gazipaşa Primary School, constructed at the beginning of the 20th century, was limited by the conditions of its time, utilizing traditional architecture and elements of the 1st National Architectural Movement. Due to its early construction date, it follows a simpler facade-plan layout compared to other structures.

As mentioned earlier, two other buildings within the research scope are Anatolia Imam Hatip High School and the Girls' Institute, both representing the 2nd National Architectural Movement and constructed

during the first half of the 20th century. They exemplify how modernism influenced local touches in the urban space, with their locations contributing to their significance in the city's memory. The Girls' Institute and Anatolia Imam Hatip High School feature different architectural experiments using reinforced concrete. They display characteristics of modernism in their plans and facades, with prominent long eaves, extended facade surfaces, rhythmic window arrangements, emphasized entrances, and monumental architectural elements.

The establishment of the Republic of Turkey led to a shift in the perspective towards architecture, resulting in the development of different architectural styles beyond traditional molds. The use of reinforced concrete played a crucial role in this transformation, as it allowed architects to design structures with more prominent structural elements. Alongside the existing Roman, Byzantine, Seljuk, and Ottoman structures in Kayseri city center, these buildings are representative of the early Republic era. Displaying Neoclassical architectural style, they provide insight into the city's development. Considering the architectural significance of the three researched buildings reflecting 20th-century architecture, it is essential to preserve their existence within the urban space.

The research has presented the facades and floor plans of the three buildings. During the period between 1918 and 1951, a span of 33 years, differences and similarities are observed in terms of materials used, structural designs, facade arrangements, plan types, and layouts. Particularly, the introduction and evolution of reinforced concrete in

Anatolia have played a crucial role in creating the differences. Additionally, the influence of the 1st and 2nd National Architectural Movements, which reflect the period's orientations, can be seen in the buildings. Gazipaşa Primary School (1918), originally constructed using traditional masonry with wooden coverings and beams, was later completed with reinforced concrete after undergoing restoration. Despite this, its remaining architectural elements and values hold importance as it managed to survive until today. Although chronologically listed as the second, the Girls' Institute building represents characteristics more akin to the 2nd National Architectural Movement. Distinctive with its basement floor constructed in masonry, while the ground and first floors are reinforced concrete, the building features three floors of windows on the facade due to the ground floor starting at a higher level to allow natural light to enter the basement. This feature distinguishes it from other structures. Anatolia Imam Hatip High School, on the other hand, reflects the 1st National Architectural Movement with its long roof eaves. It represents the transition from local stone to the combined use of local stone and reinforced concrete. Gazipaşa Primary School and Anatolia Imam Hatip High School are located parallel to Osman Kavuncu Boulevard, one of Kayseri's important axes, with their facades oriented towards the city. The round-sectioned columns on the front facade of Anatolia Imam Hatip High School signify this characteristic.

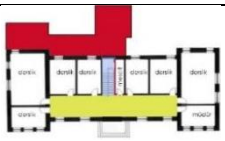
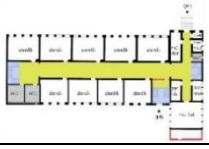
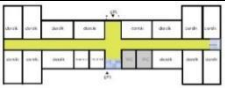
Regarding the floor plans of the three buildings, the development over time is evident. Gazipaşa Primary School is one of the typical examples of the early 20th century found in both urban and rural areas of Anatolia. The

classrooms are surrounded by circulation areas in an "H" plan layout, with access to classrooms provided from an "I" shaped circulation space. The entrance to the circulation area is achieved through a symmetrical facade, and a staircase is located opposite the entrance opening. The plan type of Anatolia Imam Hatip High School, dating back to 1951, shares similarities in terms of entrance axis and the location of the staircase opposite the entrance. However, the "H" plan type was used on a larger scale compared to Gazipaşa Primary School, and classrooms were placed on both sides of the corridor, creating a "+" shaped circulation space. Considering that Gazipaşa Primary School primarily served primary level education and was built with limited resources of its time, this choice appears to be due to its smaller scale. The evolution of the "H" plan type becomes evident through the comparison between these two buildings. Despite being constructed before Anatolia Imam Hatip High School, the Girls' Institute building features different architectural characteristics due to its "L" plan type, asymmetrically arranged entrance, distinguishing it typologically from other buildings. In the northern wing of the building, there are places such as the principal's room, the assistant principal's room, the teachers' room, the tea room, the toilet and the exhibition area, while the south wing has classrooms and toilets.

The placement of staircases in the floor plan is also significant. Gazipaşa Primary School, with its simple characteristics, has a double-sided staircase located opposite the entrance, while Anatolia Imam Hatip High School features a triple-sided main staircase situated inside, across from the entrance. In addition, two double-sided staircases are located at the end

of the corridor in the high school. The placement of main staircases opposite the entrance is a common feature in both buildings. However, in the Girls' Institute building, the staircase is not located opposite the entrance; instead, they are positioned along the northern and southern facade walls. The choice of a triple-sided staircase aligns with Anatolia Imam Hatip High School (Table 1).

Table 1. Plan comparison table

	Gazipaşa Elementary school	**Girls' Institute**	**Anatolia İmam hatip high school**
Ground floor plan			
Date of construction	1918	1939	1951
Plan type	H plan type	L plan type	H plan type
Circulation type	"I" Form	"T" Form	"+" Form

In terms of facade arrangement, all three buildings have rhythmic window compositions. The upper window series of Gazipaşa Primary School is in an arched form, reflecting the architectural style of its construction era, whereas the other two buildings do not feature arched windows. The use of triple window compositions, commonly found in Turkish houses and representing the characteristics of the 1st National Architectural Movement, has been preferred in all three structures. İmamhatip High School and Girls' Institute have rectangular and framed windows. Girls' Institute stands out with its variation in window forms, especially in the staircase elements. On the other hand, İmamhatip High School maintains a more uniform window arrangement. Girls' Institute thus brings diversity

to its facade design. Additionally, the basement windows of the Girls' Institute differ from the other buildings. The fact that Girls' Institute follows an "L" plan while Gazipaşa Primary School and İmamhatip High School have "H" plans adds dynamism to the facades. Detailed comparisons and differences of the structures are presented in Table 2.

Table 2: Facade comparison table

	Gazipaşa Elementary School	**Girls' Institute**	**Anatolia İmam Hatip High School**
Entrance facade photo			
Date of construction	1918	1939	1951
Window type	Rectangular+arched	Rectangular	Rectangular
Floor border	+	-	+
Entrance axis	Symmetric entry	Assymmetric entry	Symmetric entry
Number of floors	Floor+1	Groun+floor+1	Floor+1
Facade material	Cut stone	Paint	Stone+paint
Eaves type	Long eaves	Short eaves	Long eaves
Eaves photo			
Classroom space photo			
Staircase type	2-armed	3-armed	3-armed
Main Staircase			

Acknowledgements and Information Note

This study is a study that was researched for a period of time in the course called “Contemporary Architecture after 1950”, which was taught during the doctoral course of the Department of Architecture, Department of Architecture, Faculty of Architecture, Erciyes University. I would like to thank Associate Professor Duygu Turgut, the instructor of the course, for her advice, teachings, guidance and information.

The article complies with national and international research and publication ethics. Ethics Committee approval was not required for the study.

References

Akçaözoğlu, S., Özmertyurt, A. G. G., Özal, A. G. G., & Yıldırım, A. G. Ö. C. (2019). Niğde İnönü İlkokulu'nun mevcut durumunun incelenmesi ve kullanım sorunları, *Akademik Sosyal Araştırmalar Dergisi*, June 2019, 7(93), 370-384. Access Address (20.07.2023): https://asosjournal.com/?mod=makale_tr_ozet&makale_id=36618

Atıcı, A. (2021). Sinop-Ayancık'ta Erken Cumhuriyet Dönemi ilkokul binası: Kurtuluş İlkokulu (Mehmet Akif Ersoy Ortaokulu). *Sanat Tarihi Dergisi*, 30(1), 435-455. Access Address (20.07.2023): https://dergipark.org.tr/en/pub/std/issue/62342/752482

Bozaslan, B. M., & Çokoğullar, E. (2015). Osmanlı'dan Cumhuriyet'e modern eğitimin inşası: devletin kurtarılmasından devletin kurulmasına. *Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 17(3), 309-329. Access Address (20.07.2023): https://dergipark.org.tr/en/pub/gaziuiibfd/issue/28305/300791

Bozdoğan, S. (2008). *Modernizm Ve Ulusun Inşası: Erken Cumhuriyet Türkiyesi'nde Mimari Kültür*. İstanbul: Metis Yayınları.

Demir, A. (2008). *Arşivdeki Belgeler Işığında Güzel Sanatlar Akademisi'nde Yabancı Hocalar.* İstanbul: MSGSU Yayınları.

Işık, G. (2010). Kayseri'de erken cumhuriyet dönemi eğitim yapıları (Master's thesis). Erciyes Üniversitesi Fen Bilimleri Enstitüsü, Kayseri. Access Address (20.07.2023): https://tez.yok.gov.tr/UlusalTezMerkezi

Kul, F. N. (2011). Erken Cumhuriyet Dönemi ilkokul binaları. *Mimarlık Dergisi*, 360, 67-71. Access Address (20.07.2023): http://www.mimarlikdergisi.com/index.cfm?sayfa=mimarlik&DergiSayi=374&RecID=2862

Özbek, Y. (2013). Erken Cumhuriyet Döneminde (1923-1945) Kayseri'de okul yapıları. *Belleten Dergisi*, 77(278), 271-302. Access Address (20.07.2023): https://belleten.gov.tr/ozet/2664/tur

Özbek, Y. (2019). Kayseri/Pınarbaşı'nda Erken Cumhuriyet Dönemi (1923-45) köy okulları. *Akdeniz Üniversitesi İnsani Bilimler*

Dergisi, 267-286. Access Address (20.07.2023): http://proje.akdeniz.edu.tr/mcri/mjh/9-1/MJH-22-Yildiray_OZBEK.pdf

Satoğlu, A. (2002). *Kayseri Ansiklopedisi* (Vol. 377). Ankara: Kültür Bakanlığı

Taştekin, O. (2019). Ottoman educational institutions during and after 18th century. *Cumhurıyet Ilahıyat Dergısı-Cumhurıyet Theology Journal*, 23(3).

Tonguç, İ. H. (1947). *Eğitim Yolu ile Canlandırılacak Köy*. İstanbul: Güven Basımevi.

Yaldız, E., & Parlak, Ö. (2018). Birinci Ulusal Mimarlık Dönemi kamu yapıları. *International Social Sciences Studies Journal*, 4(24), 4930-4947.

Url-1: https:// kanadoluihl.meb.k12.tr/meb_iys_dosyalar/38/14/750319/fotograf_galerisi_2352629.html?CHK=1685e559262aed0acc1175e092686b82

Url-2: https:// www.resmigazete.gov.tr/arsiv/2434.pdf

PhD. Candidate Seda IŞILDAK

E-mail: sedakucukkatrc@gmail.com
Educational Status: PhD student
License: Erciyes University / Department of Architecture
Degree: Konya Technical University / Department of Architecture
Doctorate: Erciyes University / Department of Architecture - Still in Continue
Professional experience: Architectural Conservation

EDITORS' CV

Prof. Dr. Kağan GÜNÇE

Kağan Günçe has a bachelor's degree in architectural program, a Master (of science) degree in architecture program and Doctor of Philosophy in architectural theory from EMU, Department of Architecture. He is professor of Architecture at Eastern Mediterranean University (EMU) in North Cyprus. He is a full-time professor in the Faculty of Architecture at EMU. He also serves as Vice-Chair of the Institute of Graduate Studies and Research at EMU. He was the director of HERA-C (Housing Education, Research & Advisory Centre) and he was the head of the Interior Architecture Department at EMU. Prof. Dr. Günçe, who has been a university senator for a long time, is currently the elected professor representative senator. His research interests include architectural theory, design, environmental psychology, conservation, traditional built environments and housing issues. He has also collaborated with researchers in several other disciplines such as the role of technology in shaping memory of architectural space, topics in profession, tourism and education. He has articles, papers in many national and international journals and conferences, and international research projects supported by the European Union in the mentioned fields. He has many academic awards and his academic works have received many citations on the web of science platform.

Assoc. Prof. Dr. H. Hale KOZLU

Hale Kozlu completed her undergraduate education at Selçuk University, Faculty of Engineering and Architecture, Department of Architecture in 1999, completed her master's degree at the same university in 2002 with a thesis titled "*Architectural Features of Traditional Develi Houses*", and received her doctorate degree at Istanbul Technical University in 2010 with a thesis titled "*Characterisation of Historical Mortars in Kayseri Region and Properties of Repair Mortars*". In 1999, She started her academic career as a research assistant at Erciyes University, Faculty of Architecture, Department of Architecture, Department of Restoration, where she continues her academic career as a lecturer and Head of the Restoration Department. Kozlu, who conducts various courses in the field of Restoration and Architectural Design at the Faculty of Architecture, has various publications, scientific research projects, awards and survey / restitution / restoration projects in the field of conservation / restoration.