E-ISSN

# UNIMUSEUM

Volume: 1 Issue: 1

2018


Official Journal of

International University Museums Association Platform

NIKART Platform

## Targets and Scope

UNIMUSEUM is an international, scientific, open access periodical published in accordance with independent, unbiased, and double-blinded peer-review principles. The journal is the official publication of NIKART and International University Museums Association Platforms UNIMUZED and it is published twice a year. The publication languages of the journal are English and Turkish.

UNIMUSEUM aims to contribute to the literature by publishing manuscripts at the highest scientific level on all fields of university museums. The journal publishes original research and review articles that are prepared in accordance with the ethical guidelines.

The scope of the journal includes but not limited to; museum studies, cultural heritage areas, university museums, museum management, museum education, museum planning, museum technology, museum marketing, collections and archives. The target audience of the journal includes specialists and professionals working and interested in all disciplines of university museums.

The editorial and publication processes of the journal are shaped in accordance with the guidelines of the Committee on Publication Ethics (COPE), European Association of Science Editors (EASE), and National Information Standards Organization (NISO). The journal is in conformity with the Principles of Transparency and Best Practice in Scholarly Publishing (doaj.org/bestpractice).

All manuscripts must be submitted via the online submission system, which is available at unimuzed.org. The journal guidelines, technical information, and the required forms are available on the journal's web page.

All expenses of the journal are covered by the NIKART. Statements or opinions expressed in the manuscripts published in the journal reflect the views of the author(s) and not the opinions of the UNIMUSEUM and NIKART editors, editorial board, and/or publisher; the editors and publisher disclaim any responsibility or liability for such materials. All published content is available online, free of charge at unimuzed.org.


UNIMUSEUM published twice a year/ International is a peer-reviewed journal

UNIMUSEUM

**International University Museums Association Platform**

UNIMUSEUM
International University Museums Association Platform

**Chief Editor**

Prof. Dr. Fethiye ERBAY

**Co. Editor**

Assoc. Prof. Mutlu ERBAY

**Correspondence Adress**

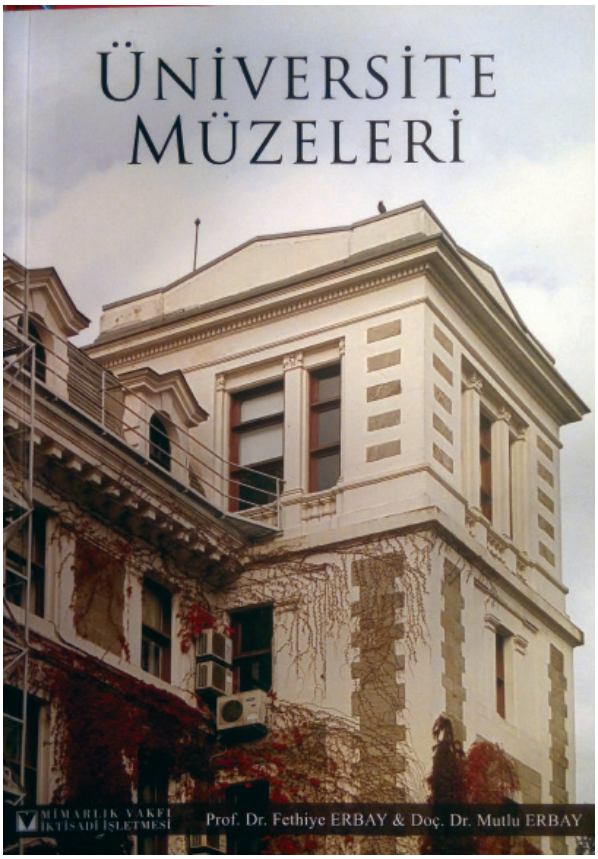
Uluslararası Üniversite Müzeleri Birliği Platformu

Kültürel Miras Dergisi Editörlüğü

NİKART: Ortaklar Caddesi, Mecidiyeköy /İstanbul

**Tel:** 0212 347 38 15 **Fax:** 0212 288 76 02

**E-mail:** erbayf@boun.edu.tr



UNIMUSEUM
International University Museums Association Platform

Vol. 1 Issue 1 Page 1 - 34 (2018)

## Table of Contents/İçerik

UNIMUSEUM

**International University Museums Association Platform**

# The Role of University Museums

**Fethiye ERBAY**

**Cite this article as:**
Erbay, F. (2018). The Role of University Museums. UNIMUSEUM, 1(1), 1-4. DOI:

**ABSTRACT**
**The Role of University Museums**

University museums carry out significant roles and duties to define, process, distribute, reshape and develop knowledge in scientific domain. By the end of 1990, the literature on university museums has expanded, the role of subjectivity and personalization of interest strengthened. Educational transformation for redefining and archiving of collections has become prominent. Since 2000, studies on museums and visitors have increased. This leads an increase in the awareness and significance of the establishment of university museums. The increase in the role of university museums in research areas supports the establishment of university museums in various areas. Enclosed, isolated university collections were not able to endure stable in front of today's rapid social transformations. Transforming university collections into living institutions of museums is a significant attempt of transformation of past tradition into future. Following the transformation, these traditional and institutional practices about university collections should be redefined. University museums will transform universities into more valuable, branding institutions in the next century.

**Key Words:** university museum, museum projects, university museums association.

Istanbul University,
Head of Museum Management Department, İstanbul - Turkey

**Unimuzed.org**

**Accepted:** 01.12.2017
**Submitted:** 01.06.2018
**Published online:** 23.07.2018
**Correspondence:** Prof. Dr. Fethiye ERBAY
**Unimuseum**
**E-ISSN**
**DOI**

## Introduction

University museums carry out significant roles and duties to define, progress, distribute, reshape and develop knowledge in scientific domain. As the fundamental institutions of specializations in the modern era, museum studies shed light on the understanding of social service. By the end of 1990, the literature on university museums has expanded the role of subjectivity and personalization of interest strengthened. Educational transformation for redefining and archiving of collections has become prominent. This new museology understanding leads an increase in experiences in digital and interactive media domains. Nationwide web-based networks provide access to collections and support researches and studies.

University museums conduct joint studies on technology; focus on networks which increase the number and volume of collaborations. University museums are very significant to provide visible, livable, touchable and sensible environment for education of Generation z, in other words "the internet generation". There is an increase in their art and exhibition experiences based on interactive placements.

Studies on üniversity museums and visitors have increased since 2000. Those lead to an increase in the awareness and significance of the establishment of university museums. Plenty of museums conduct new joint projects with university museums to meet people's demands. Recent scientific studies have brought the significance of the projects conducted with university museums into the agenda through the hypothesis as "Museums are vital for mental health to find out one's emotions and ideas". Researches show that most people visit museums for relaxation and refreshment purposes.

The project in London Guildhall Art Gallery investigated the impact of museum and gallery visits in the afternoon on stress level of people. It was observed that there was a significant decrease in stress hormone levels of people while they were analyzing the pieces of art. New York Museum of Modern Art (MoMa) in the USA conducts studies on Alzheimer patients. This kind of projects indicates that many projects will be conducted to support social consciousness and awareness of university museums. Today, in the era of 4th Industrial Revolution, the importance of university museums is ever-increasing. University museums have started to take a more direct role in scientific projects. The significance of these museums increases day by day as they provide resources for innovation studies and scientific research. Development of university museums parallel with the cultural structure requires new ways to pursue. The attempt of bringing past and future together is influenced by this transforma- tion. The increase in the role of university museums in research areas supports the establishment of university museums in various areas.

In Turkey, my studies on the increase in strengths of university museums in social structure indicate that university museums are not in an underrated situation. Academic studies and academicians play significant roles in dramatic increase in the number of these museums. Devoted studies of pioneering academicians are very important to increase the recognition and accessibility of university museums in Turkey. Enclosed, isolated university collections were not able to endure stable in front of today's rapid social transformations. The course of opening new university museums has accelerated in recent years in Turkey. In 2009, I resigned from my position at Bogazici University and was appointed by Istanbul University to establish 12 museums within the scope of the university. Transforming university collections into living institutions of museums is a significant attempt of transformation of past tradition into future. Following the transformation, these traditional and institutional practices about university collections should be redefined.

University museums carry out significant roles and duties to define, progress, distribute, reshape and develop knowledge in scientific domain. As the fundamental institutes of specializations in the modern era, museum studies shed light on the understanding of social service. The mission of university museums expanded to transfer information and ideas with the intention of changing existing thoughts, increasing information and guiding behaviors through communication. By the end of 1990s, the literature on university museums has expanded the role of subjectivity and personalization of interest has strengthened. Today, technological change and economic trans- formation, and the concerns to protect lost values, assign significant missions to universities. Educational transformation for redefining and archiving of collections has become prominent. Natural sciences, archaeology, ethnology, earth sciences and science collections increasingly included in university museums. Recent studies in various fields such as open-air museums and cultural heritage are increasing day by day parallel with the increase in excavation works at universities. University museums have recently increased the activities to raise social consciousness. They organize permanent exhibitions, educational activities, atelier works and conferences which make them different from traditional understanding of exhibition. Today, technological change and economic transformation, and concerns to protect missing values, assign significant missions to universities. University museums use their social influence to raise social consciousness on cultural and scientific heritage. University museums should be driving forces for universities to increase the existing knowledge and communicate with students and society. University museums conduct joint studies through technology oriented networks which increase cooperation possibilities in the future. University museums are very significant to provide visible, livable, touchable and sensible environment for Generation z, in other words "the internet generation". There is an increase in their art and exhibition experiences based on interactive placements.

The increase in the studies in digital and interactive media areas within the new museum understanding leads new research areas for university museums. International web based net- works support the access and studies on each level of collections. The number of studies in digital and interactive media areas has also increased. New projects on digital archiving have emerged after re-evaluation of university museum collections since 2000. University museums conduct joint studies, which also increased the

collaboration among universities, over technology based networks.
Nationwide web-based networks provide access to the collections and support researches and studies. The use of digital technologies has changed the communication language of universities. University museums have also initiated digital network studies. The University of Oxford has digitally connected university museums through wi-fi connection. University museums have started to support project researches and innovation studies. New museology studies lead to transformation in exhibition and presentation techniques of university museums. The stories of the exhibited objects have also gained importance. The importance of online studies has come to the agenda to share the information easier. Universities should consider this transformation as an opportunity and should prepare themselves for the future. The adaptation of the university museums to this development and transformation should be planned in detail.

Nick Poole defines in his study "What impact will university museums have in 2020?" the five driving forces of universities. These driving forces are democratization of knowledge, market competition, digital technology, global mobility, integration with industry and all of these forces are significant for the future of university museums. Project based studies have created new marketing areas for university museums. Joint projects on the fields of neuro-marketing, brain and health are initiated with university museums. Plenty of museums have conducted new projects with the universities to meet people's demands. The hypothesis of "Museums are necessary for mental health to perceive what people feel and think" is a result of the recent scientific studies and also revives the importance of joint projects conducted by university museums. The research suggests that many people visit museums for relaxation and regeneration. Furthermore, it can be said that St. Ambulance Wens of Rijks Museum is an inspiration for other museums. Thus, museums have extended their studies on humans, nature and society.

The project in London Guildhall Art Gallery investigated the impact of museum and gallery visits in the afternoon on stress level of people. It was observed that there was a significant decrease in stress hormone levels of people while they were analyzing the pieces of art. New York Museum of Modern Art (MoMa) in the USA conducts studies on Alzheimer patients. This kind of projects indicates that many projects will be conducted to support social consciousness and awareness of university museums. The attempt of bringing past and future together is in- fluenced by this transformation. Today, in the era of 4th Industrial Revolution, the importance of university museums is ever increasing.

University museums have started to take a more direct role in scientific projects and innovation based projects. Traditional and institutional structures of universities regarding their own collections have created a competitive environment. With this regard, Britain ranked top six universities: University of Cambridge Fitzwilliam Museum is ranked as the first, Oxford University Ashmolean Museum, Pitt Rivers Museum, London University Courtauld Gallery and Petrie Museum and Glasgow University Hunterian Museum, respectively. Closed, isolated university collections could not remain stable from Turkey's rapid social transformation.
In recent years, there is a competition to open new university museums in Turkey. I have also contributed to establish new museums since 1990. In 1992, I was assigned to establish Kandilli Observatory Museum in Bogazici University. I gave consultant for the establishment of İTÜ Mineral Museum (1995), İstanbul University Cerrahpaşa Medical Faculty, Medical History Museum (2003-2013). There were many difficulties during this establishment process, but collaborations and efforts brought the success. I was assigned to establish 12 museums in Istanbul University in 2009. I was assigned to establish Geology Museum (2012), Beyazıt Fire Tower Memorial Museum (2012), Archaeology and Cultural History Museum in İstanbul University. These projects are very significant to reach success in museology area. The cultural heritage was transferred into digital environment, new restoration ateliers were opened and MUZEYUM was established to compete in this environment. Today, Istanbul University has five approved museums. In the future, special areas and specialities will increase in the museology area. Academic studies and academicians play significant roles in dramatic increase in the number of these museums. Devoted studies of pioneering academicians are very important to increase the recognition and accessibility of university museums in Turkey. It is difficult to maintain the sustainability of university museums which established with special efforts.

To establish university museums through the university collections is a significant attempt for transformation of tradition into the future. The numbers of specially designed architectural projects for university museums are rapidly increasing in Turkey. The studies to establish a Comtemporary Arts Museum in the Antrepo 5 region instead of Arts and Sculpture Museum of Mimar Sinan University continue. This museum will have the widest university art collection in Turkey in a new area designed by a special architectural project.

Academicians play significant roles to increase the social importance of university museums in Turkey. They have valuable contributions to the development of university museums. I organized the 1st International University Museums Conference at Bogazici University in 1994 with the cooperation of Helsinki University and Bogazici University Museums.

In 2006, Ankara University organized Bekir Onur University Museums and Museology Conference. In 2012, Kocaeli University conducted museuni project with the conference of New Perspectives for University Museums in Europe and Turkey and brought university museums together.

1st International University Museums Conference was held at Bogazici University in 1994 and Helsinki University and Bogazici University museums were examined together. International University Museum Association Platform realised with 22 university museums in 2014 with the cooperation of Boğaziçi and İstanbul Üniversities. Beşiktaş Naval museum host the conference in 2015

with 40 university museums both national and from abroad: Participants from 6 countries (Serbia, Russia, Bulgaria, USA, Korea, Finland) introduced the university museums. Boğaziçi University host the conference.

In 2016, with over 50 university museums, It took place in Trakya University. Participation in 8 countries (Egypt, Serbia, Kosovo, Russia, Cyprus, Bulgaria,USA, Greece) was provided.In 2017, both national and international 56 notices accepted to the conference which will be in Anadolu University. Museum theorists from 8 countries (Russia, Cyprus, Bulgaria, USA, Jordan, Iranian, Spain, Azerbaijan) introduced their university museums

This year, in 2018, the conference was held at Trakya University with 60 participants who indicated us that there is an increase in the interest for university museums.
The participating museums from 10 countries (Russia, Bulgaria, Srpska, USA, Iranian, Azerbaijan, Tatarstan, Kazakhstan, France, Indonesia) discussed the problems of university museums in the conference.

In this five year period, increase of the participate number shows the importance that museum workers and scholars give. I am glad to contribute to the structural transforming of university museums through the conferences of University Museum Associations Platform which has been organized since 2014. The valuable contributions, positive feedbacks and energies of our colleagues who attend these conferences will empower the development of university museums.

## Conclusion

University museums will transform universities into more valuable, branding institutions in the next century. I hope, in the future, with their valuable contributions to universities, working like educational and research institutes, the number of university museums will increase in the future. University museums have significant importance in terms of social sciences. Universities should rediscover the museums to create new academic funds. Cultural based development of university museums required new developments and improvements in this area. The success of university museums is parallel with the success of their universities. Universities' adaptation to the recent scientific and technological developments as well as rapid structural transformation will also affect university museums. University museums present source for the future youth. University museums will maintain its existence by utilizing environmental factors and adaptation to the transformation.

In the future, universities will transform with the transformations in university museums. Universities transform into alternative structural organizations to maintain contemporary education services. Universities will contribute to too many researches and projects with their university museums. University museums will transform into valuable, branded organizations in the future. Brand value definitions, existing in a competitive environment will bring university museums into new research areas. To institutionalize the cultural heritage of university museums is significant for the development of university museums. University museums in Turkey are richness of our country. They will contribute today and future with their Professional management studies. I hope the number of university museums will increase in the future to contribute the success of universities and work as education and research institutes

## References


Erbay, F.; (1996). **Objectives and Problems of the Museums in Educational Institutions,** International Designing University Museums Conference Boğaziçi University, 18 Kasım, Istanbul

Erbay, F.: (1999). **Üniversite Müzelerinin Önemi**, Anadolu Sanat, Anadolu Üniversitesi Güzel Sanatlar Fak. Yay.,No:10, Eskişehir, s:48-53.

Erbay, F.; (2009). **Eğitim Kurumlarında Bulunan Müzelerin Kurulma Amacı ve Problemleri**, Müze Yönetimini Kurumlaştırma Çabası; Mimarlık Vakfı Yayını; Istanbul;s:311-314.

Erbay, F.;(2014). **Üniversite Müzelerinin Değişen Yapısı, Üniversite Müzeleri;** Mimarlık Vakfı Yayını;ISBN:978-605-65821-3-4, Istanbul;s.11-15.

Erbay, F.; (2015). **University Museums In The Age Of Innovation,** The II. Internatıonal University Museums Association Conference; Bogaziçi University. Natuk Birkan Konferans Holl.

Erbay, F.; (2016). **Redefining and Discussion The Role of University Museums**, Değişen Üniversite Müzeleri; Trakya Üniversitesi Yayını; ISBN:978-975-374-204-7, Edirne, s.9-14.

Erbay, F.; (2018). **Introduction,** Büyük Değişimler Çağında Üniversite Müzeleri; Anadolu Üniversitesi Çağdaş Sanatlar Müzesi Yayını; No:3, ISBN:978-975-06-2302-8 , Eskişehir, s.7-8.

Poole,N.;(2013), **The Impact of University Museums in 2020**http://Www.Slideshare.Net/Nickpoole/The-İmpact-Of-University-Museums-İn-2020 (Çevrim içi: Mart 2016

UNIMUSEUM

**International University Museums Association Platform**

# Türk Yazı Tarihi Müzesi / Astana Kazakistan

**Salih DOĞAN**

**Cite this article as:**

Doğan, S. (2018). Türk Yazı Tarihi Müzesi - Astana Kazakistan. UNIMUSEUM, 1(1), 5-10. DOI:

**ÖZ**

Yazı Tarihi Müzesi L.N. Gümilev Avrasya Milli Üniversitesinde 2003 yılında kurulmuştur. Müzenin temeli 2001 yılında Moğolistan'daki Kültigin kitabesinin bilimsel kopyasının yapılması ile başlamıştır. İki yıl aradan sonra Prof.Dr. Karcaubay Sartkocaoğlu'nun başkanlığında ilk defa Türk Kökenli Halklar'ın tarihte kullandığı yazıtlar ile ''Yazı Tarihi Müzesi'' kurulmuştur.

Müze iki alandan oluşmaktadır. 1.Kısım: Kültigin Atriumu. (Bu alanda Kültegin kitabesinin kopyası ve Orhun Abideleri'nin fotoğrafları bulunmaktadır. Atrium'un son kısmında ''El tutka''adını alan yağlı boya tablosu bulunmaktadır. Tabloda Kazak halkının tarihteki bütün önderlerinin portreleri çizilmiştir. İkinci bir tarafında ''Tomiris'' adını alan iskitler ve farsiların savaşını yansıtan yağlı boya tablosu bulunmaktadır. 2. Kısım: Bu kısımda tarihte Türklerin kullandığı bütün yazıt örnekleri ve taş tablolar bulunmaktadır. En eskisi M.Ö. 4-5 yy. dönemine ait esik kurganından bulunan iskitlerin yazıt örnekleri vardır. Dolayısıyla Göktürk yazıt örnekleri, brahmi yazıtı, uygur yazıtı, eski çin yazıtı, moğol yazıtı, arap alfabeli yazıtlar vs. sunulmuştur. Müzenin önemli eserlerinin biri de Kutluk kağan heykelinin başıdır. Heykel 2002 yılı Moğolistan'da bulunmuş olup Kazakistan'a getirilip müzeye koyulmuştur. Müzenin sağ kısmında arkeoloji alanı da oluşturulmuştur. Mayhan uul denilen yerde bulunan (dağ)Gök Türk kağan mezar maketi ve buluntuların fotoğrafları bulunmaktadır. Bunun yanı sıra Enisey yazıtların estampaj kopyaları, Çin'de bulunan Türk tarihine ait önemli kitabelerin estampajıları bulunmaktadır. İlk Göktürk yazıtının deşifre eden V.Tomsen'in de ayrı bir köşesi bulunmakta (büst, fotoğraf, eserleri). Göktürk liderleri adlı yağlı boyalı tablo bulunmaktadır. Burada Tonikok, Kutluk Kağan, Yoluk Tegin, Bilge Kağan, Külteginler'in portresi çizilmiştir. Müzede ortalama 100'e yakın yazıtla ilgili görsel ve maddi eserler bulunmaktadır.

**Anahtar Kelimeler:** L. N. Gumilev, Kazakistan, Yazı Tarihi Müzesi.

**ABSTRACT**

**L.N.Gumilyov Eurasian National University: Turkish Writing History Museum**

Establishment process of the museum was achieved by collection of epigraphs used by Turks in history and the process was started by preparation of scientific copy of Kultigin Epigraph in 2001 at Kazakhstan, Astana L.N. Gumilyov Eurasian National University and completed in 2003, under leadership of Prof. Karcaubay Sartkocaoglu. Museum was designed as two sections.

Section I – Kultigin Atrium: This section includes visualizations of Gokturk Epigraps and a scientific copy of Kültigin Epigraph. In addition to that, oil painting portraits of leaders called "El Tutka", who leaded Kazakhs in history are presented in this Atrium. Another oil painting in this section portrays the war between Scythians and Persians.

Section II: This section includes examples of all epigraphs used by Turks in history. Scythian epigraphs found in Isik Kurgan, which were dated B.C. 4th – 5th centuries, are in this section. Turkish epigraphs, Uygur epigraph samples, Mongol epigraphs, Brahmin epigraph, epigraphs in Arabic alphabet and old Chinese epigraphs are presented here.

One of the most important objects presented in the museum is head of Kutluk Khan Sculpture, which was found in Mongolia in 2002 and brought to Kazakhstan. Also there is an archeology section within the museum. Some pictures of the findings and model of Gokturk Khan's tomb is presented in this sub-section. In addition to these, art estampages of Yenisey Epigraphs and epigraphs on Turks, which were found in China are in this section. Oil paintings of Gokturk leaders (Kutluk Khan, Bilge Khan, Vizier Tonyukuk) and a sub-section including photographs and a portrait sculpture of Danish scientist, Turcologist and philologist Vilhelm Thomsen, who analyzed and decoded first Gokturk Epigraph can also be seen in the museum.

**Key Words:** L. N. Gumilyov, Kazakhstan, Turkish Writing History Museum.

Panaroma 1453 Tarih Müzesi Müdürü, İstanbul - Turkey

**Unimuzed.org**

**Accepted:** 01.12.2017
**Submitted:** 01.06.2018
**Published online:** 23.07.2018
**Correspondence:** Salih DOĞAN
**Unimuseum**
**E-ISSN**
**DOI**

## Giriş

Yazı Tarihi Müzesi, L. N. Gumilev Avrasya Milli Üniversitesi'nde 2003 yılında 966 m2 alana kurulmuştur. İki yıl aradan sonar Prof. Dr. Karcaubay Sartkocaoğlu'nun başkanlığındailk defa Türk kökenli halkların tarihte kullandığı yazıtlar ile 18 Eylül 2003 tarihinde "Yazı Tarihi Müzesi"kurulmuştur.

*Fig.1. Orhun Yazıtlarından Kültegin Kitabesinin Bilimsel Kopyası*

2014 yılında Kazakistan'ın başkenti Astana'da "Türk Yazı Günü" ilk defa kutlanmış olup Kazakistan Cumhuriyeti Parlamentosu da 18 Mayıs gününü "Türk Yazı Günü" olarak ilan etmiştir. Bu tarihten itibaren her yıl kutlanılmaya devam edilmektedir.

Müze, aynı zamanda Üniversitenin bilimsel, eğitim, öğretim ve kültürel birim misyonunu üstlenmiş ve bu doğrultuda çalışmalar gerçekleştirmektedir. Bu çalışmalar daha çok Türklerin yazı tarihi konusunda verilen konferanslar, etkinlikler ve geçici sergileri kapsamaktadır.
Müzenin yazı tarihi ile ilgili olan bölümü; Türk toplumlarının tarih sahnesinde var olduğu günden beri kullanmakta oldukları 26 farklı dil ve 16 farklı yazı sisteminin çeşitli arkeolojik kazılarda bulunan yazı tabletlerinin vb. materyalin replikalarının müze alanında sergilemesi ile oluşturulmuştur.

Müze iki bölümden oluşmaktadır:

## Birinci Bölüm: Kültiğin Atriumu

Bu alanda Kültigin Kitabesi'nin replikası ve Orhun Abideleri'nin fotoğrafları bulunmaktadır. Atriumun son kısmında "El tutka" isimli
yağlı boya tablo bulunmaktadır. Tabloda Kazak halkının tarihteki bütün liderlerinin portreleri yapılmıştır. Aynı alanda ayrıca "Tomiris" isimli İskitler ve Farisilerin


*Fig.2. Orhun abidelerinin fotoğrafı*

*Fig.3. Müzenin temeli 2001 yılında Moğalistan'daki Kültigin Kitabesi'nin bilimsel kopyasının yapılması ile atılmıştır.*

savaşını yansıtan yağlı boya tablo bulunmaktadır.

*Fig.4. Kültegin Atriumu*

*Fig.5. Muhteşem Türk Milleti savaşçıları, Kültegin beyaz atı sürerken resmedilmiştir*

## İkinci Bölüm: Yazı Örnekleri

Bu bölümde tarihte Türk toplumlarının kullandığı bütün yazıt örnekleri ve taş tablolar bulunmaktadır.En eskisi M.Ö.4-5yüzyıla ait Esik Kurganı'nda bulunan İskitlerin yazıt örnekleri vardır. Göktürk yazıt örnekleri, Brahmi yazıtı, Uygur yazıtı, eski Çin yazıtı, Moğol yazıtı, Arap alfabeli yazıtlar vs. sunulmuştur.

Müzede bulunan önemli eserlerden biri de Kutluk Kağan heykelinin baş kısmıdır. Heykel 2002 yılı arkeolojik kazılarında Moğolistan'da bulunarak Kazakistan'a getirilmiştir.

*Fig.6. Talas Göktürk yazıtları*

*Fig.7 Kutluk Kağan heykelinin başı*

Bu bölümde tarihte Türk toplumlarının kullandığı bütün yazıt örnekleri ve taş tablolar bulunmaktadır. En eskisi M.Ö. 4-5 yüzyıla ait Esik Kurganı'nda bulunan İskitlerin yazıt örnekleri vardır. Dolayısıyla Göktürk yazıt örnekleri, Brahmi yazıtı, Uygur yazıtı, eski Çin yazıtı, Moğol yazıtı, Arap alfabeli yazıtlar vs. sunulmuştur.

Mayhan Uul Kurganı, Orta Moğolistan'da başkent Ulan Bator'un 210 kilometre batısında Bulgan eyaletinde adını aldığı dağ olan Mayhan Uul'un (Çadır Dağı'nın) eteğindedir. Ayrıca yine bu dağın eteklerinde Mayhan Uul gibi yığma topraktan, kümbete benzer 12 kurgan bulunmaktadır. M.S. 7-10. yüzyıllar arasına tarihlenen bu anıt mezarların tümü Göktürklere özgü bir gelenek olarak bilinen hendeklerle çevrilidir.

*Fig.8. Mayhan Uul Göktürk Kağan mezarının maketi Moğolistan. Bayannnur*

*Fig.9. Çin'de bulunan Göktürk tarihine ilişkin kitabelerin Çince yazılmış estampaj kopyası*

Bunun yanı sıra Yenisey yazıtlarının estampaj kopyaları, Çin'de bulunan Türk tarihine ait önemli kitabelerin estampajları da bulunmaktadır.

Müzede ayrıca ilk Göktürk yazıtını tercüme eden Danimarkalı Dil Bilimci Vilhelm Thomsen'in de ayrı bir köşesi bulunmaktadır. Bu köşede büst, fotoğraf gibi eserler sergilenmektedir.

Dünya çapında bir üne sahip olan Danimarkalı Dil Bilimci VilhelmThomsen, Kültigin ve Bilge Kağan için dikilmiş iki Orhun Yazıtı'nı tam ve doğru olarak okuduğu bu buluşunu Danimarka Bilimler Akademisi'nin 15 Aralık 1893 tarihli toplantısında "Orhon ve Yenisey Yazıtlarının Çözümü, İlk Bildiri" adlı bildirisi ile bilim dünyasına açıklamıştır.Müzede ortalama 100'e yakın yazıtla ilgili görsel ve maddi eserler bulunmaktadır.

*Fig.10. Vilhelm Thomsen köşesi*

Yukarıda kısaca anlatmaya çalıştığım eserlerin haricinde

• Kıpçak savaşçılarının zırh ve silahlarının rekonstrüksiyonu,
• Göktürk Yazıtları konusunda yayımlanan kitapların bulunduğu köşe,
• Arap alfabesiyle yeni Kazak alfabesini kurgulayan bilim adamı Ahmet Baytursunov köşesi,
• Kazak sultanları ve beyleri mühür örnekleri ile
• Karluk boy damgaları şeklinde farklı eserler de mevcuttur.

Tüm bu eserler vitrin içinde panolarda, stant üzerinde, maketlerle, modellerle (Mankenler ve Mumyalar) ve kopyalar şeklinde farklı sergileme teknikleri ile sergilenmektedir.Ayrıca eserler kendi içinde kronolojik, malzemeye ve koleksiyon özelliğine gore sınıflandırılmışlardır.

## Yazı Tarihi Müzesi Kuruluş Amaçları

*Fig.11. Altay Dağlarındaki Ukok Kurganı'nda bulunan ceset. M.Ö. 5-4 yüzyıl. İç-Oğuz döneminde gömülen genç kızın vücudundaki dövme.*

İnsanoğlu, tarihinde konargöçer medeniyeti oluşturarak "Bengü el (Ebedi el)" ideolojisini öne sürmüş ve günümüzde 26 kardeş dil konuşan Türk halkları tarih boyunca 16 alfabe kullanmıştır. M.Ö. 1200 yılından itibaren ilk Göktürk bitig yazıtı oluşturmuştur.

Avrasya Milli Üniversitesinin Avrasya düşüncesini ön planda tutarak Avrasya coğrafyasındaki kültürü, yazıt türleri ve yazı eserlerini tanıtmak amacıyla kurulmuştur. Ses, işaret edecek harflerin oluşmasından önce insanoğlu piktografiya, ideogra- fiya, hiyeroglif, hece yazıtı kullanmıştır. M.Ö. 2 bin yılının sonunda sözü, hecelerin gösteren yazıt oluşmuştur. Netice- sinde M.Ö. 13 asırda Semit harf yazısı ortaya çıkmıştır.

*Fig.12. M.Ö. 10-5 yüzyıl. Ayıt İç-Oğuz/İskit sakalar/döneminin kaya resimleri*

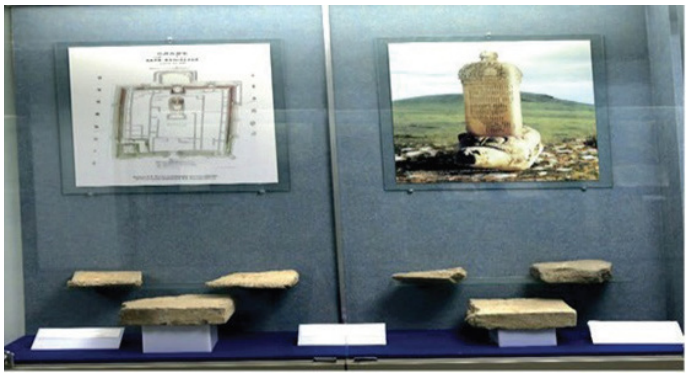


*Fig.13. Ordubalık sütunundaki Soğd metni. M.Ö. 73*

*Fig.14. Esik Kurganı'nda bulunan Altın Elbiseli Adam ve gümüş kepçedeki bitig yazıt. M.Ö.5-4-yüz-yıl.*

*Fig.15. Geyikli taş. İç-oğuz devri. Moğolistan M.Ö.2000-100 yüzyıl.*

*Fig.16. Avesta kutsal kitabı. M.Ö. 3-2. yüzyıl İskit dönemi. Brahmi Alfabesi. M.Ö. 1-7 yüzyıl*

Günümüze gelen sesi işaret eden en eski yazıtlar ise Ahi- ram tabutu'ndaki yazıttır. (M.Ö. 13. yüzyıl).

Yehemi yazıtı (M.Ö. 12 yüzyıl). Bu yazıtların gelişmiş son versiyon örnekleri İncil'de bulunmaktadır (M.Ö. 5-6 yüzyıl).

Finike harfinin daha gelişmiş türü Ürdün Nehri'nin doğu kısmında Moava Meşa hükümdarının anısına dikilmiş olan sütundaki yazıttır (M.Ö. 9 yüzyıl). Bu Meşe yazıtından eski Yahudi yazıtı çıkmıştır. Finike'nin gelişmiş bir örneği olarak Aramey Yazıtı ortaya çıkmıştır.

Yazı Tarihi Müzesi'ndeyazı tarihini gelişimine ışık tutan değerli eserler bulunmaktadır. Bunlardan:

- Küüli-Çor Kitabesi. M.Ö. 740.
- Bilge Kağan Kitabesi (735 yıl) ve Bilge Kağan heykeli.
- Bilge Kağan'ın hatunu Bübi-Begim heykeli.
- Gümüş tabaktaki kurban aşı (kurutulmuş koyun eti) de yer almaktadır.
- Tonyukuk Anıtı (738 yıl) ile Terkin Kitabesi (753 yıl)
- Bilge Törayın Kağan'ın 3 kitabesi. (760 yıl)
- Üç dilde Türk Çin Soğd yazıtlarında yazılan ordu balık kitabesi müzenin sergileme alanlarında bulunan değerli eserlerdir.
- Köşe taşları adlı yerde bulunan Kültigin ve Bilge Kağan Anıtı'nın kuzey kısmında yer alan ayrı küçük anıt barınaklardaki taş/kututaş M.S.7. yüzyıl. Tuygun/ simurg kuşu/kabartılan taş levha, Manihei yazıtı. M.S. 3-10 yüzyıl'a ait eserler bulunmaktadır.

Müze hafta içi saat 09.00 - 17.00 arasında ,Cumartesi günü ise 09.00 -13.00 arasında ziyarete açıktır. Müze ziyaretleri ücretsizdir

## Sonuç

Yazı Tarihi müzelerinin yurtdışında ve ülkemizde örneklerinin giderek artması eğitim müzelerine de kaynaklık sağlayacaktır. Aynı zamanda üniversite müzelerinde eğitim tarihinin gelişmesi açısından örnek teşkil etmektedir.

## Kaynakça


Alyilmaz, Cengiz; (2016),Uluslararasi Türk Akademisi ve Altay Cumhuriyeti'ndeki Eski Türk Yazitlari Albümü Adli Eser Üzerine, A. Ü. Türkiyat Araştırmaları Enstitüsü Dergisi [TAED] 56, Erzurum,s:657-690

Erbay, F.& Erbay, M.; (2016). Değişen Üniversite Müzeleri; Trakya Üniversitesi Yayını; ISBN:978-975-374-204-7, Edirne

Gumilev,L.N. (2003), Etnogenez Halkların Şekillenişi, Yükseliş ve Düşüşleri, İngilizce'den çeviren: D. Ahsen Batur, Selenge Yayınları, 523, İstanbul.

Gumilyev, L.N.;(2012), Eurasian National University rector lectures in Kurchatov city

Konkobayev, K., Useev, N. ve Şabdanaliyev, N. (2015). Altay Cumhuriyeti'ndeki Eski Türk Yazıtları Albümü. Astana: Uluslararası Türk Akademisi Yayınları.

Taşağıl, Ahmet.;(2003),Gök-Türkler 1-2-3,Türk Tarih Kurumu Yayını,Ankara,s:229

Qarcaubay, Sartkocaoğlu.;Göktürk Yazıtının Genezi (Görüşme Tarihi:21-22 04.2014 / Mayıs 2016)

Qarcaubay, Cantegin.;L. N Gumilev Avrasya Universitesi Arkeolog – Turkolog (Görüşme Tarihi:21-22 04.2014 / Mayıs 2016)

UNIMUSEUM
International University Museums Association Platform

# Comparison Between Kandilli Observatory Museum and Galileo Museum

**Mutlu ERBAY**

**Cite this article as:**
Erbay, M. (2018). Comparison Between Kandilli Observatory Museum and Galileo Museum. UNIMUSEUM, 1(1), 11-17. DOI:

**ABSTRACT**
**Comparison Between of Kandilli Observatory Museum and Galileo Museum**

The objective of this paper is to compare and evaluate worldwide known Kandilli Observatory and Galileo Museums. Bogazici University Kandilli Observatory Museum is the current Kandilli Observatory and Earthquake Research Institute located in the back of Kandilli by director Fatin Hoca in 1911 as the continuation of Observatory-Amire, founded in Beyoğlu in 1868. It is a Turkish observatory, which is also specialized on earthquake research. The museum is retransformed as Kandilli Observatory and Earthquake Research Institute Museum in 2006 to provide information on geophysics instruments for young students. Galileo Galilei Museum was created by the University of Florence in 1972 for the Italian astronomer, physicist, engineer philosopher and mathematician on the banks of the Arno River in Florence. The research was designed to provide contributions to young scientists and museum specialists by investigating similarities and differences between the two museums.

**Key Words:** Galileo Museum, Kandilli Observatory and Earthquake Research Institute Museum, Exhibition, Research Institution, Mathematics, Science.

Boğaziçi Üniversity, Head of Fine Arts Department,
İstanbul - Turkey

**Unimuzed.org**

**Accepted:** 01.12.2017
**Submitted:** 01.06.2018
**Published online:** 23.07.2018
**Correspondence:** Doç. Dr. Mutlu ERBAY
**Unimuseum**
**E-ISSN**
**DOI**

## Introduction

Boğaziçi University Kandilli Observatory Museum: Kandilli Observatory Museum includes instruments in the Islamic Era as sextants, quadrants, manuscripts, telescopes, transit instruments, globes, observatory equipment and a wide astronomy collection. Within the Rectorate of Ergün Toğrol and the Observatory Directorate of Ahmet Mete Işıkara, Fethiye Erbay was assigned to establish a museum in Kandilli in 1992. Museum studies initiated within the same year by Cumhure Üçer, Atilla Özgüç, Tahsin Tahaoğlu ve Fethiye Erbay, Mutlu Erbay. Within the context of this Science Museum Project; inventory was defined, collection was recognized and restoration works started at first.

Old instruments, sextants, quadrants, astrolabes and astronomy calendars were collected from the university departments for exhibition purposes. Instruments kept in various places, storages and packages were removed, cleaned, separate pieces were brought together and inventory studies were initiated. Inventory studies performed by Fethiye Erbay and retired museum specialist of Beşiktaş Naval Museum and her student Nuran Tezgel, in 1993.

A specific area in the building was assigned for museum objects. Museum establishment project was prepared by Nuri Özer Erbay and the preliminary project was completed in March 1994. Earthquake simulation rooms, ateliers for training purposes were included in the pro- ject. Fethiye Erbay designed and drew new cabinets appropriate for contemporary exhibition standards. 10 cabinets were constructed. Construction work started to transform this area into a museum. Museum project was supported with an exhibition held on the occasion of Ulug Bey's 600th birthday.
Since 1992, establishment of Kandilli Observatory and Earthquake Research Institute Museum has gained a new perspective. In 2006, Gülay Barbarosoğlu, Head of the Institute, brought the Project of Establishment of Science Museum in Kandilli Observatory and Earthquake Research Institute into the agenda. Barbarosoğlu's attempts to retrieve the objects formerly be long the Institute and not open to public in Rahmi Koç Industrial Museum became successful and those objects were taken back. The seismography lab built in 1934 by the devoted studies of Mustafa Aktar and Tahsin Tahaoğlu was also integrated in museum's exhibition area. 32 of 581 volumes Kandilli manuscripts, including 369 books on astronomy, mathematics and geography and written in Turkish, Arabic and Persian, are exhibiting in the museum. The museum was restorated by Istanbul Metropolitan Municipality in the past.

During the Rectorate of Gülay Barbarosoğlu, the Kandilli Observatory and Earthquake Research Institute Museum was again brought to the agenda to protect the cultural heritage. The studies initiated to establish an official museum.

**Galilei Galileo's Galery:** Galileo's name was due to a fifteenthcentury ancestor, Galileo Bonaiuti. He was Galileo's greatgreat uncle and had been a wellrespected physician and chief magistrate in Florance. The family changed its surname to Galilei in his honor and Galileo was also given his first name. Galileo's father, Vincenzio Galilei, was born in Florence, Italy in 1520. He had a significant influence on his son. He studied music in Venice and later made his living as a composer, singer, teacher and lute player. Vincenzio published several books on music theory and musical scores for the lute. He also performed several experiments using mathematics to try to explain how musical instruments worked. These experiments had a strong influence on Galileo. Galileo learned how to sing, play the lute and other musical instruments.

*Fig 1-2. Museum Objects in the Kandilli Observatory and Earthquake Research Institute (F.Erbay; 1994)*

*Fig 3. Documentation of Museum Objects in Kandilli Observatory and Earthquake Research Institute, (F.Erbay; 1994)*

He learnt musical measure of time or rhythm. Vincenzio Galilei wrote "Dialogue on Ancient and Modern Music". He discovered and published a new tuning rule for lute. This work was against the traditional music model and a challenge for former music teacher of him, hence Vincen zio's former teacher prevented him to publish the book in Venice, and this book was published three years later. Galileo's experimental and theoretical works on mass movement were independent from the works of Keppler and Descartes. His inventions were prototypes of classical mechanical instruments developed by Sir Isaac Newton. Galileo conducted various experiments on pendulums. These experiments originated from a sermon in the Cathedral of Pisa when he became interested in the cathedral's chandelier. As it swung in the breeze, the chandelier traced part of the circumference of a circle, or an arc. Galileo noticed that the time for a complete swing appeared to stay the same whether the arc was small or large. He used his pulse to measure the time and counted how many beats each swing took.

He studied Medicine for two years at the University of Pisa before his interest
in Physics.

Galileo's quote: *''Philosophy [nature] is written in that great book whichever is before our eyes -- I mean the universe* –''but we cannot understand it if we do not first learn the language and grasp the symbols in which it is written. The book is written in mathematical language,

*Fig 4-5 Exhibition of Museum Objects in Kandilli Observatory and Earthquake Research Institute (F.Erbay; 1994)*


*Fig 6-7. An astrolabe and a quadrant (F.Erbay; 1994)*

and the symbols are triangles, circles and other geometrical figures, without whose help it is impossible to comprehend a single word of it; without which one wanders in vain through a dark labyrinth."

Galileo questioned the strict, dogmatic and traditional views of the Church with philosophical views and ideas of the Enlightenment. Galileo made his own telescope and tried to discover the mysteries of the universe. This was the physical basis for theoretical assumptions of today's astronomy. Galileo observed the surface of the Moon, discovered the phases of Venus and discovered Jupiter's satellites, observed Saturn's ring, Orion and the star groups and the Milky Way, and discovered the sunspots on the Sun. Galileo's observations strengthened his belief in Copernicus' theory that Earth and all other planets revolve around the Sun. Most people in Galileo's time believed that the Earth was the center of the universe and that the Sun and planets revolved around it. The Catholic Church, which was very powerful and influential in Galileo's day, strongly supported the theory of a geocentric, or Earth- centered, universe. He was accused of being a heretic by the Church and people.

"Starry Messenger" was criticized by traditionalist scientists and ecclesiastics. The Church thought that this was a serious threat for its holy structure since the Renaissance. This perception indicated that the strict rules and actions of the Church were getting more restricted. Galileo proved the validity of the Copernican system, the Sun was the center of the universe and the Earth had a motion around this center.

**Galileo Museum:** Galileo had also valuable contributions in engineering such as physics. Between 1595 and 1598, he invented and developed geometric and military compass which was appropriate for the use of soldiers and architects. This instrument was a developed version of the former instrument designed by Niccolo Tartaglia and Guidobaldo Del Monte. Marc Antronio Mazzoleni produced over 100 of these compasses with Galileo's order and Galileo sold at 50 lire a piece. He also received 120 lire for the lectures to teach how to use of this instrument. In 1593, Galileo Galilei invented a rudimentary water thermoscope, which for the first time, allowed temperature variations to be measured. These objects are the most valuable instruments in the museum and symbolize the first technological improvements.

GMAİLG

Galileo Museum has various awards like 2010 ICOM Italy Award, 2010 British Scientific Curator Award and 2011 European Museum Academy Award.

The Palazzo Castellani, site of the Istituto e Museo di Storia della Scienza since 1930, nowadays Museo Galileo, is a building of very ancient origin, dating from the late 11th century. Today, it hosts the Galileo Museum of University of Florence, the Institute and Museum of the History of Science.

## Interior Design and collection of Galileo Museum:

Medici and Lorraine collections were transferred into a small room in the Uffizi Gallery which became known as the "stanzino delle matematiche" and the museum was established. In 1775, the instruments were moved from the Pitti Palace to the Royal Museum of Physics and Natural History founded by Grand Duke Peter Leopold Habsburg-Lorraine. In 1929, the First National Exhibition of the History of Science was organized in Florence. Main remark of this exhibition was Italy's scientific heritage and following the show, in 1930, the University of Florence opened to the public in Palazzo Castellani and the permanent exhibition of the Istituto di Storia della Scienza, to which the Medici-Lorraine collection of instruments had been conferred. The museum is open to public since 1930 and an affiliation of the University of Florence. After the damage caused by the bombings that destroyed the bridges of the Lungarno at the end of the Second World War, another hard blow was dealt to the collection by the flood of 1966. The instruments were


*Fig 8. Galileo Museum, University of Florence, Institute and Museum of the History of Science*
*http://www. visitmuseums.com/museum/galileo-museum-of-science-florence-italy-343.(çevrimiçi; Mart 2016)*

stored in the basement; ground floor of the Museo wasserious damaged. Thanks to the efforts of Maria Luisa Righini Bonelli, the director of the Museum later, it was possible to carry out the instruments, reopen the exposition rooms to the public and return energies towards library collecting and research activities. Building of the museum was renovated between 2002 and 2003. Goppion made 80 display cases and cabinets for Galileo Museum, objects are still exhibited on these cabinets today. Basement is used for the seminars, conferences, temporary exhibitions, cultural events.

Book sales, restoration studies are conducted in the Entrance Floor. Medici Collections are included in the First Floor. Second Floor is designed for Lorraine Collections. Third Floor includes Galileo Museum, offices and a library belongs to University of Florence, Institute and Museum of the History of Science and a project area for the team work.

Galileo Museum includes Medici and Lorraine Collections. The First Floor Temporary Exhibition includes Medici Collections, Science Academy Collections in 1657, Leopold Medici Collections, a thermometer, a barometer and objects found in Pitti Palace. The Medici Wardrobe from 1562, the wardrobe in Vecchio Palace, the house of Cosimo Medici, maps, solar system and globes.

In 1600 the collection was transferred to a small room in the Uffizi Gallery which became known as the "stanzino delle matematiche". Lorraine Family Collections include microscopes, telescopes, micrometers and spectroscopes as well as thermoelectric instruments. There was a room including Lorraine Colections:

These collections, Galileo Tribune, as statue of Galileo, a military compass, and telescope were brought together with the documents on Galilean discoveries in 1841.
Two fingers and a tooth removed from Galileo Galilei's corpse in a Florentine basilica in the 18th century. The vertebra, tooth and three fingers have been kept at the University of Padua, where Galileo taught for years. But the tooth and two fingers from the scientist's right hand - the thumb and middle finger - were kept by one of the admirers, an Italian marquis, and later enclosed in a container that was passed on from generation to generation in the same family. Museum authorities found detailed historical records and documentation regarding to these families and gave them back to the museum in 2014.

A geometrical and military compass was designed by Galileo in 1604. Galileo's military compass offered gunners a new and safer way of elevating cannons accurately and enabled them to quickly compute the charge of gunpowder for cannonballs of different sizes, materials. He published Operations of the Geometric and Military Compass in 1603. In the preface, it was stated that the book was written in the writer's house. The preface also included a lens and two telescopes developed by Galileo with the contributions of Don Cosimo, the Grand Duke of Tuscany, to discover Jupiter's satellites. Galileo heard of a Dutch invention that allowed distant objects to be seen as distinctly as if they were nearby. He noticed the military importance of this instrument. He built his own telescope, and then gradually improved the power of his telescope, grinding lenses himself, and he introduced his invention to the Venetian Senate. He was quick to spot the potential military application of an instrument which would enable the holder to see ships' approaching Venice two hours before they were visible to the naked eye. He made the Senate a present of a telescope. time, allowed temperature variations to be measured. In 1714, Gabriel Fahrenheit invented the first mercury thermometer, the modern thermometer.

Galileo's thermometer, thermoskope was invented in 1597. The Galilean thermoscope comprises a small glass jar fitted with a very thin tube about 50 centimeters long. You warm the jar in your hands and immerse it upside down in a vessel filled with water. When the jar loses the warmth from your hands, you observe that the water rises in the tube.

The experiment demonstrates the changes in air density caused by changes in temperature.
When the jar is warmed again, the air inside expands, lowering the level of water in the tube. Conversely, when the air cools, its volume shrinks, enabling the water to rise back from the lower vessel into the tube of the jar. He also researched on the areas of Mass and Gravitational

Force. Galileo was the first to study the simple pendulum. He conducted experimental and theoretical research on mass movement. Unlike Kepler, he found that even when a pendulum swings through a small angle, the time of each swing (the period) remains the same as if it swung through a large angle. Galileo performed the experiments at the Leaning Tower of Pisa with the balls of different weights.

During the reign of Ferdinando II, the Grand Duke of Tuscany, a plague swept through Florence. As a scientist, Galileo had an interesting comment on the plea that he analyzed on the microscope: "awful"…They were analyzing them through lenses, however they were unable to define that these microorganisms are real microbes. The "Microbe" would be defined in 1894 by a French bacteriologist Alexandre Yersin, from the Pasteur Institute.

Inclined Plane and Mass Research are also very important. He published the books *"Of Things that Float on Water"* (1612) and The Discourses and Mathematical De- monstrations Relating to Two New Sciences (1638). He calculated the rolling periods and the initial velocity/ time of bronze cannon balls in Venice.

He used a pot filled with water and hanging above. He added a small scale pipe at the bottom of the pot. He measured the discharged water during the each fall of the ball. These measures gave the differences and proportions, hence the mass and the velocity of fall could be calculated.

Inclined Plane Experiment indicated that the weight of an object mathematically related to the component of the weight directed parallel to the inclined plane. The mass of the object doesn't matter; the mass was parallel to the velocity. This development was very helpful for cannon casting ateliers in Venice.

**Galileo Museum Library:** The library –which has been a part of the institute since its foundation– was completely remodeled in 2002, when it was moved to the third floor of Palazzo Castellani. The new architectural design was awarded the "Bibliocom Biblioteche in vetrina" prize. The library houses about 150,000 works concerning the history of science.
The antique book collection consists of nearly 5,000 works. It includes the Medici-Lorraine Collection, made of scientific books mostly about physics and mathematics, gathered by Tuscan dynasties over five centuries. The library is also home to several archival collections from 18th.to 20th. century and has a photo archive related to the history of the museum's collections, ancient instruments and places of scientific interest. All the materials of the library can be searched from the online catalogue. Museo Galileo started its own Multimedia Lab in 1991. The Lab produces offline and online interactive applications related to the dissemination and documentation of both permanent collections and temporary exhibitions. It also creates digital archives for historical scientific research.

**Research and Documentation:** Museo Galileo carries out research and documentation in the history of science and technology, as well as in the field of preservation and improvement of museum collections. The Library's book collection and a number of online resources are available to scholars. The museum is a partner to the important institutions, such as the Royal Swedish Academy of Sciences, the Nobel Foundation, the Max Planck Society's institutes and the Harvard University, and co-sponsors several research projects. It also organizes and takes part in many conferences on scientific museology and the history of science and technology.

Galileo Galilei (1564 – 1642), was an Italian astronomer, physicist, engineer, philosopher, and mathematician who played a major role in the scientific revolution during the Renaissance. He changed the mind and logic of his era. Galileo has been called the "father of observational astronomy", the *"father of modern physics"*, and the *"father of science"*. His contributions to observational astronomy include the telescopic confirmation of the phases of Venus, the discovery of the four largest satellites of Jupiter, and the observation and analysis of sunspots. He got blind in 1936 because of naked sunlight and he lost his life in 1642. Through the end of his life, Galileo stated following words for his own life: "I would prefer to discover only one fact in the life, even a small one instead of not discover anything and explain the large and wide things. These small things are as important as many fundaments of the inventions are kept in their prototypes"

Galileo's Dialogue Concerning the Two Chief World Systems was published in 1632 and some months after the book's publication, Pope Urban III and Barbarine banned its sale and expelled him from the Science Committees and intellectual bodies. The Inquisition blamed him for heresy, he was forced to give up his minds and he was sentenced to life imprisonment, which was fortunately later reduced to permanent house arrest. He published *"The Discourses and Mathematical Demonstrations Relating to Two New Sciences"* in 1638. 366 years after the Roman Catholic Church condemned Galileo; Pope John Paul II is poised to rectify one of the Church's most infamous wrongs the persecution of the Italian astronomer and physicist for proving the Earth moves around the Sun.

In 1737, 95 years after his death, his corpse was moved from a storage place to a monumental tomb in Santa Croce Basilica in Florence. Galileo Museum Project for restoration and exhibition were designed by Guicciardini& Magni architect studio associate (2007-2010)

The Director of the Vatican's Observatory in Italy, Fr. José Gabriel Funes said in an interview with the Vatican daily, L'Osservatore Romano, it is the 400 th anniversary of Galileo's first celestial observations, so 2009 declared as the astronomy year by the United Nations and the UNESCO and celebrated as Galileo year in Italy. The memory coin is pressed for this year honour.

How does the Kandilli Observatory Museum become a worldwide known museum as Galileo Museum?

The Kandilli Observatory Museum has the advantages of its institutional building, location and has a safe, sheltered area within the campus. It is open to researchers

and reminds the Galileo Museum with these features. The Kandilli Museum has its own janitors, researchers and a manager. However, this museum employs fewer researchers than the Galileo Museum. Inventories of the Museum were recorded and their restorations were completed. The objects and artifacts are always under maintenance, and many instruments are in working order. The Museum may cooperate with various research insti- tutions. The artifacts may be shared in the digital media.

## Conclusion

The museum may be represented through a master program or by the Institute. The Galileo Museum is a subsidiary of an Institute, therefore has various sources and funds. The Galileo Museum buys artifacts outside and accepts various objects to exhibit.
However, the Kandilli Museum is not allowed to receive

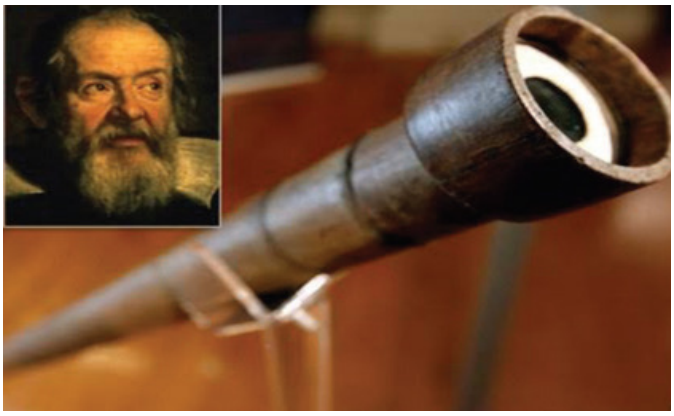


*Fig 9. Galileo Museum Galileo's telescope., http://www.museumsinflorence.com/musei/History_of_Science_museum.html( Çevrim içi:7.07.2018)*

any donations. Youth generation should be attracted and kept awake through social media. Some researches and conferences may be organized. Swot and feasibility works on museum development still continue. We are in the belief that the Museum will serve as a worldwide known institution as the Galileo Museum in a short period of time

## References


Bixby, William: (1997), **Galileo ve Newton'un Evreni,** çev. Nermin Arık, Tübitak Yayını, ISBN 9789754030778

Brodrick, James S,J: (1964), **Galileo the Man: his Work, his Misfortunes,** Harper and Row Publishers, California University,New York, ASIN B0007ILH0W

Erbay, Mutlu.; (2016). **Compare of Kandilli Observatory Museum to Galileo Museum,** Değişen Üniversite Müzeleri; Trakya Üniversitesi Yayını; ISBN: 978-975-374-204-7, Edirne, s.139-151

Erbay,Fethiye & Erbay, Mutlu.; (2016), **Değişen Üniversite Müzeleri;** Trakya Üniversitesi Yayını;ISBN:978-975-374-204-7, Edirne,

Topdemir, H.Gazi & Yenilmez, Seval.; (2009), **Galileo:Dünyayı Döndüren Adama,** Fikir Mimarları Dizisi, Say Yayınları, No: 18, İstanbul, ISBN: 9789756391129

Heilbron ,J.K:(2010) **Galileo,** Oxford University Press, England, ISBN: 9780199655984

Manhamer, Peter.:(1998), **The Cambridge Compani on to Galileo,** Cambridge University Press, England, ISBN: 0521588413,9780521588416

Sirkecioglu, Murat. :(2009), **Galileo, Dante'nin Cehennemi Üzerine Dersler,** Bilge Kültür Sanat, Istanbul, ISBN: 97860557.

Sobel Dava.:(2000), **Galileo'nun Kızı,** Bilim, İnanç ve Sevgi Üstüne Tarihsel bir İnceleme, Türkiye İş Bankası Kültür Yayınları, Yayın no: 478, Edebiyat Dizisi No:128, İstanbul, ISBN :9789754582376

Guicciardini and Magni Architetti_studio Katalog, (2014); **Galileo Museum Project 2007-2010,** Associato.portfolio:http://www.guicciardinimagni.it & http://www.guicciardinimagni.it/en/Projects-list/galileo-museum/paginate_group:Museums (Çevrimiçi: 18-21 Nisan 2016)

https://www.**museogalileo**.it/it/museo/impara/online.html (Çevrimiçi: 18-21 Nisan 2016)

http://www.**visitmuseums.com**?museum?galileo-museum-of-science-florence-İtaly-343(Çevrimiçi: 18-21 Nisan 2016)

https://www.**getyourguide.com.tr**/floransa-l32/galileo-nun-muezesi-oezel-rehberli-tur t88808/?referrer_view_id=1e4ff45d97d1bcdf1453b45c276d5109&referrer_view_position=2(Çevrimiçi: 21 Temmuz 2018)

History of Science Museum Galileo; http://www.museumsinflorence.com/musei/History_of_Science_museum.html (Çevrim içi:7.07.2018)

UNIMUSEUM
International University Museums Association Platform

# METU SCIENCE AND TECHNOLOGY COLLECTION: DETAILS FROM ARCHAEOLOGICAL EXHIBITIONS

**İlker KOÇ**

**Cite this article as:**
Koç, İ. (2018). Metu Science and Technology Collection: Details From Archaeological Exhibitions. UNIMUSEUM, 1 (1), 18-23. DOI:

**ABSTRACT**

**METU SCIENCE AND TECHNOLOGY COLLECTION: DETAILS FROM ARCHAEOLOGICAL EXHIBITIONS**

The activities of the Science and Technology Collection located within the Middle East Technical University campus are concentrated on four main areas. These are History of Science and Technology Exhibition, Classical Automobiles Exhibition, Science Center and Open Air Exhibition Area. The History of Science and Technology Exhibition can be grouped in three types of exhibitions. The first group is composed of exhibitions showing the advancement of science and technology in Anatolia down the ages. The second group includes exhibitions showing the enhancement of technologies such as writing, medicine and textile. The third group, on the other hand, is composed of exhibitions where certain working spaces (blacksmith, coppersmith, pharmacy, photography studio and laboratory, radio repair shop etc.) from Ottoman and Republican periods are reconstructed. In these collections, the replicates of archaeological objects and the originals of Ottoman and Republican periods objects are put on display.

In this article, general information will be provided with regards to exhibitions showing the development of science and technology in Anatolia throughout the millennia, and more detail will be given on the Hittite Period Exhibition. Extensive information will be given on some selected objects of Hittite Period Exhibition, such as Alaca Höyük reliefs, earthenware pipes used as part of water supply system of the city, a Hittite musical instrument (lute/guitar-like), a saw, a pot bellows, a loom, and clothes and shoes of soldiers.

**Keywords:** Collection, Anatolia, Hittite, Exhibition, Science, Technology

Research Assistant, Middle East Technical University, Society and Science Application and Research Center, Ankara - Turkey

**Unimuzed.org**

**Accepted:** 01.12.2017
**Submitted:** 01.06.2018
**Published online:** 23.07.2018
**Correspondence:** Arş. Gör. İlker KOÇ
**Unimuseum**
**E-ISSN**
**DOI**

## Introduction

The studies at the Science and Technology Collection under The Society and Science Application and Research Center established at the Middle East Technical University started in the year 2000. The introductory exhibition opened in 2003 and moved to the main exhibition area where it stands today in 2005. The collection consists of four areas: History of Science and Technology Exhibition, Classical Automobiles Exhibition, Science Center and Open Air Exhibition.

The History of Science and Technology Exhibition consists of three different themes. The first one includes the exhibitions showing the development of technology through ages in Anatolia via archaeological exhibitions. The second group covers the development of technologies such as writing, medicine, chemistry and textile while the third group consists of exhibitions that enact the working environments of some professions in the Ottoman and Republic Eras. These exhibits contain the replicas of archaeological objects and the originals of the objects dated to the Ottoman and Republic Eras.

In the exhibitions showing the development of technology through ages in Anatolia, the timeline starts at the beginning of the Universe and chronologically comes up to the Republic Era. Especially the replicas of objects from Anatolian civilizations are exhibited in these exhibitions.

## Geological Times Exhibition

The first exhibition cell depicts geological times and provides information about the formation of the solar system and Earth based on the Big Bang Theory, and the diversification of life on Earth. The visitors learn about the formation of the universe, and find the opportunity to closely examine the models of specific dinosaurs that lived in the Jurassic Era (between 200 million years and 146 million years ago), known as the second period of the Mesozoic Era (between 251 million years and 61 million years ago). The model of Brachiosaurus, one of these dinosaurs, attracts the attention of especially young visitors. Right next to this cell, there are skull replicas belonging to hominids starting from 3.8 million years ago. Moreover, replicas of some stone cutting and piercing tools provide the visitors some insight into these daily use tools.

## Göbekli Tepe Exhibition

Göbekli Tepe, located 2.5 km to the east of Örencik Village, 15 km to the northeast of Şanlıurfa, is known as the oldest temple in the world and is dated to the Pre-Pottery Neolithic Era (Schmidt, 2007, p. 115). Göbekli Tepe was established by hunter-gatherers and the studies suggest that it was built about 12,000 years ago, filled with monumental structures of ritualistic purposes (Schmidt, 2009, p. 11). The defining feature of this monumental structure with a circular plan is that it contains very heavy, monolithic, T-shaped stones (Dietrich, Köksal-Schmidt, Kürkçüoğlu, Notroff, Schmidt, 2012, p. 52; Schmidt, 2011, p. 921). The limestone monoliths typically have reliefs showing lions, snakes, gazelles, foxes, bulls, hogs and cranes (Schmidt, 2011, p. 65). However, there are also many symbolic finds. In addition to the T-shaped monoliths in Göbekli Tepe, many shells, fillings, flint knives and small blades constitute another group of artifacts (Dietrich et al., 2012, p. 54). Göbekli Tepe is very important since it shows the value of the symbolic world for the people who lived around it in the Pre-Pottery Neolithic (Sagona and Zimansky, 2015, p. 59; Schmidt, 2007, p. 115). The replica of a section of this monumental structure is exhibited in the Science and Technology Collection. The exhibition contains the monoliths depicting a lion, hog, fox and crane, in addition to the relief of a reptile-like animal (Schmidt, 2007, pp. 164 pict. 25, 188 pict. 59, 290 pict. 103).

## Neolithic Period Exhibition

The Neolithic Period in which humans started engaging in agriculture following a period of hunting-gathering, domesticating animals and living together in their villages is very significant because it is the foundation of our present civilization. This period is divided in two: Pre-Pottery and Pottery Neolithic Periods. Hunting and gathering were still going on in the Pre-Pottery Neolithic, during which a new architecture and village life emerged following settled life, grains and animals were domesticated and included in the food chain. During Pottery Neolithic Period, the economic model based on farming and food production affected the whole social life (Özdoğan, 2011a, p. 56). Architecturally, the transition from shelter to cottage took a very long time. At the beginning of the Neolithic, the common architectural style consisted of round cottages. The superstructures of these cottages were laid with materials such as branches and reeds, then plastered with mud. In time, these structures became inadequate because necessities such as food preparation and storage arose. This situation led to the transition to rectangular-plan, vertical walled and roofed, wider structures built from adobe over a stone foundation (Özdoğan, 2011a, pp. 58-59). In our collection, in addition to the house models showing the development of the architecture of the era based on the archaeological evidence (Çayönü-Diyarbakır, Ilıpınar-İznik, Hacılar-Burdur) we have also prepared the replica of a Neolithic House. Examining the features of these houses especially encountered in Çatalhöyük, we find that the houses do not have doors, the entry to the house is from the roof, using portable wooden ladders. The sofas in the houses are used to place objects on and to lie down on. Another feature of the sofas is that the deceased are buried under the ground under these sofas (Akurgal, 1989, p. 22; Hodder, 2011, p. 110; Mellaart, 2003, pp. 38-42, 47, 92, 168; Naumann, 1998, p. 494; Özdoğan, 2011a, p. 61; Öztan, 2007, pp. 224-225). The exhibition also contains replicas of some objects used in daily life. The wheat grinding stone that represents the food production technology encountered in the Körtik Tepe and Çayönü settlements, bone tools and spoons used in daily life, containers and obsidian mirrors that reflect the importance of the institutionalization of the

farmer's life based on the production model constitute this group (Esin and Harmankaya, 2007, p. 270 fig. 19; Mellaart, 2003, p. 5; Özdoğan, 2007, pp. 409 fig. 4-5, 419 fig. 23; 2011b, p. 78; Özkaya and San, 2007, p. 26 fig. 23).

*Fig. 1. Neolithic House (Neolithic Period Exhibition), METU Science and Technology Collection*

## Chalcolithic Age and Early Bronze Age Exhibitions

Based on the obtained finds, the people who lived in Anatolia, which is considered the emergence point of mining, discovered the deposits for these metals and manufactured the tools, symbols, jewelry, weapons and kitchenware they needed. Based on these finds, it is known that the first metal discovered by humans was copper, and the people living in Aksaray-Aşıklı Höyük and Diyarbakır-Çayönü mined the raw copper in the area, processed it with simple methods and manufactured small tools and jewelry. Mining in Anatolia can be studied in distinct periods. These periods are: The Preparation Period - before 8200 B.C. (non-metal period), Beginning Period- after 8200 B.C. (single metal period), Development Period-after 5000 B.C. (beginning of extractive metallurgy), Structuring/Experience Period - after 4000 B.C. (advanced metallurgy) and Industrial Period- after 2800 B.C. (Bronze and Iron Ages). In the preparation period, it is understood that people collected the malachite ore but didn't process it at the beginning, and the object manufacture started around 9000 B.C. The beginning period is very important because it is the period in which humans started using pyro-technology. Fire that was previously only used for heating was used to heat and beat the copper. As a result, it was discovered that copper could be processed more easily and more sturdy products could be manufactured. It was the first time that heat was used for a technological purpose such as processing a raw material. Thus, the foundations of the mining industry were laid (Bilgi, Özbal and Yalçın, 2004, pp. 3-9; Yalçın, 2008, pp. 18-19). During the Chalcolithic Age, which was called the urbanization process of agricultural villages, also defined as the Development Period of mining, copper ore was smelted in crucibles to obtain pure copper for the first time. Thus, copper was used in the manufacture of axes and chisels: the first examples of casting. (Bilgi et al., 2004, pp. 9-10; Özdoğan, 2011c, p. 102). Replicas of some melting pots and axes-chisels found in Kuruçay Höyük, one of the settlements in this period, are on display in the Chalcolithic Age Exhibition in the Science and Technology Collection. Replicas of other finds from this settlement such as mortars, copper knives, copper sewing needles are also on display in the exhibition. (Umurtak, 1996a, p. 52 and plt. 149; 1996b, pp. 56-57 and plt. 161,166; 1996c, p. 60 and plt. 166). Due to smelting and casting techniques, larger and more complex objects could be manufactured. This situation was a turning point in terms of technology (Sagona and Zimansky, 2015, p. 129). In the Structuring/Experience Period, those who were engaged in the mining business tried to obtain complex, compound ores and to process those. Copper ores containing arsenic were of particular interest for them and they started manufacturing arsenic-copper works (Bilgi et al., 2004, p. 13). One of the best examples of these finds is Malatya-Arslantepe Höyük, which was the political center of the region during its history. Arslantepe is an important settlement because it shows that the emergence of the state system was not unique to Upper and Lower Mesopotamia (Sagona and Zimansky, 2015, p. 134). In our collection, the spear tips and swords manufactured using the copper-arsenic casting technique are interesting, among other finds from this mound. The most important feature of these swords is that it wasn't manufactured with the same casting technique as other long swords before its time. (Belli, 2004, pp. 9-10; Frangipane, 2000, pp. 451, 471 fig. 17; 2011, pp. 134-135). The intense use of metals for swords and spear tips was important to demonstrate the power and reputation of the ruling class. Another important feature of this period is the dissemination of the use of metal already known to exist, and the high technology levels it achieved (Frangipane, 2002, pp.284, 289 fig. 77). The Early Bronze Age, also called the Industrialization Period, shows markedly more works and more careful manufacturing. The manufacture of arsenic-copper works continued in this period. Bronze works manufactured in this period are not very numerous. The reason for this is that the amount of tin, which is used to manufacture bronze, is not adequate in Anatolia. The first bronze objects in Anatolia are seen in the middle of this period. In this period, closed moulds were used in addition to open moulds (Bilgi et al., 2004, pp.14-19). Some object that was excavated at Çorum-Alaca Höyük and Amasya-Mahmatlar, which is two of the most important settlements of the period, are included in the Early Bronze Age Exhibition of the Science and Technology Collection. These replicas consisting of axes and weapons are very interesting because they demonstrate the achievements of Early Bronze Age societies in terms of metallic manufacturing.

## Assyrian Trade Colonies Period Exhibition

In the Assyrian Trade Colonies Period, which is known as the beginning of History in Anatolia, in addition to a widespread trade network, writing was also introduced to Anatolia. Experienced Assyrian traders engaged in trade

with Anatolia and they developed this trade a level that allowed the establishment of colonies (Özgüç, 2011, p. 244). Assyrian traders brought tin and cloth to Anatolia and took raw materials such as copper, silver and timber in return (Akurgal, 1988, p.46). Assyrians have set up trade colonies called, kārum and wabartum. The center of these colonies was the kārum at Kültepe (Kanesh/Nesha) (Bryce, 2005, pp. 21-23; Günbattı, 2012, pp. 6-8). Kültepe is a very important location that revealed documents and archaeological finds concerning the Assyrian Trade Colonies Period. The exhibition concerning this period contains replicas of Kültepe finds. The most important finds concerning this period, in which the written history of Anatolia starts, are doubtless the tablet ovens and clay tablets. This is why the replica of the tablet oven in the exhibition offers an interesting experience for the visitors. The visitors of the exhibition are quite surprised when they learn that the ovens that they thought were used to bake bread, were actually used to fire clay tablets. The stone moulds and metal works in the exhibition constitute the other group of finds (Özgüç, 2005, pp.217 fig. 258-259, 220-221 fig. 265-266). The excavated finds show that in this period, the previous experiences and casting skills were at their peak (Bilgi et al., 2004, pp. 24-29). Hematite weights suggest that the widespread trade network was based on weighing and measurement (Kürkman, 2003, p. 18; Özgüç, 2005, p. 26).

*Fig.2. Stone Mould (Assyrian Trade Colonies Period Exhibition), METU Science and Technology Collection*

## Hittite Period Exhibition

The Hittites lived in Anatolia in the second millennium B.C. and established a large empire centered at Boğazköy, which is in the Boğazkale district of Çorum today. The Hittite language used by this civilization is the oldest member of the Indo-European language family. Hittites who had two writing systems used cuneiform, which was an old syllable-based writing system in the Old Babylonian style on tablets, and the hieroglyphic writing system on rock monuments, seals, stone blocks and some vessels and objects. The most important cultural remains of the Hittites are the cuneiform tablets. The excavated cuneiform tablets contain king annals, legal texts, political agreements, administrative instructions and religious texts (Karasu, 1997, pp. 215-216; 2006, pp. 4-5; Savaş, 2013, p. 41). Cuneiform writing consists of nail-like symbols created by pressing a reed pen on clay tablets. The signs in cuneiform are of five types: “horizontal, vertical, rising and falling slopes and corner hook” (Karasu, 2013, p. 88). It is doubtless the Hittite scribes who wrote the ideograms that represented a syllable or a word. The scribes were trained in scribe schools and were subjected to a tough and probably rough training process due to the significance of their job. (Aslantürk, 2014, pp. 38-39; Bryce, 2003, p. 75). It is thought that the structure called “House on the Slope” in Boğazköy is the Scribe School where this training was given (Bryce, 2003, p. 81; Savaş, 2013, p. 52).

The Hittite Period Exhibition displays some of Alaca Höyük reliefs and some archaeological objects provide important information to visitors who came to see this collection. Since the center of their large civilization was in Anatolia, the importance of the Hittites and the works they left behind are also important in terms of Anatolian history. The objects displayed in the exhibition are described in more detail under the following headings.

**1. Alaca Höyük Reliefs:** Hittites had a polytheistic belief system and their pantheon included unique Indo-European gods, Hatti-based gods, Luwian and Palaian gods. Moreover Hurrian gods, Sumerian and Babylonian gods and the gods of the Indo-Ari class were also included in the official religion and pantheon of the Hittites. The Hurrian gods had the most influence over the Hittite religion and had a special place in their pantheon (Aslantürk, 2015, p. 61). The supreme god of the Hittites is the God of Storms. Hittite gods were depicted in human or animal form, or with a stone object (huvaši) (de Martino, 2013, s. 410). Since no information about the social life of the people could be obtained, the only information about the cult and the festivals of the state is based on the texts and reliefs that were found. In religious feasts, ceremonies that were organized with the participation of the king, queen, princes, princesses and high-ranking officials, and in the cult hall of the temple, it was important to make animal sacrifices and offer drinks in front of the god’s statue or altar, or to accompany the worship scene with music and dance. The Hittite kings are generally depicted while presenting offerings to the gods along with musicians. In musical ceremonies, dancers and acrobats accompany the musicians and those who sing prayers. Such scenes are depicted in Alaca Höyük reliefs, dated to the Hittite Empire era. A section of these scenes is on display in our collection. The main scene of the relief in the exhibition depicts the praying or worshiping king in the act of presenting an offering to the god. Right behind the king, the praying queen and the officer bringing the sacrifices that will be used in the cult ceremony are depicted. In another scene, we can see the performing acrobats. In the sacrifice scene, there are depictions of a musician, and officers carrying the sacrificial animal/animal-shaped sacrificial drink or playing an instrument (Alp, 1999, pp. 1, 12, 14, 27; Baltacıoğlu, 2006,

pp. 26-28). An object similar to the lute/guitar-like musical instrument depicted in the relief was manufactured based on the data obtained from the depiction and included in the exhibition (Alp, 1999, p. 27; Baltacıoğlu, 1995, p.5 and fn. 31-32). The musical instruments used by the Hittites are divided into three categories: string (harp, lyre, lute), percussion (cymbal, tambourine, drum) and the wind (flute (long reed), double oboe and horn) (Conka, 2011, p.295). The Alaca Höyük reliefs are interesting because they depict subjects related to the Hittite religion, and they are the most beautiful examples of depicted relief stones. Another point of interest is that they reflect the state of the art of Hittite stone workers.

*Fig.3. Alaca Höyük Reliefs (Hittite Period Exhibition), METU Science and Technology Collection*

**2. Loom:** We do not know for certain that the Hittites manufactured cloth, however, the texts mention cloth processing. It may be suggested that the people were engaged in weaving at home and that they manufactured some of their needs, based on the documents and archaeological finds that were obtained. The great number of spindles loom weights and cloth needles found in the excavations suggest this. The clothing needles found around the great temple in Boğazköy, the capital, suggest that the weavers were generally located in the workshops around the temple (Doğan-Alparslan, 2011, p. 290). A text concerning one of the great festivals of the Hittites, the KI.LAM festival, state that the cult personnel wore first or second class dresses according to their internal hierarchy (Arıkan, 2003, pp. 12-13). The loom on display at the exhibition is the example of a warp-weighed loom used in the Aegean Region during the Hittite Period. Dr. Özlem Tütüncüler in 2000 during her graduate studies, and was donated to be exhibited in the METU Science and Technology Collection at a later date (Koç, 2006, p. 70; Tütüncüler, 2004, p. 293 and pict. 3a).

**3. Metal Objects:** Metals formed the most important part of daily life in the Hittite world. The information obtained from the texts reveal an advanced metallurgy. The metal works that were manufactured using the casting method were also found outside the capital. Most of the tools manufactured in the Bronze Age are axes used in carpentry. A rare find, a saw excavated in Boğazköy is also on display in the exhibition. This saw was used by carpenters and there are no other examples of such a saw in Anatolia. Its length is 67.5 cm and weight is 2.5 kg, the most interesting feature of this object is its similarity to the saws used today. Another interesting object is the goldsmith's anvil/multi-tipped chisel. This tool can be attached to the wood with its long arm, and its arms with varying tips may be used to shape different metal objects (Bilgi, 2004, pp. 90, 97; Jacob, 2002, fig. 148-149; Savaş, 2006, pp. 93-95 and fn. 315). The other metal objects on display include axes, sickles, arrow tips and a fishing line which is very important for the history of fishing (Ertem, 1988, pp. 19, 22 and Cat. 37-38, 28-29 and Cat. 75-78, 31-32 and Cat. 87).

**4. Clay Water Pipes:** The Hittites established a pipe system to transfer the spring waters to the city. This system brought water to the city and satisfied its water requirements. A long water infrastructure was laid down by attaching many clay pipes end to end. The wide mouths of the pipes had holes and these holes were closed off with stone or clay. These holes were used in the maintenance of the infrastructure. The clogged sections were cleaned by means of these holes. The pipes were 60-96 cm long, and with mouth dimensions that tapered from 20-25 cm to 11-15 cm (Jacob, 2002, fig. 150-152; Naumann, 1998, pp. 199-201; Seeher, 2006, pp. 60, 98 and pict. 104; Ünal, 2005, pp. 70-71). An edict from a Hittite king to the commander of a castle states the following on the subject:

"Let the pipes of the bath and the cupbearer's house be removed! Let them look at it! Let them wipe the (dirty) water-clogged ones upwards! Let the birds in the water puddles in your administrative region be healthy (Alp, 2005, p. 79)."

The pipes used to bring drinking water to the city were also used to drain the waste water and rain waters. The statements in a text concerning the protection of the roof of the temple of the Hittite Sun-goddess and a tile dated to the Hittite period found in Alaca Höyük may be the examples for this (Arıkan, 2003, pp. 22-23; Naumann, 1998, pp. 206-209). The replicas of these pipes in the Hittite Period Exhibition attract attention since they provide visual information about the pipe system that was established centuries ago.

**5. Pot Bellows:** The pot bellows were used in smelting ores. These pot bellows had a very important role to play in mining by providing an efficient and controlled air flow to the furnace or oven. The workshops excavated in Kültepe offer examples of these pot bellows. There are notches below the mouths of the pot bellows used to tie the leather. The bottom of the pot bellow has a cylindrical nipple and the air flow is directed to the furnace through the blower attached to this nipple. The workshops excavated in Kültepe contained the pot bellows, furnace, blower, crucible and mould examples used in casting together (Bilgi et al., 2004, p. 25; Savaş, 2006, p. 95 and fn. 321). The pot bel-

lows found in Alaca Höyük and a replica of which is on display at the exhibition is worth attention since it demonstrates one of the mining technologies of the era.

*Fig. 4. Pot Bellows (Hittite Period Exhibition), METU Science and Technology Collection*

**6. Hittite Warrior Dress and Equipment:** Hittites had a regular army and the war uniforms worn by the soldiers consisted of a short wainscot, armor, helmet and pointed rawhide sandals. The weapons they used included daggers, swords, spears, axes, arrows, and bows. However, the greatest strength of the army was their chariots. The skeleton of the chariot on which three soldiers stood during the fight was wooden and it had a leather covering. The chariot had two wooden wheels and pulled by two horses (Koç, 2006, pp. 74-75). The reliefs and wall paintings at Abu Simbel and Luxor (Thebes) depicting The Kadesh War between the Hittites and Egypt offer important information about the Hittite infantry and chariots (Lorenz and Schrakamp, 2011, pp. 126, 128-130 fig. 1-4, 132-134 fig. 5-7). The god relief on the King's Gate, one of three gate of the capital, Boğazköy, depicts the basic equipment of a Hittite soldier (Bryce, 2007, pp. 15-16). The warrior dress and equipment on display at the Hittite Exhibition was used in the documentary movie, "The Hittites" and was donated to the collection by Tolga Örnek, the director of the movie (The Hittites, 2003).

## Iron Age Exhibition

The destruction of the Hittites in the beginning of 12th century B.C. ended the Bronze Age and marked the beginning of the Iron Age. Neo-Hittites in the south of Middle Anatolia and the regions neighboring Syria, Urartians in Eastern Anatolia, Phrygians and Lydians in Middle Anatolia, Lycians in Southwestern Anatolia and Ionians in the Aegean emerged as new peoples and political powers (Akurgal, 1995, p. 96; Sagona and Zimansky, 2015, p. 257). The usage of iron became widespread in this period but bronze finds are still more numerous. The exhibitions concerning this age contain reliefs and objects from the Neo-Hittites, Urartians, Phrygians and Lydians.

Neo-Hittites did not use cuneiform writing, their textual heritage mostly consisted of monumental texts. They improved relief technique, which already existed in the Hittite Empire (Sagona and Zimansky, 2015, pp. 261-262). The reliefs on display in the Neo-Hittite Period collection, which is considered the continuation of Hittite tradition consist of the Burial stone depicting a mother and son excavated in Maraş and the original of which is in the Adana Museum today; another Burial stone excavated in Maraş and exhibited in the Louvre Museum in Paris, depicting a man with a pair of scales; and another one depicting Sam'al (Zincirli) king Barrakib and (probably) his scribe, exhibited in the Berlin-Das Vorderasiatische Museum (Akurgal, 1995, plt. 117, 147, 152). Moreover, a copy of Barrakib's throne was manufactured based on the data in the relief and placed in the Iron Age Exhibition to be displayed.

*Fig. 5. Mother and (scribe) son (Iron Age Exhibition), METU Science and Technology Collection*

Urartians established a theocratic state centered in Van-Tuşpa and although they didn't dominate as wide an area as the Hittites, they were very successful in procuring raw materials. They produced valuable works in architecture, metal objects and casting (Bilgi, 2004, p. 102; Sagona and Zimansky, 2015, pp. 281-282). It is known that the Urartians started and improved iron metallurgy based on the excavated finds. These works were forged (Bilgi, 2004, p. 102). Urartians produced many iron objects and weapons, especially in the 7th century B.C. However, the fact that iron is not as resilient under natural conditions as bronze caused most of the finds in the excavations to be in a bad condition. The deformation due to rust prevented these works from being important. Although this kingdom is an Iron Age civilization, most of the obtained works of art made from copper and bronze (Çilingiroğlu, 1997, p. 108).

The pitchforks used in agriculture, quivers and large cauldrons can be seen in the exhibition as examples of the Urartian products made from bronze. Encountering copper, gold and silver objects among Urartian works, along with iron and bronze, suggest that this civilization is a center of metal processing and manufacture (Çilingiroğlu, 1997, p. 107).

Phrygians, who are thought to have migrated to Anatolia, are a kingdom centered in Polatlı-Gordion. It is understood that they had close cultural relations with the Hittites and their rock-cut monuments and tumuli are quite interesting (Sagona and Zimansky, 2015, p. 317). The most famous of these monuments is the Arslantaş rock-cut monument in the Göynüş Valley. A small-scale copy of the relief depicting two lions standing on their hind legs at the entry to the rock-cut tomb was produced and placed in the Iron Age Exhibition. This work is interesting since it demonstrates the level of the Phrygians in terms of monumental architecture. Other Phrygian finds in the exhibition include bronze cauldrons and vessels obtained in the Great Tumulus.

Lydians minted coins made from electron, an alloy obtained by mixing gold and silver in the appropriate amounts, and they are considered the first civilization that used money (Sagona and Zimansky, 2015, p. 327). Some examples of these coins and works including badge moulds are also exhibited.

*Fig.6. Electron Coins (Iron Age Exhibition), METU Science and Technology Collection*

Roman, Seljuk-Ottoman and Republic Periods Exhibitions
The most important objects in the Roman Period Exhibition containing glass products and food production technologies are Ephesus Medical Instruments. The tools were found in a tomb: they were buried with the deceased doctor (Uzel, 2000, p. 219 and plt. LIX-LXVI). In the Seljuk-Ottoman Exhibition that comes right after offer information concerning Seljuk metal objects and Ottoman Era medicine and astronomy through posters, and exhibits objects used in the daily life. The Republic Era Exhibition that describes the industrialization process generally contains objects used in recent histories such as printing presses, cliches, scales, old coins and newspapers.

## Conclusion

The most important feature of these archaeological exhibitions containing finds belonging to these civilizations who lived in Anatolia is that they show the development of technology through time. The fact that the exhibited finds include technologies from different fields is the most interesting feature of these works.

## References


Akurgal, E. (1989). **Anadolu Uygarlıkları.** İstanbul: Net.

Akurgal, E. (1995). **Hatti ve Hitit Uygarlıkları.** İstanbul: Net.

Alp, S. (1999). **Hititlerde Şarkı, Müzik ve Dans. Hitit Çağında Anadolu'da Üzüm ve Şarap.** Ankara: Kavaklıdere.

Alp, S. (2005). **Hitit Çağında Anadolu.** Ankara: TÜBİTAK.

Arıkan, Y. (2003). **Hitit Çivi Yazılı Belgelerinde šuhha- "(düz) dam, çatı" ve Onun Dinsel ve Sosyal Hayattaki Yeri.** Archivum Anatolicum, VI (1), 11-57.

Arıkan, Y. (2003). **Hitit Çivi Yazılı Kaynaklarında LÚzilipuriiatalla- Görevlisi.** Archivum Anatolicum, VI (2), 1-26.

Aslantürk, N. (2014). **Ukkiia şehri ve katipler.** Turkish Studies, 9 (1), 37-42. e-journal. doi: :http://dx.doi.org/10.7827/TurkishStudies.6380

Aslantürk, N. (2015). **Hitit metinlerinde geçen Hurri tanrı çiftleri: "Nabarbi-Šuvala" "Uršui-Iškalli".** Turkish Studies, 10 (1), 59-82. e-journal. doi: :http://dx.doi.org/10.7827/TurkishStudies.7725

Baltacıoğlu, H. (1995). **Alaca Höyük Sfenksli Kapı'ya Ait Müzisyen ve Bir Görevli Kabartmasına İlişkin Gözlemler.** Offprint, 1-16.

Baltacıoğlu, H. (2006). **Alaca Höyük Sfenksli Kapı Hitit İmparatorluk Çağı Kabartmaları,** İDOL, 30, 24-29.

Belli, O. (2004). **Anadolu'da Kalay ve Bronzun Tarihçesi.** İstanbul: AKMED.

Bilgi, Ö. (2004). **Castings of Copper-Bronze/Bakır-Tunç Döküm Sanatı.** Önder Bilgi (Ed.), Anatolia Cradle of Castings/Anadolu Dökümün Beşiği (pp. 45-112). İstanbul: Döktaş.

Bilgi, Ö., Özbal, H., Yalçın, Ü. (2004). **Castings of Cop per-Bronze/Bakır-Tunç Döküm Sanatı.** Önder Bil gi (Ed.), Anatolia Cradle of Castings/Anadolu Dökümün Beşiği (pp. 1-43). İstanbul: Döktaş.

Bryce, T. (2003). **Hitit Dünyasında Yaşam ve Toplum** (M. Günay, Trans.). Ankara: Dost.

Bryce, T. (2005). **The Kingdom of the Hittites.** New York: Oxford.

Bryce, T. (2007). **Hittite Warrior.** Oxford: Osprey.

Conka, S. (2011). **Hititlerde Müzik.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 295.

Çilingiroğlu, A. (1997). **Urartu Krallığı Tarihi ve Sanatı**. İzmir: Yaşar.

de Martino, S. (2013). **Din ve Mitoloji/Religion and Mythology.** Meltem Doğan-Alparslan ve Metin Alpars lan (Ed.), Hititler: Bir Anadolu İmparatorluğu/Hittites: An Anatolian Empire (pp. 410-429). İstanbul: Yapı Kredi.

Dietrich, O., Köksal-Schmidt, Ç., Kürkçüoğlu, C., Notroff, J., Schmidt, K. (2012). **Göbekli Tepe.** Aktüel Arkeoloji, 26, 52-55.

Doğan-Alparslan, M. (2011). **Hititlerde Meslekler.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 290.

Ertem, H. (1988). **Korucutepe I (1973-1975 Kazı Yıllarında Ele Geçen Erken Hitit-İmparatorluk Çağı Arası Buluntuları).** Ankara: Türk Tarih Kurumu.

Esin, U., Harmankaya, S. (2007). **Aşıklı Höyük.** Mehmet Özdoğan ve Nezih Başgelen (Ed.), Türkiye'de Neolitik Dönem: Anadolu'da Uygarlığın Doğuşu ve Avrupa'ya Yayılımı; Yeni Kazılar, Yeni Bulgular (Plates) (pp. 260-272). İstanbul: Arkeoloji ve Sanat.

Frangipane, M. (2000). **The Late Chalcolithic/EB Sequence at Arslantepe.** Chronological and Cultural Remarks from a Frontier Site. Varia Anatolica, 11 (1). 439-471.

Frangipane, M. (2002). **Yakındoğu'da Devletin Doğuşu. Mezopotamya ve Çevresinde Güçlü Aile Yönetimlerinin Devlet Çarkına Dönüşmesi (Z. Z. İlkgelen, Trans.).** İstanbul: Arkeoloji ve Sanat.

Frangipane, M. (2011). **Arslantepe.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 134-135.

Günbattı, C. (2012). **Kültepe-Kaniş Anadolu'da İlk Yazı, İlk Belgeler.** Kayseri: Kayseri Büyükşehir Belediyesi.

Hodder, I. (2011). **Çatalhöyük: The Leopard's Tale. Revealing the Mysteries of Turkey's Ancient 'town'.** London: Thames&Hudson.

Jacob, W. (2002). **Die Hethiter und Ihr Reich: Das Volk der 1000 Götter/Hititler ve Hitit İmparatorluğu: 1000 Tanrılı Halk.** Bonn: Theiss

Karasu, C. (1997). **Hattuša-Boğazköy Arşiv-Kitaplık Sistemleri Üzerine Bazı Yorumlar.** Archivum Anatolicum (Emin Bilgiç Anı Kitabı), 3, 215-238.

Karasu, C. (2006). **Hititler Devri (M.Ö. 1650-1190) ve Hitit Bilimi'nin Kuruluşu.** İlker Koç (Ed.), Hititler (pp. 1-13). Ankara: ODTÜ.

Karasu, C. (2013). **Hititçe ve Hitit Çiviyazısı/The Hittite Language and Cuneiform Script.** Meltem Doğan-Alparslan ve Metin Alparslan (Haz.), Hititler: Bir Anadolu İmparatorluğu/Hittites: An Anatolian Empire (pp. 84-93). İstanbul: Yapı Kredi.

Koç, İ. (Ed.) (2006). **Hititler.** Ankara: ODTÜ.

Kürkman, G. (2003). **Anadolu Ağırlık ve Ölçüleri.** İstanbul: AKMED.

Lorenz, J., Schrakamp, I. (2011). **Hittite Military and Warfare.** Hermann Genz and Dirk Paul Mielke (Ed.), Insights into Hittite History and Archaeology, Colloquia Antiqua 2 (pp. 125-151). Leuven, Paris, Walpole MA: Peeters.

Mellaart, J. (2003). **Çatalhöyük: Anadolu'da Bir Neolitik Kent** (G. B. Yazıcıoğlu, Trans.). İstanbul: Yapı Kredi.

Naumann, R. (1998). **Eski Anadolu Mimarlığı** (IV. Dizi – Sa. 9c) (B. Madra, Trans.). Ankara: Türk Tarih Kurumu.

Örnek, T. (Director). (2003). **Hititler** [Film]. İstanbul: Ekip.

Özdoğan, M. (2007). **Marmara Bölgesi Neolitik Çağ Kültürleri.** Mehmet Özdoğan ve Nezih Başgelen (Ed.), Türkiye'de Neolitik Dönem: Anadolu'da Uygarlığın Doğuşu ve Avrupa'ya Yayılımı; Yeni Kazılar, Yeni Bulgular (Plates) (pp. 406-430). İstanbul: Arkeoloji ve Sanat.

Özdoğan, M. (2011a). **Çanak Çömleksiz Neolitik.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 56-73.

Özdoğan, M. (2011b). **Çanak Çömlekli Neolitik.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 78-99.

Özdoğan, M. (2011c). **Köyden Kente.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 102-119.

Özgüç, T. (2005). **Kültepe Kaniš/Neša.** İstanbul: Yapı Kredi.

Özgüç, T. (2011). **Kültepe-Kaniş Asur Ticaret Kolonileri.** ArkeoAtlas: Tarih Öncesinden Demir Çağı'na Anadolu'nun Arkeoloji Atlası, 1, 244-253.

Özkaya, V., San, O. (2007). **Körtik Tepe.** Mehmet Özdoğan ve Nezih Başgelen (Ed.), Türkiye'de Neolitik Dönem: Anadolu'da Uygarlığın Doğuşu ve Avrupa'ya Yayılımı; Yeni Kazılar, Yeni Bulgular (Plates) (pp. 14-28). İstanbul: Arkeoloji ve Sanat.

Öztan, A. (2007). **Köşk Höyük: Niğde-Bor Ovası'nda Bir Neolitik Yerleşim.** Mehmet Özdoğan ve Nezih Başgelen (Ed.), Türkiye'de Neolitik Dönem: Anadolu'da Uygarlığın Doğuşu ve Avrupa'ya Yayılımı; Yeni Kazılar, Yeni Bulgular (pp. 223-235). İstanbul: Arkeoloji ve Sanat.

Sagona, A., Zimansky, P. (2015). **Arkeolojik Veriler Işığında Türkiye'nin En Eski Kültürleri** (N. Başgelen, S. İ. Belik, M. Payne, H. Taşkıran, Trans.). İstanbul: Arkeoloji ve Sanat.

Savaş, S. Ö. (2006). **Çiviyazılı Belgeler Işığında Anadolu'da (İ.Ö. 2. Binyılda) Madencilik ve Maden Kullanımı** (VI. Dizi-Sa. 63). Ankara: Türk Tarih Kurumu.

Savaş, S. Ö. (2013). **Hitit Dili ve Yazısı.** Aktüel Arkeoloji, 36, 36-53.

Schmidt, K. (2007a). **Göbekli Tepe. Taş Çağı Avcılarının Gizemli Kutsal Alanı. En Eski Tapınağı Yapanlar** (R. Aslan, Trans.). İstanbul: Arkeoloji ve Sanat.

Schmidt, K. (2007b). **Göbekli Tepe.** Mehmet Özdoğan ve Nezih Başgelen (Ed.), Türkiye'de Neolitik Dönem: Anadolu'da Uygarlığın Doğuşu ve Avrupa'ya Yayılımı; Yeni Kazılar, Yeni Bulgular (pp. 115-129). İstanbul: Arkeoloji ve Sanat.

Schmidt, K. (2009). **Göbekli Tepe, Dünyanın En Eski Tapınakları, Bir Büyük Keşfin Hikâyesi.** Şanlıurfa Kültür Sanat Tarih ve Turizm Dergisi, 5, 6-15.

Schmidt, K. (2011). **Göbekli Tepe: A Neolithic Site in Southeastern Anatolia.** Sharon Steadman and Gregory McMahon (Ed.), Oxford Handbook of Ancient Anatolia (pp. 917-933). Oxford: Oxford University.

Seeher, J. (2006). **Hattuşa Rehberi: Hitit Başkentinde Bir Gün.** İstanbul: Ege.

Tütüncüler, Ö. (2004), **M.Ö. 2. Bin Liman Tepe Dokuma Âletleri.** II. Arkeolojik Araştırmalar Sempozyumu, H.Erkanal Vd.(eds.), Anadolu/Anatolia Ek Dizi, No.1, 287-295.

Umurtak, G. (1996a). **Pişmiş Toprak Eserler. Refik Duru, Kuruçay Höyük II. 1978-1988 Kazılarının Sonuçları, Geç Kalkolitik ve İlk Tunç Çağı Yerleşme leri/Results of the Excavations 1978-1988, The Late Chalcolithic and Early Bronze Settlements** (pp. 51-54). Ankara: Türk Tarih Kurumu.

Umurtak, G. (1996b). **Maden Eserler. Refik Duru, Kuruçay Höyük II. 1978-1988 Kazılarının Sonuçları, Geç Kalkolitik ve İlk Tunç Çağı Yerleşme leri/Results of the Excavations 1978-1988, The Late Chalcolithic and Early Bronze Settlements** (pp. 56-59). Ankara: Türk Tarih Kurumu.

Umurtak, G. (1996c). **Taş Eserler. Refik Duru, Kuruçay Höyük II. 1978-1988 Kazılarının Sonuçları, Geç Kalkolitik ve İlk Tunç Çağı Yerleşmeleri/Results of the Excavations 1978-1988, The Late Chalcolithic and Early Bronze Settlements** (pp. 59-61). Ankara: Türk Tarih Kurumu.

Uzel, İ. (2000). **Anadolu'da Bulunan Antik Tıp Aletleri** (VI. Dizi-Sa. 55). Ankara: Türk Tarih Kurumu.

Ünal, A. (2005). **Hititler Devrinde Anadolu III.** İstanbul: Arkeoloji ve Sanat.

Yalçın, Ü. (2008). **Ancient Metallurgy in Anatolia.** International Conference AMITEM 2008 Ancient Mining in Turkey and The Eastern Mediterranean, 2, 15-40.

UNIMUSEUM
International University Museums Association Platform

# Museums of Latvia University

Nuri Özer ERBAY

**Cite this article as:**
Erbay, N. (2018). Museums of Latvia University. UNIMUSEUM, 1(1), 24-27. DOI:

**ABSTRACT**
**Museums of Latvia University**

Latvia University Museums serve to increase the value of cultural heritage. Original Greek and Roman works of art and Latvian art treasures enriched the importance and value of this cultural heritage. Riga Polytechnic Institute was transformed into Latvia University and collections from this period were gathered together. After unremitting organizational work, in 1990 a united University of Latvia museum was formed comprising 6 branches: UL Museum of History, Museum of Zoology, Museum of Geology, Museum of Computing and Informatics, Museum of Botany and Museum of Pedagogy. After some years new museums were added: Memorial Museum of Friedrich Zander (Museum of Space Research) and Museum of Human Pathology, and a partnership was formed with the Latvian Museum of History of Chemistry. Today, the UL Museum of History serves the purposes of education and science, as well as popularizes the values of cultural history of the University of Latvia.

**Key Words:** Latvia, University Museum, Museum.

İstanbul Üniversitesi Edebiyat Fakültesi, Müze Yönetimi, İstanbul - Turkey

**Unimuzed.org**

**Accepted:** 01.12.2017
**Submitted:** 01.06.2018
**Published online:** 23.07.2018
**Correspondence:** Assist. Prof. Nuri Özer ERBAY
**Unimuseum**
**E-ISSN**
**DOI**

## Introduction

Around 2500 BC, the proto-Baltic ancestors of the Latvian people settled on the eastern coast of the Baltic Sea Latvia is a democratic parliamentary republic established in 1918. The Republic of Latvia was founded on 18 November 1918. However, its de facto independence was interrupted at the outset of World War II. In 1940, the country was forcibly incorporated into the Soviet Union, invaded and occupied by Nazi Germany in 1941, and re-occupied by the Soviets in 1944 to form the Latvian SSR for the next fifty years. The peaceful Singing Revolution, starting in 1987, called for Baltic emancipation of Soviet rule. It ended with the Declaration on the Restoration of Independence of the Republic of Latvia on 4 May 1990, and restoring de facto independence on 21 August 1991. Latvia (officially the Republic of Latvia), is a country in the Baltic region of Northern Europe, It is bordered by Estonia to the north, Lithuania to the south, Russia to the east, and Belarus to the southeast, as well as a maritime border to the west alongside Sweden. The capital city is Riga, the European Capital of Culture 2014.

Today, Latvia University Museums serve to increase the value of cultural heritage. Original Greek and Roman works of art and Latvian art treasures enriched the impor- tance and value of this cultural heritage. Riga Polytech- nic Institute was transformed into Latvia University and collections from this period were gathered together. The University museum collections were primarily meant for academic training and scientific research purposes. In 1930, an idea was put forward to unite these study offices museums in a united and general University of Latvia Museum, but due to the faculties' inability to find common ground, it did not come true. But in the meantime another significant decision was made on April 13, 1932, the University management decided to preserve the former students' punishment cell of Riga Polytechnic Institute, thus creating a unique landmark of cultural history. After 1940, the University of Latvia Museum pieces were not spared, many museum collections were destroyed, a lot of valuable items disappeared without a trace, a part of them were included in the national museums' holdings. A change sparks in the late 1960's when in 1967 first thematic exhibition dedicated to the history of the University was opened and, despite contradictory attitudes, promoted compiling of new museum material. A new period of significant importance started in the research on the University of Latvia history in the late 1980's with the renewal of the idea about a united University of Latvia museum. On October 31, 1988, the Council of the University of Latvia passed a resolution to found the University museum. After unremitting organizational work, in 1990 a united University of Latvia museum was formed comprising 6 branches: UL Museum of History, Museum of Zoology, Muse- um of Geology, Museum of Computing and Informatics, Museum of Botany and Museum of Pedagogy. After some years new museums were added: Memorial Museum of Friedrich Zander (Museum of Space Research) and Mu- seum of Human Pathology, and a partnership was formed with the Latvian Museum of History of Chemistry.

## UL Museum of history

The origin of the UL Museum of History is the creation of the Office of the History of Art by Ernests Felsbergs, the first Rector of the University of Latvia, in the academic year 1921/22.The idea to gather, preserve and popularize precious museum pieces in the University of Latvia emerged with the establishment of the university. Since 1919 collections of museum objects were gathered in several faculties and with time museums and study offices for educational pur- poses were set up, good examples are the Faculty of Medicine Museum of Anatomy, the Faculty of Engineering Sciences Museum of Geodesy and Bogs, the collections of the faculties of Theology and Architecture, as well as the values gathered by the Faculty of Mathematics and Nature Sciences. The Office of the History of Art is notable for the richness and value of the collections. It was created and managed by Prof. Ernests Felsbergs, the first Rector of the University of Latvia, in the Faculty of Philology and Philosophy, in the academic year 1921/22. In this museum's holding, there were valuable coins and printed material collections, original Greek and Roman works of art and Latvian art treasures. The University museum collections were primarily meant for academic training and scientif- ic research purposes. In 1930, an idea was put forward to unite these study offices museums in a united and gener- al University of Latvia Museum, but due to the faculties' inability to find common ground, it did not come true. But in the meantime another significant decision was made on April 13, 1932, the University management decided to preserve the former students' punishment cell of Riga Polytechnic Institute, thus creating a unique landmark of cultural history. After 1940, the University of Latvia museum pieces were not spared, many museum collections were destroyed, a lot of valuable items disappeared without a trace, a part of them were included in the national museums' holdings. During this period the research on the University of Latvia history was discontinued due to the new rule which rewrote and reconstructed it anew. A change sparks in the late 1960's when in 1967 first thematic exhibition dedicated to the history of the University was opened and, despite contradictory attitudes, promoted compiling of new muse- um material. A new period of significant importance start- ed in the research on the University of Latvia history in the late 1980's with the renewal of the idea about a united University of Latvia museum.

### Students' Punishment Cell

A small room at the University of Latvia main building preserves evidence about the time when students who had failed to return library books in due time could be punished by deprivation of liberty for several days. The students' punishment cell was installed in 1875 on request by Riga Polytechnic Institute and for more than twenty years it became the joy and dread for the University students. Riga Polytechnic Institute at the time was located in the current University of Latvia main building and its management had the authority to punish students for different violations of internal rules by submitting them to hours, days and even weeks in the punishment cell. As it was a solitary confinement, the grayish-white walls of the cell were quickly adorned up to the ceiling with drawings and inscriptions in the Latvian, Polish, German, Russian, French and Latin languages revealing peculiarities about students' lives of the period: drawings and descriptions of different violations, immediate reflections about the University professors, memories about their sweethearts and

revision of mathematic formulae. The students' punishment cell ceased functioning before the foundation of the University of Latvia. Today the students' punishment cell, the oldest one in the Baltics which has been preserved in its original state, unlike when it was functioning and was mostly locked and inaccessible, is open for all interested visitors.

## Botanical Museum

The museum head Irena Berga states that: The UL Herbarium as a museum collection was included in the UL Museum of History of Science and Technology in 1991. The creation of the collection in Herbarium began already in 1920s – 1930s. It contains herbarium collections gathered by both 19th century natural scientists and 20th century Chair of Botany teaching staff. They are meant for teaching and research purposes. The most important are the Baltic plant herbarium, the Latvian plant herbarium, the general herbarium of flowering plants, the herbarium of Pauls Lakševics, the herbarium of Jānis Ilsters, and the moss collection of Nikolajs Malts. The Botanical Museum also holds books, historical materials and objects related to the history of botany in Latvia.The museum's main aim is to support research and aca- demic work of botanists, taxonomists and students, inform visitors about the history of botany, preserve important old collections and supplement them with new material. The museum staff creates thematic exhibition panels about notable botanists in Latvia, gives thematic lectures, and guides tour groups.

## Friedrich Zander's Memorial Museum of Space Exploration

Exhibition is open for public since February, 2005 in University of Latvia premises in Raiņa Boulevard 19. This museum was created by taking the majority of exhibition from Zander's memorial house in Candera Street 1, which is a private property now. The museum was founded in 1987, in honour of centennial anniversary of Friedrich Zander, pioneer of constructing space rockets (1887- 1933). Now the exhibition is displayed in his Alma Mater building in Raiņa Boulevard 19, where the young engi- neer was studying in Riga Polytechnic Institute, Faculty of Mechanics (1907-1914). The Astronomical Tower of the University of Latvia is available for visitors
there as well.

The following is provided in Zander's Memorial Museum of Space Exploration, University of Latvia:
• The greatest collection of meteorites in Baltic. There are old astronomical instruments, antique star maps and old astronomical books in the museum.
• The exhibition on the 40 years of Astronautics displays space exploration in the past century in detail and provides information on the newest achievements in space exploration.
• Exhibition devoted to Friedrich Zander the father of space rockets, who lived in Riga. It was in Riga where he got his ideas of space flights and started his independent scientific research. Two of the greatest telescopes are available in the As- tronomical Tower. By visiting the museum In daytime, visitors can observe the Sun, or, when it is cloudy Riga sights.

## Museum of Pathology and Anatomy

• Museum of Pathology and Anatomy is a great help for students as appropriate materials for the illustration of every new subject are taken from the museum: macro preparations, moulages, micro preparations and educational posters which display possible macroscopic and microscopic changes in the human body.
• Several shelves are dedicated to every organ where they are seen with different pathologies. Many shelves are for human embryos' preparations different size, age, and the whole spectrum of pathologies.
• Impressive collection of bile-stones in various colors and sizes can be found in the museum as well.
• A collection of ancient pathological anatomy micro preparations from the 19th century belongs to the museum as well. These micro preparations are well preserved, as well as their inscriptions in Russian and Latin.
• The museum offers a collection of old medicine journals and books.
• The Museum of Pathology and Anatomy is the newest of all UL museums. In its current form, it was founded in 2001, after a long pause of 47 years.

The first foundations for the museum were laid by the coroner and Professor Roman Adelheim (1881-1938) in 1921. In 1919, Professor Adelheim was invited to work in the newly founded Faculty of Medicine as he was a highly experienced expert. He was entrusted with organizing education in the field of pathological anatomy. Professor Adelheim founded the Chair of Pathological Anatomy, set up lecture rooms, created patohistological laboratory, library of the chair and the Museum of Anatomy.

Pathological anatomy is the basis of clinical medicine. In Greek, pathos means suffer, illness. The coroners are the truth's finders and researchers of a body that has recovered from a disease. The coroner finds out and explains why a body has not coped with the disease. Pathological anatomy examines all questions connected with the changes in an ailing human body by using the main research methods in their field – autopsy, biopsy, examination of operating materials on macroscopic level when the changes are seen with the naked eye, or on microscopic level when the changes are seen only with the light or electron mi- croscopes.

## Museum of Geology

The exposition displays a wide range of minerals, rocks, fossils as well as mineral deposits. Experts lead thematic tours and workshops concerning such topics:
• Structure of Earth entrails;
• Geological processes on the Earth and in space;
• Mineral deposits;
• Historical development of wildlife;
• Unique fossils of Latvian plants and animals;
• Microscopic examination of rocks;
• History of geology in Latvia.

Highly skilled staff members of the museum can introduce the visitors to the use of natural stone materials in Riga's architecture, their transformation in the aggressive urban environment, rock outcrops and quarries in the vicinity of Riga and other places in Latvia.

Geology Museum of the University of Latvia dates back to September 29, 1929 when it was established from the collections of the Institute of Geology and Palaeontology of the Faculty of Mathematics and Natural Sciences. The collected materials of the natural scientists from the previous century were also included in the exposition.
Currently the Museum of Geology possesses materials related to geology: rock specimens, minerals, cuts, fossils of plants and animals from Latvia and many other places of the world, representing all continents; as well as evidence of the geology science's history: maps, archives, tools, memorial objects, photographs and books. The objective of the museum is to not only collect, store and study rock specimens and the history of geology's development, but also, using all the collected materials (~ 20 000), provide the opportunity of obtaining the required knowledge to students and others interested in this sphere as well as the opportunity of conducting research to scientists.

## Museum of Zoology

The head of museum Aivars Petriņš; The museum personnel offer consultations in entomology, malacology and ornithology issues. The museum can be visited not only by students of biology or other specialties but also by would be students as well as anyone interested in nature.

The museum was founded in 1920, when Systematic Zoology Institute and Comparative Anatomy and Experimental Zoology Institute were established in the Faculty of Natural Sciences and Mathematics. Its basic zoological preparations were taken from the Zoology and Pisciculture collections of Riga Polytechnic Institute.

## Museum of computing and Informatics

The museum was founded in 1984 and it preserves evidence about usage of computer equipment and automatic calculating in scientific research and national economy, as well as in various technical and consumer fields since as early as 1959. The museum is located in the former State University of Latvia Calculating Center - a building of historical notability; the Center used to be one of the leading research institutions in computer science (informatics) and in applied mathematics in the Soviet Union; later it became the Mathematics and Informatics Institute.

## Latvian Museum of the history of chemistry

The museum head Ilgars Grosvalds remarks that ''Latvian Museum of the History of Chemistry (LMHC) is one of the biggest natural sciences history museums in Latvia.'' It was established in the so called "Old Chemists Building" (the present building of the UL Faculty of Biology), built at the beginning of the 20th century as a laboratory for theRiga Polytechnic Institute.

## Conclusion

The professor's office and private laboratory have been preserved from the beginning of the 20th century. The LMHC was initially founded on May 27, 1975 as the memorial office of professor Gustavs Vanags. It has expanded significantly over the past years. The collection of the museum contains more than 6000 exhibits about chemists, the study process in chemistry and the chemistry science in Latvia. The museum's collection is available for researchers, chemistry teachers and everyone interested in chemistry and its founders. The museum's staff members research the development of the study process in chemistry and the chemistry science in Latvian higher educational establishments; the devel- opment of chemical production in Latvia as well as the scientific activities of a number of chemists. Many articles on these matters have been published. The museum frequently organizes colloquiums and exhibitions on the history of chemistry.

Latvia University's collections were brought together to serve academic and scientific researches. The goal of the museum is to collect, keep and protect the objects and use them in various scientific studies. They serve to contribute scientists

## References


Aronsson, Peter & Elgenius, Gabriella (eds) **EuNaMus Report** No 1. Published by Linköping University: http://www.ep.liu.se/ecp_home/index.en.aspx?issue=064 (accessed 15 January, 2016)

**About the Museum;University of Latvia** https://www.lu.lv/eng/general/administrative/museum/mh/about-the-museum (accessed 15 January, 2016)

Fedorova, Aija.; **University oflatvia History Museum,** http://www.muzeji.lv/en/museums/university-of-latvia-history-museum/(accessed 15 January, 2016)

Friedrich Zander's Memorial Museum tttp://www.latvia.travel/en/sight/university-latvia-friedrich-zanders-muse- um-space-exploration(accessed 15 January, 2016)

Jocelyn Dodd & Ceri Jones & Andy Sawyer & Maria-Anna .;(2012), **Voices from the Museum: Qualitative Research Conducted in Europe's National Museums,** Tseliou EuNaMus Report No: 6, Report series ISSN: 1650-9625, Linköping University Press; p:60-63 http://www.lu.lv/par/strukturvienibas-un-infrastruktura/lu-zinatnu-un-tehnikas-vestures-muzejs/lu-vestures-muzejs/

Ķencis, Toms & Kuutma, Kristin.; (2011),**National Museums in Latvia, Building National Museums in Europe 1750-2010.** Conference Proceedings from EuNaMus, European National Museums: Identity Politics, the Uses of the Past and the European Citizen, Bologna ,28-30 April

Lotina, Linda.; (2016), **Conceptualizing Engagement Modes: Understanding Museum–Audience Relationships in Latvian Museums,** University of Tartu Press. ISBN 978-9949-77-049-6,Latvia,P.41-49

**Museum of the University of Latvia;** (accessed 15 January,2016)https://www.lu.lv/eng/general/administrative/museum/mpa/

http://www.latvia.travel/en/sight/university-latvia-frie-drich-zanders-museum-space-exploration(accessed 15 January, 2016)

UNIMUSEUM
International University Museums Association Platform

# Architectural Design of the Architectural Design of the Complex of Sultan Bayezid II – Health Museum

**Hakan AKINCI**

**Cite this article as:**

Akıncı, H. (2018). Architectural Design of the Complex of Sultan Bayezid II - Health Museum. UNIMUSEUM, 1(1), 28-34. DOI:

**ABSTRACT**

**Architectural Design of the Complex of Sultan Bayezid II - Health Museum**

Edirne made a great cultural breakthrough in 1361 after it became the capital city of the Ottoman Empire. Structuring of the city in this period set up the base of transition to the Ottoman emperorship stage. With the other constructions of the city, Complex of Sultan Bayezid II is one of the important symbols of this transformation. It is also one of the significant examples of complex and foundation system in formation of Ottoman social and cultural core.

The construction of the complex in Edirne, the capital city of the border, the son of Bursa and father of İstanbul, sultan of the cities and city of the sultans took place as follows by the narration of Hoca Saadettin Efendi in Tacüttevarih (Vol:III): "Sultan Bayezid II left İstanbul and arrived in Edirne on March 1, 1484 for the second expedition. The Sultan honouring Edir- ne showed kindness and made donations to the public. The sultan, the ruler of right and justice, aimed to build a hospital in the city upon the demand of elite and public. Therefore, he ordered to prepare construction materials. Deep ditches were dug by the Tunca River and the materials of the construction were stored here. When all the preparations completed, the Great Sultan laid the foundations of these charity institutions with his lucky hands on May 25th, 1484 and pleased the poor by sacrificing animals. The complex, completed in a short period of four years, consisted of three main gardens and several units around. These were a group of buildings including a medical school, hospital, soup kitchen, mosque, guesthouse, bath, mill, bridge, observatory, janissary band school and primary school.

**Key Words:** Sultan II. Bayezid, Health Museum, Museum.

Trakya Üniversitesi, II. Bayezid Sağlık Müzesi Müdürü, Edirne - Türkiye

**Unimuzed.org**

**Accepted:** 01.12.2017
**Submitted:** 01.06.2018
**Published online:** 23.07.2013
**Correspondence:** Inst. Hakan Akıncı
**Unimuseum**
**E-ISSN**
**DOI**

**Introduction**

**Architect of the Complex**

Despite there is no certain record or inscription that has reached the present day about the architect of the complex, most of the researchers claimed that architect Hayrettin, who built many important constructions during the Sultan Bayezid II Period, should be the architect of this building and that view has been approved predominantly. Hayrettin is accepted as the most superior creator architect before Sinan's period architecture and Sinan's herald. Rıfkı Melül Meriç and some other researchers claim that the architect of the complex is not Hayrettin, but one of the architects of the period, Yakub Şah Bin Sultan Şah. Having a general view of the complex, it is seen that there is a complete harmony with foundation period architecture of the Ottoman Empire. The architecture shows a consistent progress with specific developments and its processor and successor examples. In this case, it is true to analyze the identity of the buildings on the period's architecture rather than analyzing it privately.

## Sections of the Complex

According to the records in 1617, the complex employed a total of 228 staff members working on different positi- ons and total outcome for these employees was 1018 sil- ver coins a day. Sultan Bayezid II dedicated many inco- me sources to meet the expenses and made them written down to account books.

**Mosque:** It is in the centre of the complex and placed in the dominant position onto more than a hundred-domed group of buildings. The position strengthens Mosque's characteristic of being the centre of complex. The inner sanctum is without arches and columns and 20.58x20.60 meter square in shape. The dome's height is 19.34 meters. The pulpit is a masterpiece of stonemasonry. Sultan's gallery is the first example of Ottoman mosque architecture. Its two minarets each of which has single-balcony and 149 stairs are 38.50 meters high. Its architecture maintains the simplicity of foundation period architecture. The dome draws attention among single-domed architectural buildings.

**Dar-al Shifa (Hospital):** It stands on just right side of the mosque. It consists of three sections. In the first courtyard, there are six outpatient rooms, service rooms such as a kitchen, a laundry, a syrup room and drug stores. In the second courtyard, high ranking staff carried out their duties in four rooms. The sanatorium is inpatient section. Here there are 10 rooms in total, six of which are for the winter season and rest of them for summer, and also a music stage. The sound of water pouring out from the fountain in the middle aimed at relieving patients. Dome and place arrangements also reflect the geometrical designs establishing the relation of the building with Beylik period and Seljuk works.

**Madrasa (Medical School):** It is the domed and square-shaped building beside the hospital. It is the period's institution giving medical education and consisting of 18 student rooms and 1 classroom. Doors of the room are opening through arched and open-viewed cloisters borne by 17 columns on the left and right. Closed courtyard work resembles an important example of Ottoman works on traditional madrasa architecture. Thus, the place is isolated for education and it gains an appropriate pattern for its essential function. Educational and accommodation needs were solved through the different building patterns and settlements applied ahead of the time. Construction of the observation terrace as a classroom also represents a reformist understanding. Given these realities, in terms of this reformist implementations and the completion of building in such short time, besides the thought of building's meeting the needs quickly, the aim of creating a tradition may also come to the mind. In this institution where the 18 students were trained each year, each need of the students was met and they were paid 2 silver coins per day as a salary. In the meantime, these students completed their education with the other physicians via master-apprentice relationship.

**Guesthouse:** There are two guesthouses attached to the mosque on two sides. There are 9 domes and 4 rooms in each guesthouse. Both guests and relatives of the patients could stay here free of charge. Discharged patients also stayed here providing no longer than 3 days for their convalescence. It is observed that earlier guesthouse examples were used to be part of mosque sanctums while here guesthouse was separated as another section. Thus, searches for central plan scheme started.

**Imaret (Soup Kitchen):** It is also called "New Imaret (Tur: Yeni İmaret)" because of being the last of 8 imarets in Edirne. Imaret buildings consist of 2 huge stone blocks and they stand on the left side of the mosque. There are conjoint halls, sections, ovens and bakeries. It consists of a kitchen, bake house, candle workshop, halva workshop, pantry, storage and stable. In these sections, meals were cooked two times every day. All staff of the complex and the poor ate here free of charge. The complex that can be considered as the transition structure from being a state to an empire fulfills another social function broadly via imarets. Thus, the building has the feature of being in the centre of social functions.

**Turkish Bath:** It is collapsed nowadays and even its foundations are not clear. From the old photographs it is known that it was near the bridge foot on the side of the complex. Architecturally, it has a double bath type. Incomes from the Turkish bath were given to the foundation. Mill: It is another building whose income was given to the foundation. It is placed nearby the bridge and Tunca River. Its existence is documented with old photographs and nowadays it is collapsed. Mills are important buildings for urbanization and economic development. For this reason, it can be said that mills and workshops were used for the region's economic and social development like the Complex of Murad II in Uzunköprü (Ergene Bridge). Bridge: It was constructed together with the complex. It is still standing today and its stone texture is preserved completely. It provides transportation between the city and the complex as well. It is 78 meters long and 6 meters wide. It has 5 pointed- arches. Bridge grants to be get crossed through river and riverbed.

**Mehterhane (Ottoman Military Band Chamber) and Primary School:** Some sources note that among the complex units and imaret blocks there was a mehterhane and a pri- mary school. It is claimed that orchestra players coming for the music therapy performance at the hospital were from mehterhane. This structure is destroyed nowadays. Muvakkithane: Some sources claim that there was a unit named "muvakkithane" announcing the hours and the calendar.

## Medresetü'l Etibba School of Medicine

Madrasa consists of 18 classrooms whose doors are opened to the centre and that are surrounded by porches and a large classroom and a square courtyard with fountain in the centre.Madrasa-i Etibba (Medical School) had served for centu- ries as a madrasa where Medical Science was taught.It is a "Madrasa of 60", which means "top ranking one" among all Ottoman madrasas.

Evliya Çelebi, who visited the complex in 1652, gave the following information about the madrasa: *"There is a medical school in the complex and the students staying in its rooms are mature doctors who always dis- cuss the scholars such as Plato, Socrates, Aristotle, Galen and Pythagoras. Each of them oriented towards a specific scientific area and respecting the valuable medical literatu- re is trying to find out the best cure for the mankind."*

The staff of the madrasa;
1 Müderris (Professor): earned 60 silver coins in a day including holidays.
1 Muid (Assistant): worked as the assistant of the professor and earned 7 silver coins in a day.
1Hafız-ı Kütup (Librarian): earned 2 silver coins in a day. (Medical books taught in Madrasa are still kept in the Selimiye Manuscripts Library.)
2 servants: Each one took 2 silver coins in a day.
18 students: All their needs were fulfilled and each one took 2 silver coins in a day.
The charter of 1560 that has reached the present day notes that 46.000 silver coins were allocated from the complex budget for that year to cover the kitchen expenses.

## Dar Al-Shifa (Hospital) Section

Dar-Al Shifa section was designed according to the 15th and 18th centuries of Ottoman Medicine.

## Sultan Bayezid II

Sultan Bayezid II was born on December 3rd, 1447 in the Palace of Didymoteicho. His father Mehmet the Conqueror died on May 4th, 1481 then he succeeded the throne on May 22nd, 1481 after his father's death. Thanks to his father's nature of giving importance to education, Bayezid had a well-educated and calm characteristic. Besides Islamic studies, Bayezid also studied philosophy and learned Arabic, Persian, Chagatai dialect and Uighur alphabet. Thus, he prioritized worship, charity and education affairs, and he protected many poets, craftsmen and scholars because of Bayezid's special interests in science and culture. He got many charity places built in Istanbul, Edirne, Amasya, Osmancık, Geyve and Saruhan. He got three complexes built in Amasya, Edirne and Istanbul. One of the most important works among them is Complex of Sultan Bayezid II in Edirne.

## Complex of Sultan Bayezid II

The foundations of complex laid on 23 May 1484 and completed in 1488 placed beside Tunca River and 2 kilometers away from city center. The complex consists of a mosque, two tabhanes (guest houses), a madrasa (medical school), a dar al- shifa' (hospital), an imaret (poor house), a kitchen and provisions. Also, there is a bridge and a Double-Turkish bath (each for women and men) which are remained outside the courtyard walls.

## Dar Al-Shifa of Sultan Bayezid II

The dar al-shifa of Sultan Bayezid II, which is a part of the complex, consists of 3 parts; two gardens connected to each other and a sanitarium. The complex is described in a detailed way in this room.

## Healthcare Staff of Dar Al-Shifa of Sultan Bayezid II

According to complex endowment registries, there were 12 healthcare personnels (1490) including a chief-physician (reis-i etıbba) who earned 30 silver coins a day, 2 physicians who worked under the chief-physician and earned 10 silver coins a day, 2 eye doctors talented on their own field who earned 7 silver coins a day, 2 surgeons who were skillful and dexterous, 4 nurses who were ordered to serve patients with friendliness and who earned 3 silver coins a day, and lastly a drug grinder and organizer. A chief-physician should be skillful and dexterous, having the knowledge of healthcare ethics, mature, well-mannered and proficient. Physicians should be getting orders done in an accurate and safe way. The structure which was arisen from the endowment principles sheltered many physicians even the ones who worked for the sultans. Some of their names are; Şifai, Sani'i, Nasuhi, Atai, Hekim Hasan Bin Kasım, Ahi Çelebi, Destari, Sinan Efendi, Süleyman Efendi, Haydar Efendi, Ahmet bin Hüseyin Kahvecizade, Fani, Mehmet bin Ahmet bin İbrahim, Lari Abdülhamid Çelebi, Cerrah Safari, Hekim Çelebi.

## Administrative Staff of Dar Al-Shifa of Sultan Bayezid II

The job definitions for personnel also are written on endowment registries. According to these registries, Superintendent was responsible for all administrative personnel and administrative affairs. A trustworthy scribe kept the expenditure records and an honest majordomo having ability to recognize the herbs, bought everything needed in Dar Al-Shifa from the city center. Provisions in the pantry commended to a trustworthy and nonmalignant provisioner. A servant protected tools and clothes and served water. A cleaner tidied up bedclothes. A doorman opened and closed the doors, watched and protected the building. A fumigator burnt incense day and night to keep the patients' soul sane. Also, there were 2 cleaners, 2 cooks, 2 launderers.

## Fundamentals of The Ottoman Medicine

Ottoman medicine can be seen as a part of Islamic Medicine and the succession of the medicine studies of starting from Middle Asia to Seljuk, Anatolian Seljuk and Beylik periods. *"The first hospital in Islamic world opened in the beginning of 700's in Damascus. In this hospital, there is more likely the impact of Indian medicine. The second hospital opened in Cairo and the third hospital opened in*

*Baghdad in the period of Caliph Al-Mansur (750-775). In this hospital the Indian book called "susruta" was translated and made use of. There is detailed information about embryology, anatomy, physiology, pathology, therapeutics, surgery, toxicology. By the effect of this book, Islamic world was impressed greatly by Indian medicine."* (İbrahim, 2012). Especially, Avicenna specified the fundamental trends and implementations, having an important role on the eastern and western medicine education. In the meantime, his sensibility against microbes, his treatments about eye diseases and his interest in psychiatric problems are his significant and important studies. Psychiatric diseases are expelled from religious affairs and become the topic of the medicine and studies were done in this field.
Ottoman medicine broke through with Mehmed the Conqueror. Physician education and educatory books became widespread in his period. The book named Cer- rahiyetü'l Haniye written by Şerafeddin Sabuncuoğlu is an important example. In this book, it is seen that surgi- cal techniques were painted and thus, visual explanation was added to education. Today, some of these drawings' reproductions are used and displayed in Health Museum. The author dedicated the book dated 1465 to Mehmed the Conqueror thanks to Mehmed the Conqueror's interest in science.

*"Ottoman physicians would explain human anatomy starting from head to feet. 17th century Ottoman physician Şemseddin Itâki gave anatomical information in his book Teşrîh-i ebdân accompanied by the drawings of 14th century Persian anatomist Mansur İbn-i İlyas.*
*The adviceof a healthy life was given wide coverage in Ottoman physicians' books. Also hadiths that were taken place in Tıbb-ı Nebevî books and translated from Arabic, about staying away from the ones suffering leprosy and plague, cleaning of teeth, drinking of honey sherbet, health benefits of fasting were pathfinders to people's healthy living. For a healthy life; air, food, water, sleep, cleansing body by bloodletting andmovement (sports) were seen important routines."* (Yıldırım, 2012, p.10)

## Game of Tuluk:

Like Game of Matrak, it was an entertaining game arranged to develop weapon and fighting capabilities. The game played in various festivals, wedding ceremonies and special days, can be seen in a variety of styles in the "games of kut" in Anatolia as well. There is a variety of playing styles. The most popular one is played with inflated goat skins. There are two groups called "tulukçular" and "keçiciler". This game is served to visitors' experience with its details.

## Drug Preparation Methods

Ottoman physicists used Islamic resources besides antique civilization resources. Minerals were powderedand cleaned by soaking. Medical herbs and some fruit were squeezed and degreased. Some substances were boiled and evaporated, and foam of some was used. Some drugs were refined by distillation method. There were various alembics to do this. Apart from these, powdering a variety of precious stones and taking them as medication was a common implication.1 Drug making in Ottomans was not depended on any system so it can be seen that not only in a scientific way but any implication. Drugs prepared and carried by physicists were gathered in the stores for the time being, and eventually, were sold by herbalists in the 18th century. Most important center was Istanbul in both Roman and Ottoman periods. Especially the Spice Bazaar located in Eminonu has an important place.
*"Ibnü'n-Nefis' significant work that became famous in Islamic world named el- Mûcez fi't-tıb, which has been translated into many languages including Turkish in the world, is the study that resulted in the most acknowledgement of him. The work was translated into Latin and published with the name "Compendium Medicine". Besides a Hebrew translation was republished with the Arabic text. The work was recognized in Ottoman period and was translated into Turkish by one of the Edirne Dar Al-Shi- fa' physicians Ali Ahmed Kemal and Muslihuddin Mustafa İbn Şa'ban es-Surûrî (death 1561)"* (http://ahmetagirakca.com.tr/uploads/default/articles/5Osmanli_Tibbinin_Kaynaklari_ve_Osmanli_Tibbina_Giris.pdf)

## Syrup Workshop/Paste Workshop

*"When Dar Al-Shifa opened, there was a separate drug making place named first "Syrup Workshop" and later "Paste Workshop". Drugs were distributed to poor and sick people every two days in a week."* (Yıldırım, 2015, p.18)

## Dental Diseases

Aches would come first on the discussions that were in Ottoman medicine books. Cauterization was applied unless toothaches could not be eased with drugs at a variety of formulas. Tooth hygiene would be given importance, tartar and plaque was cleaned up and whitener drugs were used. Decayed teeth were pulled out with pliers or disintegrated and removed with sharp drugs. Sagging gingival was cut by scissors; tooth roots that remained in the palate were re- moved. Gingival diseases (periodontology) like bleeding, regression, loosening, itching were treated by various drugs.

## Eye Diseases

In Ottoman period, it is understood that the importance was given to eye diseases by keeping eye doctors in hospitals. It is seen that common treatment methods of eye diseases were discussed by the period's scientific medicine as well as among people. One of the important sources about this subject is the work named el Mücez written by Ibn Nefis. In this work, it is seen that some drugs and herbs are mentioned which can be used in eye treatment. In the surgeon's books, the surgical methods on eye diseases and the tools used in these implications are drawn and defined.

## Ear Nose Throat Diseases

*"In Ottoman medicine books, there are diseases about ear such as: Ache, noise, itching, and worm, and dirtiness, foreign object in the ear and hearing loss. Some treatments are discussed that are related with nose: Cancer, anosmia, ozena, polyp, Adenoid, Papilloma and nosebleed. It tells about most important mouth and throat diseases and their treatments: Lingual frenectomy, ranula, inflammation of uvula and tonsillitis. Leech bites on the throat, choking on bones or other foreign objects and their treatments are widely covered. Sutures on the mouth nose and ear are app-*

*lied by a silk threaded needle."* (Yıldırım, 2015, p.21)

## Surgery

Religion has an important role in Ottoman medicine. Like in every religion, body and body integrity has an important place in Islam. Body is seen as a sacred thing not only for the living but even for the dead. Thus, Islamic physicians preferred treating with drugs and pastes rather than surgical methods and they focused on this subject. Islamic scientist Avicenna had the bold attitude here; he concentrated on the anatomy and surgery studies. Surgical implementations started to be a treatment of some diseases by taking his studies as a principle. Surgical methods started to be practiced and developed in hospitals with the period of Mehmed the Conqueror. However, complex treatments are seen rarely because of their risks, it is known that surgical method had been implemented especially on the treatments of war scars, wounds, various tumors on body, inflammations and tubercles and also fractures.

## Severe Psychiatric Patient

Treatment of mental cases became a part of scientific medicine by being no longer religion controlled topic with the studies of Al-Farabi and Avicenna. Treatment by isolating was used for only severe cases, but various methods were carried out for other cases.

## Music Therapy in Dar Al-Shifa

From the antique period until today, music therapy or in terms of far-reaching, treatment with various sounds has been an acknowledged practice. The most important center in the antique world is Pergamon Asclepeion. It is known that patients were treated with various water sounds and light animations. It is also observed that there is a common usage of music in middle Asian shamanic tradition. With the understandings about the relation between soul and the body in Islamic medicine, the effects of music on health were researched and various implementations were revealed. Evliya Çelebi stated that "hanende and sazende" (singers and players) would come to dar al-shifa' 3 times a week and play different tonalities such neva, rast, dügâh, segâh, çârgâh, sûzînak for only the sick and mental patients; and the patients were relieved with the sound of the saz (instruments). Al- farabi listed the tonalities' side effects on human soul:
Rast Makam: Gives a feeling of joy and tranquility. Rehavi Makam: Triggers a thought of eternity.
Kûçek Makam: Gives a feeling of melancholy, sorrow and grief. Büzürg Makam: Evokes a feeling of fear.
Isfahan Makam: Gives a feeling of security. Uşşak Makam: Evokes the desire to laugh. Zirgûle Makam: Makes somnolent.Saba Makam: Gives courage and strength.
Bûselik Makam: Evokes a feeling of strength and power. Hicaz Makam: Gives modesty.
In 17th century, taken from, the work titled "T'adil-ül Emzice" written by Şuuri Hasan Efendi one of the Ottoman poet-physicians:
Rast Mode: Useful for eclampsla and paralysis.
Irak Mode: Beneficial for the quick-temper and palpitations.
Isfahan Mode: Clears the mind, increases intelllgence and refreshes memories. Zirefgent Mode: Useful for curing back, joint and shoulder pains.
Rehavi Mode: Beneficial for headache.
Büzürk Mode: Good for feverish illnesses, clears the mind and removes fear. Neva Mode: It is soft and good for Irk'un nisa (gynaecological disease) Zengule Mode: Remedy for heart diseases.
Hicaz Mode: Good for urinal disarders and stimulant for sexual desire. Buselik Mode: Remedy for the shoulder pains and lumbago.
Uşşak Mode: Remedy for the heart, liver, malarla and stomach diseases.

## Psychiatric Patients

Centers where psychiatric patients were cured were usually in sanitariums. It is known that an intense treatment was carried out especially after the 17th century. Apart from music therapy and occupation treatment, other environmental opportunities were also utilized. Various sweet smelling flowers were grown up and except this; the fumigator would burn incense to keep the nice smell in the air. It was thought that nice smells had a calming effect on patients and good for the soul.

## Esthetics and Reconstructive Surgery

Generally, the fact that operations were carried out to treat some significant anomalies appeared on skin surface is known from the surgeon's books. Therefore, surgical operations were carried out to various tumor, bulk, grown wound and abscess.

## Gynecology and Obstetrics

Although it is a tradition from middle Asia, it is possible for a woman to be a physician too. This opportunity developed and gained a scientific position in Islamic period. Midwifery was a well-known implication among the commons. *"Gynecological diseases were cured by female physicians and midwives in the 15th century. Female physicians were responsible for hemorrhoids, papilloma, red spots, fistula, abscess on genital areas and the girls born with their vaginas fused, removing fetal deaths from vagina. Male physicians would operate lithotomy on female patients unless any female physicians could not be found. Births were delivered by midwives who were trained in the chain of master-apprentice."* (Yıldırım, 2015, p.26)

## Female Surgeon Küpeli Saliha Hatun

*"Most of 21 informed consents belonging to hernia operations performed by Küpeli Saliha Hatun date back to 1622-24. Therefore, it is considered that she learnt surgery from his husband Deniz bin Gazi and she worked as a surgeon alone after her husband died. All of her patients were men coming from different places of Ottoman geography. There were two janissary soldiers named Mehmed Beşe and Ali Beşe among her patients.*
*A female surgeon's performing hernia operation of male patients in the 17th century is important in terms of showing that Ottoman women had freedom of working in accordance with their skills."* (Yıldırım, 2015, p.27)

What is informed consent?
Legal regulations related to medicine in the Ottoman Empire were made more in the 18th century. The development of the patient and patient's rights has become possible later. Nevertheless, it is observed that patients and physicians or surgeons made an informed consent for the resoluti-

on of various legal situations. This agreement was made in the presence of the sharia court and legal issues that may occur related to the treatment were resolved. Witness was also taken in these agreements.

## Smallpox Vaccine from Edirne to Europe

*"Humanity has reached the greatest achievement in the struggle against infectious diseases by the eradication of smallpox. Another step of that success that came true step by step is the Turkishmethod of smallpox vaccine.*
*Lady Mary W. Montagu, who saw this method of vaccination in Edirne, has told how the vaccine is made in a letter from Edirne to Sarah Chiswell a friend in England on April 1, 1717. Smallpox Vaccine Turkish Procedure having spread first from Edirne to England then to all over Europehad had been the unique hope of human being against this disease until Edward Jenner discovered inoculation from cow to human in 1796."* (Yıldırım, 2015, p.28)

## Rose Gardening in Edirne

Rose was not just a botanical flower but also used effectively in all areas of life. It was conceived as a symbol of Mary in Christianity, Prophet Muhammad in Islam and given a special importance. Apart from this, the use of fragrances and pharmaceutical industries also made it an important part of trade. It was frequently used in the landscaping and artistic compositions, and has become an important part of the visual and verbal arts. Edirne's being the capital city of the Ottoman Empire and having many historical places here, increased the importance and production of roses in the endowment and market. In this context, the rose gardens gained importance and high quality rose waters were produced and these rose waters were presented as a gift to the sultans. Fresh rose petals were also assessed in the palace kitchen. Trade of these products to Istanbul was also provided.

## Theriac in The Ottoman Medicine

Theriac (antidotes) production and use has an essential tradition. In this context, many studies have been made. The most important of them are experimental medicine studies which were conducted by Şerefettin Sabuncuoglu. In his study, he managed to neutralize venom of the snake by using snake and rooster. He had this experiment on his own body later.

**Meeting Room:** The times when there are not any meetings, visitors watch the movie that contains information about the history of the museum.

**Pantry:**The provision of nutrition was also was important in such a great and comprehensive hospital. In addition, some plants and organic materials used in drug production in an appropriate environment and conditions had to be taken with a certain control. Therefore, the hospital had a provi- sioner anda pantry where various plants, syrup, paste and supplies were stored.

**Kitchen:**The relationship between what we eat and the disease is discussed in Avicenna's works. Therefore, the hospital needed a separate kitchen. The meal was cooked for the pa- tient in this kitchen accordance with the advice and super- vision of the doctor. The staff ate their meal in the imaret of the complex.

Laundry: Especially, intuition of the existence of microbes led to the establishment of some relationship between diseases and cleaning. Therefore, sterilization gained importance especially in hospital. There was a laundryman who was responsible for cleaning the clothes of patients' and psychiatric patients' and whatever needs to be washed and cleaned.

**Health Museum Foundation and Improvement:** Stages, which are carried out from the foundation of the Health Museum to renovation process by Abdi İbrahim,
ie xplained in detail.

## Conclusion

The complex, completed in a short period of four years, consisted of three main gardens and several units around. These were a group of buildings including a medical school, hospital, soup kitchen, mosque, guesthouse, bath, mill, bridge, observatory, janissary band school and primary school.

## References


Altun, Ara.,(2007); **Türkiye'de Müzecilik/100 Müze 1000 Eser,** Kültür ve Turizm Bakanlığı Yayını, Cilt:2, İstanbul, s: 817-820

Aslanapa, Oktay.; ( 2004), **Osmanlı Devri Mimarisi,** İnkılâp Yayınları; İstanbul,

Badi Efendi, Ahmet. (2000), **Riyaz-ı Belde-i Edirne,** (Çeviren: Ratıp Kazancıgil), Edirne Valiliği Yayınlar, İstanbul

Demiralp, Yekta.;(1999), **Erken Dönem Osmanlı Medreseleri,** Kültür ve Turizm Bakanlığı Yayınları Ankara

Başparmaksızoğlu, İsmet.; (1979), **Efendi, Hoca Saadettin: Tacüttevarix**; Tacüttevarih5.cilt,

Emecen, Feridun M. (1998), **Edirne Serhattaki Payitaht,** Tarih Koridorlarında Bir Sınır Şehri Edirne, Yapı Kredi Yayınları,İstanbul:

Erbay, Fethiye &Erbay, Mutlu.; (2006), **Cumhuriyet Dönemi Atatürk'ün Sanat Politikası,** Boğaziçi Üniversitesi yayını, İstanbul, s:.43-45

Erbay, Fethiye.; (2009), **Müze Yönetimini Kurumlaştırma Çabası;** Mimarlık Vakfı Yayını; Istanbul,

Erbay, Mutlu;(2011), **Müzelerde Sergileme ve Sunum Tekniklerinin Planlanması,** Beta yayınevi, ISBN:9786053774754, İstanbul, s:75

Erbay, Fethiye & Erbay, Mutlu.; (2016), **Değişen Üniversite Müzeleri;** Trakya Üniversitesi Yayını;ISBN:978-975-374-204-7, Edirne,

Kahraman,Seyit Ali & Dali,Yücel.;(2002), **Evliya Çelebi. Seyahatnamesi,** Yeni Baskı. Cilt 6, Yapı Kredi Yayınları, ISBN: 975-363, İstanbul

Eyice, Semavi,(1997), **Bayezid II.Camii ve Külliyesi,** İslam Ansiklopedisi, Diyanet Vakfı Yayını, 6.Cilt, İstanbul

Gökbilgin, M. Tayyip.;(1958); **XV ve XVI. Asırlarda Edirne Ve Paşa Livası,** İ.Ü. Edebiyat Fakültesi Yayınları, No:508, Üçler Basımevi, İstanbul

Grebene, Bekir.; (1978). **Müzikle Tedavi,** Sanem Matbaa, Ankara

Gurlitt, Cornelius.; **Edirne'deki Yapılar,** Yayına Hazırlayan: Mustafa Özer, Yöre Yayınları, Edirne

Güvenç, Rahmi Oruç.;(1985), **Türklerde Ve Dünyada Müzikle Ruhi Tedavinin Tarihçesi ve Günümüzdeki Durumu,** İstanbul Üniversitesi Basılmamış Doktora Tezi, İstanbul

Güvenç, Rahmi Oruç.;(1993),**Türk Musikisi Tarihi ve Türk Tedavi Musikisi,** Metinler Matbaa, İstanbul

Hibri, Abdurrahman.; (1999), **Enüsü'l- Müamirin,** Çeviren: Ratıp Kazancıgil,Edirne Valiliği Yayınları, Edirne

İsmayilov, Nergiz. Gün.;(2007); **Modern Sanat Müzeleri ve Toplum İlişkisi,**Yeditepe Üniversitesi Sosyal Bilimler Enstitüsü,2007, İstanbul, s:18-20

Karabıyık, Ayfer.;(2007),**Çağdaş Sanat Müzeciliği Kapsamında Türkiye'deki Müzecilik Hareketlerine Bir Bakış,** Atatürk Üniversitesi Sosyal Bilimler Enstitüsü, Malatya, s: 18-22

Kazancıgil, Ratıp.;(1997), **Sultan II.Bayezid Külliyesi,** Trakya Üniversitesi Yayınları, Edirne

Kazancıgil, Ratıp.;(1981), **1362-1920 Yılları Arasında Edirne İlinin Sağlık Kurumları Ve Bu Kurumlarda Çalışan Personel,** Eren Basımevi, İstanbul

Kazancıgil, Ratıp.;(1997), **Edirne İmaretleri,** Edirne Valiliği Yayınları, Edirne

Keleş Vedat.;(2003), **Modern Müzecilik ve Türk Müzeciliği,** Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, Cilt 2, Sayı:1-2,Malatya

Meriç, Rıfkı Melül,(1958), **Bayezid Camii Mimarı,** Ankara İlahiyat Fakültesi Türk Ve İslam Tarihi Araştırma Enstitüsü Yıllık Araştırma Dergisi, Cilt:2, Ankara, s:5-41

Osman, Dr.Rıfat, (1989), **Edirne Sarayı,** Yayınlayan:Ord.Pof. Dr. Süheyl Ünver, Türk Tarih Kurumu Basımevi, Ankara,

Osman, Dr.Rıfat.;(1998), **Edirne Rehnüması,** Edirne Şehir Kılavuzu,Yayınlayana hazırlayan:Ratip Kazan cıgil, Trakya Üniversitesi Rektörlüğü Yayınları, ISBN: 975-374-011-5, Edirne

Ögel, Bahaeddin.; **Türk Kültür Tarihine Giriş,** Kültür ve Turizm Bakanlığı Yayınları, 9. Cilt, İstanbul

Peremeci, Osman Nuri.;(1939) **Edirne Tarihi,** Edirne ve Yöresi Eski Eserleri Sevenler Kurumu Yayınları, Ay Matbaası, Edirne

Soyanmaz, Hakkı.,(2003), **Destan-ı Edirne,** Eser Matbaacılık, Edirne

Şehsuvaroğlu, Badi N.,(1963), **Edirne II.Bayezid Darüşşifası,** Edirne'nin 600.Fetih Yıldönümü Armağan Kitabı, TTKYayınları, Ankara

Şengül Enver, Bilar Ender.;(1997), **Darüşşifa Sultan II. Bayezid Külliyesi Sağlık Müzesi,** Trakya Üniversitesi Yayınları, Edirne

Şengül, Enver.;(2014), **Müzikle Tedavinin Merkezi Sultan II. Bayezid Darüşşifası,** Edirne Valiliği Yayınları, Edirne,

Şuuri,Hasan Efendi, **T'adil-Ülemzice,** Millet Kütüphanesi, No: 66-67-68, İstanbul

Terzioğlu, Aslan.;(1985), **Temel Atılışının 500. Yıldönümü Münasebeti ile Edirne'deki II.Bayezid Hastanesi ve Tıp Tarihi Açısından Önemi,** Bifaskop, Sayı:15, cilt:6,s:16-23

Thompson, John& Goldin, Grace.;(1975), **Medicine The Hospital a Social and Architectural History,** Yale University Press, London

Tuğrul, Murat.;(2001), **Sultan II. Bayezid Darüşşifası ve Safvet Paşa Mektubu,** 1. Edirne Tıp Tarihi Günleri Bildirileri Kitabı, Trakya Üniversitesi Yayınları No: 42,Edirne

Turabi, Ahmet Hakkı (Çeviren), (2004), **Musiki,** İbni Sina İslam Felsefesi Klasikleri, Litera Yayıncılık, İstanbul

Uludağ, Süleyman.;(1976), **İslam Açısından Musiki ve Sem,** İrfan Yayınevi, İstanbul

Yıldırım, Nuran,(2015),**University 0f Thrace Health Museum 0f The Sultan Bayezid II. Complex Dar Al-Shifa' (Hospital) Section. Ottoman Medicine, 15-**, Abdi İbrahim18.Centuries, İstanbul