

e-ISSN: 2619-9556



GRID ARCHITECTURE, PLANNING AND DESIGN JOURNAL
GRID MİMARLIK, PLANLAMA VE TASARIM DERGİSİ

VOLUMECİLT: 6 NUMBERSAYI: 1 YEARYIL: 2023



GRID ARCHITECTURE, PLANNING AND DESIGN JOURNAL
GRİD MİMARLIK, PLANLAMA VE TASARIM DERGİSİ

OWNER | SAHİBİ

On behalf of Çankaya University Çankaya Üniversitesi adına

Can Çoğun

Prof. Dr., Çankaya University, Rector

MANAGING DIRECTOR | GENEL YAYIN YÖNETMENİ

Ali Türel

Prof. Dr., Çankaya University

EDITOR (in chief) | EDİTÖR

Timuçin Harputlugil

Assoc. Prof. Dr., Çankaya University

EDITORIAL BOARD | EDİTÖRLER KURULU

Aktan Acar

Assoc. Prof. Dr., TOBB University of Economics and Technology

Ela Alanyalı Aral

Assoc. Prof. Dr., Middle East Technical University

Diane Favro

Prof. Dr., University of California

Ezgi Orhan

Assoc. Prof. Dr., Çankaya University

Esra Özkan Yazgan

Assoc. Prof. Dr., Gazi University

Papatya Nur Dökmeci Yörükoğlu

Assoc. Prof. Dr., Çankaya University

ASSISTANT TO EDITOR | EDİTÖR ASİSTANI

Şafak Sakçak

Res. Assist. – Çankaya University

FIELD EDITORS | ALAN EDİTÖRLERİ

Architecture Mimarlık

Dr. Satish BK, Cardiff University
Prof. Dr. Aysen Ciravoğlu, Yıldız Technical University
Prof. Dr. Gülser Çelebi, Çankaya University
Prof. Dr. Maria João Durão, Universidade de Lisboa
Prof. Dr. Pieter de Wilde, University of Strathclyde

City and Regional Planning Şehir ve Bölge Planlama

Assoc. Prof. Dr. Giancarlo Cotella, Politecnico di Torino
Prof. Dr. Zeynep Enlil, Yıldız Technical University
Prof. Dr. Ayda Eraydın, Middle East Technical University

Industrial Design Endüstri Ürünleri Tasarımı

Prof. Dr. Alpay Er, Özyeğin University
Prof. Dr. Claudio Gambardella, Università degli Studi della Campania Luigi Vanvitelli
Prof. Dr. Serkan Güneş, Gazi University

Interior Architecture İç Mimarlık

Assoc. Prof. Dr. Çiğdem Berdi Gökhan, Çankaya University
Prof. Dr. Pelin Yıldız, Hacettepe University
Prof. Dr. Meltem Yılmaz, Hacettepe University

Landscape Architecture Peyzaj Mimarlığı

Asst. Prof. Dr. Bahar Başer, Okan University
Asst. Prof. Dr. Irene Curulli, TU Eindhoven

Urban Design Kentsel Tasarım

Prof. Dr. Güzin Konuk, Konya Food and Agriculture University
Prof. Dr. Mehmet Tunçer, Çankaya University

PUBLISHING COORDINATOR | BASIM KOORDİNATÖRÜ

Dr. Can Gölgeioğlu, Çankaya University

PUBLISHING BOARD | BASIM KURULU

Res. Assist. Ayşe Nihan Avcı, Çankaya University
Res. Assist. Burcu Eryılmaz, Çankaya University
Dr. Can Gölgeioğlu, Çankaya University
Res. Assist. Başak Kalfa Ataklı, Çankaya University
Res. Assist. Şafak Sakçak, Çankaya University

SCIENTIFIC ADVISORY BOARD | BİLİMSEL DANIŞMA KURULU

Assoc. Prof. Dr. Yasemin Afacan, Bilkent University (yasemine@bilkent.edu.tr)
Asst. Prof. Dr. Saadet Akbay Yenigül, Çankaya University (akbay@cankaya.edu.tr)
Asst. Prof. Dr. Deniz Altay Kaya, Çankaya University (denizkaya@cankaya.edu.tr)
Prof. Dr. Nur Ayalp, TED University (nur.ayalp@tedu.edu.tr)
Assoc. Prof. Dr. İdil Ayçam, Gazi University (iaycam@gazi.edu.tr)
Prof. Dr. Mehmet Emre Aysu, Okan University (emre.aysu@okan.edu.tr)
Prof. Dr. Shady Attia, Université de Liège (shady.attia@uliege.be)
Assoc. Prof. Dr. Bülent Batuman, Bilkent University (batuman@bilkent.edu.tr)
Asst. Prof. Dr. Aysu Berk, Bilkent University (aysu.berk@bilkent.edu.tr)
Prof. Dr. Can Binan, Yıldız Technical University (binan@tnn.net)
Prof. Dr. Demet Binan, Mimar Sinan Fine Arts University (demet.binan@msgsu.edu.tr)
Prof. Dr. Esin Boyacıoğlu, Gazi University (eboyaci@gazi.edu.tr)
Prof. Dr. Müge Bozdayı, TOBB University of Economics and Technology (mbozdayi@etu.edu.tr)
Asst. Prof. Dr. Çağla Caner Yüksel, Başkent University (ccyuksel@baskent.edu.tr)
Prof. Dr. Luis Bento Coelho, Instituto Superior Tecnico Lisboa (bcoelho@tecnico.ulisboa.pt)
Prof. Dr. Nur Çağlar, TOBB University of Economics and Technology (ncaglar@etu.edu.tr)
Prof. Dr. Nevin Çekirge, Beykent University (nevincekirge@beykent.edu.tr)
Assoc. Prof. Dr. Özgen Osman Demirbaş, İzmir University of Economics (osman.demirbas@ieu.edu.tr)
Asst. Prof. Dr. Güler Ufuk Demirbaş, Çankaya University (udemirbas@cankaya.edu.tr)
Prof. Dr. Füsün Demirel, Gazi University (fusund@gazi.edu.tr)
Prof. Dr. Halime Demirkan, Bilkent University (demirkan@bilkent.edu.tr)
Asst. Prof. Dr. Günseli Demirkol, Eskişehir Technical University (hgdemirkol@eskisehir.edu.tr)
Prof. Dr. Cüneyt Elker, Çankaya University (elker@cankaya.edu.tr)
Assoc. Prof. Dr. Namık Erkal, TED University (namik.erkal@tedu.edu.tr)
Assoc. Prof. Dr. Arzuhan Burcu Gültekin, Ankara University (abgultekin@ankara.edu.tr)
Prof. Dr. Nevin Gültekin, Gazi University (neving@gazi.edu.tr)
Asst. Prof. Dr. Elif Güneş, Atılım University (elif.gunes@atilim.edu.tr)
Prof. Dr. Berin Gür, TED University (berin.gur@tedu.edu.tr)
Prof. Dr. Suna Güven, Middle East Technical University (sunag@metu.edu.tr)
Prof. Dr. Deniz Hasircı, İzmir University of Economics (deniz.hasirci@ieu.edu.tr)
Prof. Dr. Christina Hopfe, Graz University of Technology (c.j.hopfe@tugraz.at)
Asst. Prof. Dr. Bilge İmamoğlu, TED University (bilge.imamoglu@tedu.edu.tr)
Asst. Prof. Dr. Çağrı İmamoğlu, Bilkent University (icagri@bilkent.edu.tr)
Assoc. Prof. Dr. Zerrin Ezgi Kahraman, Çankaya University (ekahraman@cankaya.edu.tr)
Prof. Dr. Jian Kang, University College London (j.kang@ucl.ac.uk)
Prof. Dr. Pınar Dinç Kalaycı, Gazi University (pdinc@gazi.edu.tr)
Prof. Dr. Buğru Han Burak Kaptan, Eskişehir Technical University (bkaptan@eskisehir.edu.tr)
Assoc. Prof. Dr. Ceren Katipoğlu Özmen, Çankaya University (cerenk@cankaya.edu.tr)
Asst. Prof. Dr. Kıvanç Kitapçı, Çankaya University (kivanckitapci@cankaya.edu.tr)
Prof. Dr. Özlem Güzey Kocataş, Gazi University (odundar@gazi.edu.tr)
Assoc. Prof. Dr. Güliz Muğan, Okan University (guliz.mugan@okan.edu.tr)
Asst. Prof. Dr. Gülru Mutlu Tunca, Çankaya University (gulru@cankaya.edu.tr)
Prof. Dr. Gül Koçlar Oral, İstanbul Technical University (kgul@itu.edu.tr)
Prof. Dr. Luigi Maffei, Università degli Studi della Campania Luigi Vanvitelli (luigi.maffei@unicampania.it)
Assoc. Prof. Dr. Selim Ökem, Yıldız Technical University (okem@yildiz.edu.tr)
Prof. Dr. Gülşen Özaydın, Mimar Sinan Fine Arts University (gulsen.ozaydin@msgsu.edu.tr)
Asst. Prof. Dr. Suna Senem Özdemir, Çankaya University (sozdemir@cankaya.edu.tr)
Assoc. Prof. Dr. Lale Özgenel, Middle East Technical University (olale@metu.edu.tr)
Assoc. Prof. Dr. Cengiz Özmen, Çankaya University (cengizozmen@cankaya.edu.tr)
Assoc. Prof. Dr. Fatma Gül Öztürk Büke, Çankaya University (gulozturk@cankaya.edu.tr)
Asst. Prof. Dr. Mehmet Koray Pekerçli, Middle East Technical University (koray@metu.edu.tr)
Prof. Dr. Nuran Kara Pilehvarian, Yıldız Technical University (pvarian@yildiz.edu.tr)

Prof. Dr. Halim Perçin, Ankara University (percin@ankara.edu.tr)
Assoc. Prof. Dr. Özge Süzer, Çankaya University (ozgesuzer@cankaya.edu.tr)
Prof. Dr. Leyla Tanaçan, İstanbul Technical University (tanacan@itu.edu.tr)
Assoc. Prof. Dr. Sezin Tanrıöver, Bahçeşehir University (sezin.tanriover@arc.bau.edu.tr)
Prof. Dr. Elçin Taş, İstanbul Technical University (tase@itu.edu.tr)
Assoc. Prof. Dr. Gülsu Ulukavak Harputlugil, Çankaya University (gharputlugil@cankaya.edu.tr)
Asst. Prof. Dr. Zeynep Çiğdem Uysal Ürey, Çankaya University (zeynepuysal@cankaya.edu.tr)
Prof. Dr. Aslıhan Ünlü, Özyeğin University (aslihan.unlu@ozyegin.edu.tr)
Prof. Dr. Ali İhsan Ünay, Gazi University (unay@gazi.edu.tr)
Prof. Dr. Rengin Ünver, Yıldız Technical University (runver@yildiz.edu.tr)
Prof. Dr. Henk Visscher, TU Delft (h.j.visscher@tudelft.nl)
Prof. Dr. Oğuz Yılmaz, Ankara University (oyilmaz@ankara.edu.tr)
Asst. Prof. Dr. Pelin Yoncacı Arslan, Middle East Technical University (pyoncaci@metu.edu.tr)
Prof. Dr. Neşe Yüğrük Akdağ, Yıldız Technical University (nakdag@yildiz.edu.tr)
Prof. Dr. Zerhan Yüksel Can, Yıldız Technical University (karabi@yildiz.edu.tr)
Prof. Dr. Gülay Zorer Gedik, Yıldız Technical University (ggedik@yildiz.edu.tr)



GRID ARCHITECTURE, PLANNING AND DESIGN JOURNAL
GRID MİMARLIK, PLANLAMA VE TASARIM DERGİSİ

VOLUME CİLT 6 NUMBERSAYI 1 YEARYIL 2023

On behalf of Çankaya University Çankaya Üniversitesi Adına

OWNER | SAHİBİ

Can Çoğun (Prof. Dr.)

MANAGING DIRECTOR | GENEL YAYIN YÖNETMENİ

Ali Türel (Prof. Dr.)

EDITOR (in chief) | EDİTÖR

Timuçin Harputlugil (Assoc. Prof. Dr – Doç. Dr.)

EDITORIAL BOARD | EDİTÖRLER KURULU

Aktan Acar (Assoc. Prof. Dr – Doç. Dr.)

Ela Alanyalı Aral (Assoc. Prof. Dr – Doç. Dr.)

Diane Favro (Prof. Dr.)

Ezgi Orhan (Assoc. Prof. Dr – Doç. Dr.)

Esra Özkan Yazgan (Assoc. Prof. Dr – Doç. Dr.)

Papatya Nur Dökmeçi Yörüköğlü (Assoc. Prof. Dr – Doç. Dr.)

CONTACT | İLETİŞİM

+90 312 233 10 00

grid@cankaya.edu.tr

dergipark.org.tr/grid

GRID is a double-blind peer-reviewed open access international scientific e-journal published by Çankaya University, Faculty of Architecture. Full-texts in Turkish and English are available online at dergipark.gov.tr/grid. Published biannually in the last days of January and July.

GRID, Çankaya Üniversitesi Mimarlık Fakültesi tarafından yayınlanmakta olan açık erişimli, çift-kör hakemli, uluslararası bir bilimsel e-dergidir. Türkçe ve İngilizce tam metinlere dergipark.gov.tr/grid adresinden çevrimiçi erişilebilir. Yılda iki kere, Ocak ve Temmuz aylarının son gününde basılır.

© 2023 Çankaya University, Faculty of Architecture

© 2023 Çankaya Üniversitesi, Mimarlık Fakültesi



GRID ARCHITECTURE, PLANNING AND DESIGN JOURNAL
GRID MİMARLIK, PLANLAMA VE TASARIM DERGİSİ

GRID 2023; 06(1)

CONTENTS | İÇİNDEKİLER

Editorial

Editörden _____

RESEARCH ARTICLES | ARAŞTIRMA MAKALELERİ

Mobilities of media in architecture's theoretical discourse in the 21st century

21. yüzyılda medyanın mimarlığın kuramsal söylemindeki hareketlilikleri

Duygu Hazal BEZAZOĞLU

1-29

Determination of the indoor air quality and occupancy satisfaction in architecture studios during model making process

Maket yapımı esnasında mimarlık stüdyolarının iç mekân hava kalitesinin ve kullanıcı memnuniyetinin belirlenmesi

Merve TUNA KAYILI & Caner YETİŞ

30-55

Class and space: Residential differentiation in industrial city Karabük

Sınıf ve mekan: Endüstri kenti Karabük'te mekansal farklılaşma

Beyza ONUR

56-81

Parameters for designing media facades: A research toward different cases from Turkey and other countries

Medya cepheleri tasarım parametreleri: Türkiye ve diğer ülkelerden farklı örneklemelere yönelik bir araştırma

Muammer YAMAN & Zeynep Yeşim İLERİSOY

82-107

The transformation of the urban experience and the memory by the images

Kent deneyimi ve belleğin imgelerle dönüşümü

Fatma KOLSAL & Feran Özge GÜVEN ULUSOY

108-132

Quarantine structures: Examples of klazomen quarantine station

Karantina yapıları: Klazomen tahaffuzhanesi örneği

Aylin GAZİ GEZGİN

133-175

Reading wellness principles of modern architecture via its examples in Güzelyurt

Modern mimarinin sağlık ilkelerini Güzelyurt'taki örnekleri üzerinden okumak

Feriha URFALI DOĞU & Lerzan ARAS

176-204

Depiction of Bodrum Halicamassus in the historical cartographic materials between 15th and 19th Centuries

15. ve 19. yüzyıllar arası tarihi kartografik malzemelerde Bodrum Halikarnas tasviri

Burak BEYHAN & Feray KOCA

205-232

The third formalism: A study on the Arter building in İstanbul

Üçüncü biçimcilik: İstanbul'daki Arter binası üzerine bir inceleme

Umut Bora ŞAHİN & Esin KÖMEZ DAĞLIOĞLU

233-253

The effects of physical environment in Ottoman healthcare facilities: 2nd Beyazid Complex in Edirne

Osmanlı sağlık yapılarında fiziksel çevre koşullarının etkileri: Edirne 2. Beyazıt Külliyesi

Diğer AYDIN & Seyhan YARDIMLI & Esmâ MIHLAYANLAR

254-284

Spatial transformation of remote working spaces of university students receiving studio education during the pandemic

Pandemi döneminde stüdyo eğitimi alan üniversite öğrencilerinin uzaktan çalışma alanlarının mekânsal dönüşümü

Gözde ZENGİN & Bengi YURTSEVER

285-308

Effects of plaster choice on conservation of the original acoustical character of historical mosques

Sıva türünün tarihi camilerin özgün akustik karakterlerinin korunmasına etkileri

Fatma YELKENCİ SERT & Özgül YILMAZ KARAMAN

309-340

Dear Readers and Authors,

GRID-Architecture Planning and Design Journal of Çankaya University which aims to contribute to the domains of architecture, urban and regional planning, interior architecture, landscape architecture, urban design, product design and industrial design with their interdisciplinary topics welcomes the first issue of the sixth volume with its new editorial board members. The issue covers twelve research papers, which were peer-reviewed by the referees with PhD degrees in their fields.

GRID with no submission or processing charge, accepts not only research and review papers but also book reviews related to architecture, planning and design. International e-journal GRID, biannually published on the last working days of January and July, encourages authors to submit their original works based on cross-disciplinary research.

I am glad to announce that with each day, there is an increasing interest on our journal. We are encouraged to do more with boosting numbers of clicks and downloads which can be tracked on our website. The Journal GRID, indexed nationally in TRDizin and internationally in Avery Index, has an acceptance rate of 21% for articles to be published.

You can visit our webpage <https://dergipark.org.tr/en/pub/grid> and contact us at grid@cankaya.edu.tr.

Last but not the least; I would like to thank referees, field editors, and the Team of GRID for their dedication and enormous effort that they have provided for the issue.

On behalf of the Team of GRID

Timuçin Harputlugil, PhD

Editor in Chief

Değerli Okuyucu ve Yazarlar,

Mimarlık, şehir ve bölge planlama, iç mimarlık, peyzaj mimarlığı, ürün ve endüstriyel tasarım ile bu alanların disiplinlerarası çalışmalarını değerlendiren, Çankaya Üniversitesi'nin çıkardığı GRID – Mimarlık, Planlama ve Tasarım dergimiz, büyüyen editörler kurulu ile altıncı cilt ilk sayısında on iki çalışmaya yer vermektedir. Sayıda yayımlanan her çalışma alanlarında doktora derecesi olan hakemlerce kör değerlendirme ile incelenmiştir.

GRID, gönderim veya işlem ücreti olmadan, yalnızca araştırma ve inceleme makalelerini değil, aynı zamanda mimarlık, planlama ve tasarımla ilgili kitap incelemelerini de kabul etmektedir. Ocak ve Temmuz aylarının son iş günlerinde yılda iki kez yayımlanan uluslararası e-dergi GRID, yazarları disiplinler arası araştırmalara dayalı özgün çalışmalarını sunmaya teşvik eder.

Her geçen gün dergimize artan bir ilgi olduğunu görmek bizi mutlu etmektedir. Her sayı ile çoğalan ve dergimizin web sayfasından takip edilebilecek okunma ile yayın indirme sayılarımız, bizi daha da fazlasını üretmek için cesaretlendirmektedir. Ulusal olarak TRDizin ve uluslararası olarak Avery Index'de listelenen dergimizin makale kabulü ve basım oranı %21'dir.

Dergimizi <https://dergipark.org.tr/tr/pub/grid> adresinden ziyaret edebilir, grid@cankaya.edu.tr e-posta adresinden bize ulaşabilirsiniz.

Son olarak bu yayının basılması için inanılmaz emek gösteren hakemlerimiz, alan editörlerimiz ve GRID ekibine yürekten teşekkür etmek isterim.

GRID Ekibi Adına

Timuçin Harputlugil, Dr.

Editör



Mobilities of media in architecture's theoretical discourse in the 21st century

Duygu Hazal BEZAZOĞLU¹, ORCID: 0000-0002-9143-0967

Abstract

Increasing permeability of disciplinary boundaries results in the theoretical and conceptual mobilities among different disciplines. Architectural theory has a unique position within these transactions since it transformed into an ever-expanding knowledge terrain via interdisciplinary perspectives. By undertaking different modes of appropriations in the architecture-media relationship, this study aims to disclose the directions and extents of these transactions. For this reason, a comprehensive literature survey was performed on certain databases. From these searches an examination list is created by selecting the studies focusing on media and architecture. Next, these studies are categorized based on their dominant themes and analyzed via Michael Ostwald's model, which is composed of uni-directional, hybridization, and multi-directional appropriation modes. The study found that architecture predominantly and more easily engages with media in the uni-directional mode since this mode does not affect the basic premises of the discipline and just expands its knowledge domain. Yet, hybridization and multi-directional appropriations are also observed, resulting in more significant impacts on architecture's disciplinary knowledge. This significance is primarily due to the interpenetration of the concept or theory appropriated from media and the transformations it suggested for architecture's premises. Specifically, in multi-directional appropriation, architectural theory and media theory intertwine preeminently. The study concludes that it might be the shared origin of two knowledge fields as revealed in the concepts of extension/prosthesis that underlie the convenience of these conceptual transactions.

Highlights

- This article focuses on various conceptual and theoretical intersections between architecture and media. It traces these intersections in a group of studies produced in the 21st century.
- The studies are categorized based on their dominant themes. These themes demonstrate the heterogeneity of media in architecture.
- The article adopts M. Ostwald's model and examines architecture's different modes of appropriation from media.

Keywords

Architectural theory;
Interdisciplinarity; Media theory;
Media; Digital media

Article Information

Received:

21.11.2021

Received in Revised Form:

17.07.2022

Accepted:

23.10.2022

Available Online:

30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Muğla
Sıtkı Koçman University, Türkiye
duygusimser@mu.edu.tr



21. yüzyılda medyanın mimarlığın kuramsal söylemindeki hareketlilikleri

Duygu Hazal BEZAZOĞLU¹, ORCID: 0000-0002-9143-0967

Öz

Disipliner sınırların artan geçirgenliği farklı disiplinler arasında kuramsal ve kavramsal hareketlilikler meydana getirmiştir. Bu hareketler içerisinde mimarlık kuramı özel bir konumda yer alır; çünkü mimarlıkta kuram, disiplinler-arası yaklaşımlar ile gittikçe genişleyen bir bilgi alanına dönüşmüştür. Çalışma, mimarlığın disiplinler sınırlarının genişlemesine ve yeniden tanımlanmasına neden olan bu benimsemelerin sınırlarını ve yönlerini açığa çıkarmayı hedefler. Bu hedef doğrultusunda, mimarlık ve medya kesişimindeki geniş literatürden, çeşitli veri tabanlarında üç aşamada gerçekleştirilen aramalar ile belirlenen bir ön değerlendirme listesi oluşturulmuş ve bu listeden ağırlıklı medya ve mimarlığa odaklanan çalışmalar seçilerek bir inceleme listesi belirlenmiştir. Bu listedeki çalışmalar ise baskın temalarına göre sınıflandırılmış ve Michael Ostwald'ın kuram/kavram benimsemelerini tek yönlü benimseme, hibritleşme ve çok yönlü benimseme şeklinde açıklayan modeli aracılığı ile çözümlenmiştir. Çalışmada yapılan çözümlemeye göre mimarlık, medya kuram ve kavramlarını ağırlıklı ve daha kolaylıkla tek yönlü olarak benimsemekte ve bu tek yönlü benimseme ile kendi bilgi alanını genişletmektedir. Ancak, hibritleşme ve çok yönlü benimsemenin de olduğu görülür; bu iki benimseme biçimi disiplinler bilgi için daha önemli etkiler oluşturur. Bunun nedeni medyadan alıntılanan kavram veya kuramın disipline tam olarak nüfuz etmesi ve bu nedenle mimarlık için önerdiği dönüşümdür. Özellikle, çok yönlü benimsemelerde mimarlık kuramı ve medya kuramının olabilecek en üst seviyede iç içe geçtiği görülmüştür. Çalışma, kavramsal hareketliliklerin elverişliliğinin bu iki bilgi alanının uzantı/protez kavramlarında açığa çıkan ortak kökeninin altında yattığı sonucuna varır.

Öne Çıkanlar

- Bu makale, mimarlık ve medyanın çeşitli kavramsal ve kuramsal kesişimlerine odaklanır ve 21. yüzyılda üretilmiş bir grup çalışma üzerinden bunların izini sürer.
- İncelenen çalışmalar baskın temalarına göre gruplanmıştır, bu temalar medyanın mimarlıktaki heterojen varlığını yansıtır.
- Makale M. Ostwald'ın modelini kullanarak mimarlığın medya kuram ve kavramlarını farklı benimseme biçimlerini inceler.

Anahtar Sözcükler

Mimarlık kuramı; Disiplinlerarasılık; Medya kuramı; Medya; Dijital ortam

Makale Bilgileri

Alındı:

21.11.2021

Revizyon Kabul Tarihi:

17.07.2022

Kabul Edildi:

23.10.2022

Erişilebilir:

30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Fakültesi, Muğla Sıtkı Koçman Üniversitesi, Türkiye
duygusimser@mu.edu.tr

INTRODUCTION

For architecture, a disciplinary turning point can be identified around the destabilizing developments of the 1960s. This critical threshold is marked as a crucial starting point in different anthologies on architectural theory. While in *Rethinking Architecture*, Neil Leach (1997) refers to the period as one of "intensifying change", in *Theorizing a New Agenda for Architectural Theory*, Nesbitt (1996) characterizes the three decades since 1965 with the words: "social upheaval, a loss of faith in the modernist project, and 'certain disillusionment with social reform' within the profession". From this point on, Nesbitt sets out to unfold the condition of architectural theory since the mid-1960s via a particular mode of plurality. For Nesbitt, this plurality, which stems from the shuttering of grand narratives, corresponds to the postmodern turn in architectural theory and brings forth "the proliferation of theoretical paradigms or ideological frameworks". As addressed by Hays in *Architecture theory since 1968* (1998), this plurality is an expansion that burgeons from the integration of architectural culture into architectural theory. However, Hays draws attention to a significant change for culture; as he proclaims the traditional understanding of culture that one belongs to or possesses can no longer arise spontaneously but "*must be constantly constructed, deconstructed, and reconstructed through more self-conscious theoretical procedures*" (Hays, 1998).

These studies attempt to describe and define a specific mode of transformation in knowledge production in architectural theory since the 1960s and show how the loss of a single monolithic theoretical basis gives place to a more polyphonic atmosphere. It is possible to claim that different alliances with other disciplines and theoretical paradigms elasticized the field within this plurality. Indeed, architecture has always borrowed from other disciplines "to illuminate its central questions" (Crysler et al., 2012, p. 14). However, these reference fields shifted from well-established disciplines to "more fluid theoretical discourses" in the late twentieth century (Crysler et al., 2012, p. 14). To put it more clearly, since the 1960s, the supremacy of "little narratives"ⁱ (Lyotard, 1984, p. 60) legitimated multistranded disciplinary expansion of architecture's knowledge production.

On the other hand, the turn of the century witnessed a confusion, which is often called "theory's death". Concerning architectural theory, Troiani and Kahn refer to this process as "theoretical meltdowns" (2016, p. 486). Being a transdisciplinary phenomenon that does not pertain to architecture, for Hight, the death of theory became official with the last issue of *Assemblage* in April 2000 (2009). However, the acceptance of the "death" and embracing obsolescence of theory in the global marketplace create a crisis for the "conditions of acting architecturally" (Hight, 2009). This disciplinary crisis for "theorizing architecture" is, on the other hand, linked to its practice which has become somewhat "limitless" (Troiani and Kahn, 2016, p. 487). The mutations that theory underwent were certainly accelerated by electronic society and communication in the 1990s.

The attempts to make sense of the bewildering new technologies, which started to change the medium of design, prompted the incorporation of subjects and themes that are not purely theoretical. The more the impact of new technologies on the discipline became visible via their practical outcomes, the more intensely issues related to architectural culture entered into the agenda of theoretical discourse.

While the influence of certain paradigms and theoretical frameworks on architecture is quite evident, such as postmodernism or deconstruction, there are more obscured concepts and theoretical frameworks that are influential for architecture yet hard to trace due to the inclusion of architectural culture in theoretical discourse. As a crucial element of architectural thought and practice, media-bounded concepts and theories inflect the discipline without turning into strong paradigms. They do not have a rooted disciplinary base in their motherlands, nor are they purely theoretical. Though it is possible to point out several theoretical and conceptual interactions between media and architecture, describing the impact of media on architecture via a coherent and single paradigm is not possible.

In effect, media intersects with architecture in three ways: as a concept, via its theoretical frameworks, and its divergent forms. In addition to the combined effects of “theoretical meltdowns” and the rise of digital, architecture’s plural engagements with media create different formations and deformations within and across the disciplinary boundaries. As a study field, media does not demonstrate a coherent outlook in its interaction with architecture. Hence, it can be claimed that the knowledge terrain at the intersection of media and architecture has a unique position for architecture’s disciplinary expansion. Architecture is indiscernibly linked to its representations that are primarily in the media domain, so it is hard to decide to what degree architectural theory is merely borrowing media-bounded concepts and ideas from outside and to what extent these concepts and theories are transformed and modified within the discipline. Moreover, the digital revolution erased the distinctions between different media. Since the 1990s, “a convergence process between acoustical, optical and audiovisual media” significantly altered the communication environment (Micconi and Serra, 2008). This further complicated the concept of media, thus its relation to architecture.

Aiming to amend this vague situation that intensified in the 21st century and delineate the disciplinary interactions among media and architecture with precise contours, this study explores different modes of theory and concept appropriations in architecture’s theoretical discourse after the 2000s. First, it tackles the heterogeneous formations of the phenomenon in the architectural discourse via a categorization of dominant themes. Following that, a model proposed by Michael Ostwald in “Architectural theory formation through appropriation” is embraced. This model is adopted due to its potential in diagnosing different degrees and extents of theoretical exchanges without sacrificing core disciplinary grounds. Moreover, Ostwald develops this model specifically for architectural theory. To explain different modes of theory and concept appropriations from other disciplines, he defines three phases; uni-directional appropriation, hybridization, and multi-directional appropriation (1999). Among these, uni-directional mode help mark the adaption of a theory or concept from a non-architectural terrain without severe modification. On the other hand, hybridization corresponds to the migration of a concept or a theory where a certain degree of erosion occurs in the meaning. Therefore, it allows tracing meaning shift via “translation and

translocation". Lastly, multi-directional appropriation indicates the use of already combined concepts. This appropriation usually takes place as the readjustment or reformulation of a concept that derives from architecture in a non-architectural terrain. Hence, the borrowed concept/theory performs in multiple directions. A group of studies at the intersection of architecture and media are analyzed based on this model. Thus, the research aspires to contribute to architecture's theoretical discourse from a meta position. This contribution is expected to be achieved by providing an elucidative ground for architecture media relationship, which becomes increasingly central to the discipline with new media developments in the 21st century.

METHOD

By aiming to clarify a multitude of interchanges between architecture and media, this research problematizes the degree and direction of "travels" between these two epistemological fields and attempts to explain the origins, modifications, and hybridizations of traveling theories and concepts (Bal, 2002). To attain this goal, an expanded literature survey, which is limited to the studies produced in the 21st century, is conducted. From the survey, the most relevant and diversifying approaches to the media-architecture relationship are selected, and an examination list is created. First, the studies in this list are analyzed and categorized based on their dominant themes in theory. They are then examined with reference to Ostwald's model, and different appropriation modes are analyzed. The selection of the studies and the creation of the list are decided according to the emphasis on media architecture interaction. This emphasis is traced via the existence of a simultaneous reference to media and architecture or a reference to their subcategories either on the title or in the abstract.

Since the study does not claim to derive a quantitative result and instead focuses on the qualitative, the selected and closely examined studies do not claim to constitute a whole. Still, they represent different engagement modes between architecture and media. It should be noted at this point that the primary constraint of the present research stems from the geographical limitation of the studies that were surveyed before this selection. Studies from Western countries dominate the literature survey. Hence, the research reflects architecture's media-related concept/theory appropriation within predominantly Western cultural and scientific geography and does not claim to provide a universally valid account.

The expanded literature survey is composed of successive stages. Primarily, the survey focuses on scholarly work produced in English after the 2000s. Media is a broad concept; when it is matched with architecture, an immense number of studies appear. This abundance is delimited in the first stage of the literature survey with the aid of the following instrumental search terms: 'discourse, knowledge, experience, and theory'. All combinations of these terms with "architecture" have been used on Scopus and Web of Science, necessary filters are applied, and most relevant studies are selected by paying attention to the discipline of the publication. Hence, studies published preeminently in the architectural context, i.e., architectural conferences, architectural journals, etc., are selected. The list was enriched by other sources found by tracing the reference lists of the most relevant studies. Finally, each study is examined by considering the prominent accentuation and its relation to media.

The first phase of the analysis aims to clarify the main themes of theory on architecture media interaction and to demonstrate the distribution of studies under these themes. These themes were determined by paying significant attention to the main concerns, frameworks, and highlights of the studies. In other words, certain parallelisms and discrepancies among ‘discursive objects’ enabled to clarify dominant tendencies as themes that emerge from architecture media interaction. Ostwald’s model enables to track interactions among architecture and different disciplines, yet it falls short of explaining the plurality and heterogeneity within theoretical discourse. Therefore, this phase, on the one hand, reflects the heterogeneous nature of theory formation in architecture; on the other hand, it provides a base to review different approaches systematically. The second phase consists of the close examination of how architecture appropriates multiple forms, theories, and concepts of media in its knowledge production via the model provided by Ostwald. This phase involves a thorough analysis of the studies in the selected list. The procedures of this analysis can be summarized as follows: scrutiny of general terms and their discipline of origin, revealing main positionings with regard to architecture and media, tracing the stabilities or modifications of media and architecture as discursive objects within the examined study. These considerations form a framework to dismantle disciplinary and theoretical origins and mobilizations. Thus, they provide a ground to explain Ostwald’s model further.

THEORIZING MEDIA IN ARCHITECTURAL THEORY

Interdisciplinarity not only results in the stretching of disciplinary boundaries; it also paves the way for shared concepts and theories. This interdisciplinary mobility of concepts is not peculiar to architecture. Moreover, as Mieke Bal (2002) demonstrates, such travels are pretty common, especially for humanities, where concepts "migrate between disciplines, individual scholars, historical periods or academic communities". As a result of such travels, many concepts and theories that originate from media theory or different forms of media open new vantage points for the discipline of architecture. On the one hand, these interactions expand architecture's disciplinary field; on the other hand, they transform its outlook. Because as a complex and multi-layered phenomenon by itself, media enables to construct numerous connections with architecture. These connections vary from architecture's recalibration as a medium to its extension via different communication environments. Media-related expansion portrays such a vast terrain for architecture that it leaves room for both conceptual and practical coexistences. However, the degree and the content of these interchanges, loosening and transforming meanings and forming new ones remain unaddressed in the literature. Increasing attention to the subject can be pinpointed in the last years (Buckley, 2019; Brown, 2018; Cairns, 2017; Wilson, 2015). This popularity brings an inevitable diversity of perspectives. However, all these attempts operate without clear navigation for their position within the theory and in architecture’s inter and transdisciplinary interactions.

As discussed by addressing theory’s death and the rise of interdisciplinary, it is impossible to mention a solid and close framework for theory in the 21st century. Not only architecture’s theoretical landscape has been transformed with its inclusion of architectural culture, but it has been enlarged by different forms of practicing architecture, such as pedagogy, historical research, or calls for action. Thus, in the 21st century, architectural theory operates within an enlarged scope and with an inevitable “heterogeneity” (AlYousefi, 2019). For architecture-media interaction, a

similar condition can be observed. This heterogeneity can be seen to have its subcategories. In other words, architecture media interaction develops around specific themes and subjects. According to the studies examined in the article, these themes appear as space, urban digital media, media-architecture, film medium, networks, information technologies, and representation (Table 1). There are certain affinities among the themes in the list. Media-architecture and urban digital media can be seen as different scales of an akin approach, but despite their similar perspective, what they undertake differs in scope. On the other hand, the film medium is essentially a different type of representation, and there is a great deal of scholarly production around this medium. Indeed, film theories distinguish themselves from other media forms, and their impact on architecture is not confined to the representational potential. While networks and information technologies are also linked, there is an accentuation and scale difference between the two. Lastly, studies that scrutinize the peculiar correlations between space and media seem emergent, so approaching media from the perspective of space compose another group.

Table 1 - Distribution of dominant themes in the list of examined studies.

	Thematic Category	Name, Author and Year of the Study
1	Space	Mediated Space Brown, J. 2018
		Media, Architecture and the Moving Subject of Pedagogy Ellsworth, E. 2004
		Warped Space: Art, Architecture, Anxiety in Modern Culture Vidler, A. 2000
2	Urban Digital Media	*The City is a Medium Kittler, F. A. and Griffin, M. 1996
		The Media City McQuire, S. 2008.
		Infostructures: A Transport Research Project Häusler, M.H. Tomitsch, M. Gardner, N. 2010
		Urban Media Cultures Tscherteu,G., Pop, S. Stalder,U. and Struppek, M. 2012.
		Deep Mapping the Media City Matern, S. 2015
3	Media Architecture	Media Architecture, Engaging Urban Experiences in Public Space Brynskov, M., Dalgaard, P., and Halskov, K. 2015
		Media Architecture: Using Information and Media as Construction Material Wiethoff, A. and Hussmann, H. (Eds.) 2017
		We Live Here: Media Architecture as Critical Spatial Practice Colangelo D. 2021
4	Film Medium	*Montage and Architecture Eisenstein, S, 1989 [orig. 1940]
		Structures and Sequences of Spaces Moretti, L. 2002
		The Architecture of the Screen: Essays in Cinematographic Space Cairns, G. 2013
		Sequences in architecture: Sergei Ejzenstejn and Luigi Moretti, from images to spaces Molinari, C. 2021
5	Networks	Network Fever Wigley, M. 2001
		The Organizational Complex. Martin, R. 2003
6	Information Technologies	Information Obsession: the Eameses' Multiscreen Architecture Colomina, B. 2001
		*Prosthetic Theory: The Disciplining of Architecture Wigley, M. 1991
		Unclear Vision Colomina, B. 2009
7	Representation	Image, Text, Architecture: the Utopics of the Architectural Media Wilson, R. 2015
		Cinematics: Embodying Architectural Representation in the Digital Age. McGrath, B. and Gardner, J. 2008
		Visioning Technologies: the Architectures of Sight. Cairns, G. 2017

*These studies do not belong to the 21st century, but they form the basis of important discussions in other studies.

Uni-directional appropriation

The first relationship of appropriation Ostwald (1999) defines is "uni-directional", where a theory or concept originated from a non-architectural terrain has been adapted without a strict modification; it "migrates" to architecture from outside and becomes "a catalyst for the development of a particular form of architectural theory". Ostwald explains this with a straight line that connects deconstructionist architecture and French philosopher Jacques Derrida's work. In the case of media, uni-directional appropriation can be observed in such differing accentuations that it is possible to mention a wide array of topics: these diversify as screen:façade alliance, new notions of space, cooperation of media and physical environment at urban scale, architectural representation and its extensions into other media, information technologies-architecture unity.

What is expected from a uni-directional appropriation is the use of media or media-originated tools and concepts without losing their primary sense and simultaneously proliferation of new perspectives for architecture. At this point, it is common to encounter studies that tackle media as a physical component that can be added to an architectural element (Häusler et al., 2013, Brynskov et al., 2015; Basaran, 2016; Wiethoff et al., 2017; Colangelo, 2021; Aksu, 2022). This rather application-oriented approach to media-architecture togetherness develops from an oft-repeated idea: 'screenization' of façade. This approach seems to be constructing its discourse under the term "media-architecture"; while growing via multiple organizations since 2007ⁱⁱ. The institutional body Media Architecture Institution (MIA), which is composed of designers, architects, interaction designers, artists, and researchers, plays a significant role for both the research and practice around media-architecture. This institution organizes events and conducts projects that bring media, art and architecture together via screen-based designs.

The extension of media into the urban environment, which repeats the media-architecture approach on a different scale, is also one of the most evident uni-directional appropriations from media. Forming an essential part of the projects developed by MIA, these studies examine the existence of multiple media formations in the urban environment. In this sense, *Infostructures* (Häusler et al. 2010), and *Urban media cultures* (Tscherteu et al. 2012) exemplify different aspects of media use in the urban environment. While the former, a case-based study, adopts a more pragmatic and practical view by suggesting digital technologies to solve the problems of public transportation, the latter looks into what seems to be turning into a culture via the intense use of media in the form of installations, projections, and surfaces in public space. At the threshold between screenization of façade and urban media, Wiethoff and Hussmann conceptualize the use of media as an (im)material component of public space via interactive, light-emitting elements on the outer shell of architectural structures. Their approach adds the materialities of information next to the traditional materials (Wiethoff & Hussmann, 2017). Kandemir also tackles the link between architecture and information technologies without modifying architecture or media. In this study, however, Kandemir defines some categories in which immaterial elements engage with the architectural object. These can be summarized as the use of digital tools in the design phase, the interactivity of information technologies, and the control of non-material components of an architectural object. Among these, the last category draws attention with its novel approach. Kandemir's inference on that matter can be rephrased as the evaporation of architecture's materiality via its reliance on information technologies.

The function of screening that architecture acquires or the extension of digital media in the urban environment is the most prominent and direct example of architecture and media interaction in a literal sense. On the other side, there exist the media production spaces that operate as an intermediary zone between the real and constructed. From this perspective, Brown tackles real, imagined, or hybrid spaces as different genres of mediated space; entertainment, advertising, and broadcast news (2018).

Although it is epitomized in the table with few studies, architecture's representation in the media composes a broad category that includes numerous studies that vary from architecture in magazines to films and photographs as enlarged architectural territories. In these studies, media is primarily considered an outcome, an environment that intervenes in architecture's production, perception, and reception. Thus, the emphasis shifts from architecture's material existence to its extensions into other mediums (Wilson, 2015). The broad scope of these approaches owes much to their approximation and intersection with visual culture studies. In this regard, discussing architecture via different visual environments, especially film and photography, is quite prevalent. At this point, the film medium's potential for architecture distinguishes itself since architecture and film converge on the superimposition of movement and space.

British scholar Graham Cairns (2013) deciphers architectural spaces via a filmic lexicon in *The architecture of the screen: essays in cinematographic space*. Cairns scrutinizes a wide range of qualities that a space acquires in its conceptual or literal encounter with film, video, or digital media. His cinematographically refined interpretations of space vary between Jean Nouvel's use of sequencing as a design tool to Carlo Scarpa's "intrinsically filmic" work (Cairns, 2013, p. 104). Moreover, perceptual fusions of space and film also carve a niche in Cairns's discussion via performances and installations. Thus, he merges the filmic and the architectural in various contexts and attunes the latter to the former.

A detailed approach that can be located at the intersection of architecture and its representation via media can be found in *Visioning Technologies* (2017). Again Cairns, the editor of the book, attempts to clarify how architecture is "restructured and reframed" by visual and theoretical frameworks that originated from optical media, which is the central focus of the study. Moreover, the historical evolution of media and architecture's parallel transformation is displayed, focusing on human perception. Within the study, the contributions are categorized depending on the media types; the essays are grouped under themes of perspective, photography, film, and digital technologies. This grouping reflects both a division and a presupposed evolution of media that architecture engages. Relying on his engagement with the subject for the past twenty years, Cairns claims that "certain patterns of technological motivation and evolution repeat themselves with the emergence of every new technology of sight" (2017, p. 3). While in *Visioning Technologies*, this repetition is theorized as optical mimicry, the importance of revealing this and similar patterns are encouraged by Cairns, who underscores the need to provide a historical background for the increasingly digitalized new era.

Interestingly, when the concept of digital media enters into architecture without a strict modification, it tends to generate discussions that cover architecture's existence and circulation in cyber space. It is seen that this medium's potential and intrinsic qualities are engaged without

modification in the meanings of both architecture and media. However, this identification excludes the implications and potentials of using the digital medium as a design tool, which has been widely discussed in the 1990s and early 2000s in relation to Deleuzian “fold” or Greg Lynn’s “animated form”. The virtual existence of architecture in the cyber space mainly deals with the dissemination of architecture’s knowledge via digital publications and platforms (Erdem, 2021; Esen & Dinç-Kalaycı, 2021); if not, it deals with the use of the internet as a repository of knowledge. Surprisingly, in the Turkish context, there is plenty of studies around the implications, functions, and potentials of digital media to extend architecture’s knowledge domainⁱⁱⁱ. Nevertheless, not all studies embrace the issue from a positive side; as Boyacıoğlu and others discuss, digital media also paves the way for architecture’s transformation into a commodity in the global market (2015).

An interesting framework for the medium’s agency in representation with reference to the digital medium can be found in McGrath’s and Gardner’s theory of Cinematics (2008). Opposing the closed and stabilized schema of the perspectival regime suggested by Evans, McGrath and Gardner proposes a dynamic, open-ended, and cybernetically informed drawing system that pertains to the technology of the 21st century. This model goes beyond informing the drawing process and hints at a new way of thinking about architecture as well; because this open-ended proposal suggests considering architecture within the greater web of relations. In constructing the theory of cinematics, McGrath and Gardner appropriate concepts and ideas from cybernetics and film theory without any modification. Indeed, they benefit from these fields for theoretical elucidation in deciphering architecture’s enviroing atmosphere in the digital medium. As a result, an exciting discussion on digital representation is presented by the unaltered use of Henri Bergson’s theories and Deleuze and Guattari’s concepts movement-image and time-image.

Table 2 - The list of studies that appropriate media in the uni-directional mode.

	Thematic Category	Name, Author and Year of the Study	Mode of Appropriation
1	Space	Mediated Space Brown, J. 2018	uni-directional
2	Urban Digital Media	Infostructures: A Transport Research Project Häusler, M.H. Tomitsch, M. Gardner, N. 2010	uni-directional
		Urban Media Cultures Tschertou, G., Pop, S. Stalder, U. and Struppek, M. 2012.	uni-directional
3	Media Architecture	Media Architecture, Engaging Urban Experiences in Public Space Brynskov, M., Dalsgaard, P., and Halskov, K. 2015	uni-directional
		Media Architecture: Using Information and Media as Construction Material Wiethoff, A. and Hussmann, H. (Eds.) 2017	uni-directional
		We Live Here: Media Architecture as Critical Spatial Practice Colangelo D. 2021	uni-directional
4	Film Medium	The Architecture of the Screen: Essays in Cinematographic Space Cairns, G. 2013	uni-directional
5	Networks		
6	Information Technologies		
7	Representation	Image, Text, Architecture: the Utopics of the Architectural Media Wilson, R. 2015	uni-directional
		Cinematics: Embodying Architectural Representation in the Digital Age. McGrath, B. and Gardner, J. 2008	uni-directional
		Visioning Technologies: the Architectures of Sight. Cairns, G. 2017	uni-directional

Elaborating the role of the medium as an inherent mechanism in architectural research is not a rare approach. Moreover, the prevalence of digital media further incited this paradigm and caused growing attention to the subject after the 2010s^{iv}. Although the inclusive concept-term of medium/media seldomly took central place and became the sole object of inquiry, frequently it is deployed as a complementary component to other agendas (McKim, 2018; Ellsworth, 2004, Dorrian et al., 2020). In between these two poles, more often than not, it provides a visually, politically, and culturally loaded ground to examine architecture. Discussions on media fabricate fresh viewpoints and render what is visible yet unseen more explicit and articulate. Uni-directional appropriation seems to be used as a convenient tool in theoretical discourse since this mode does not affect the basic premises of the discipline and just expands its knowledge domain by adding new territories of exploration.

Hybridization

The second type of appropriation in Ostwald's (1999) model is "hybridization", which defines more blurry ground than uni-directional appropriation. In hybridization, during its migration between two distinct knowledge domains, the theory/concept loosens; its original meaning erodes with the processes of "translation" and "translocation" (1999, p. 55). Moreover, this hybrid form of theory may embody the aspects of both the old and the new disciplines since the coherence of the concept is open to reduction in translation. Ostwald exemplifies this via the discrepancy between the source and use in Venturi's work. In advancing his idea of "compositional complexity", Venturi relies on T. S. Eliot. Ironically, in its original discipline of literary theory, Eliot's writings are considered to deploy "a dominant *ordering influence* over the text". What this reflects is the changing, expanding, and transforming meanings during migration.

In the case of architectural theory and media, hybridization occurs predominantly via the travel of the concept of medium. In its interaction with architecture, medium gains new characters; its sheer meaning starts to acquire additional connotations. This potential of medium has been diagnosed via historical and critical studies of Beatriz Colomina since the 1990s (Colomina, 1991, 1994, 1999). Yet, as a prolific scholar, she continues to dwell on that matter with different perspectives in the 21st century as well. In two studies, which date to the early years of the 21st century, Colomina utilizes a hybrid mode of appropriation with different degrees and emphases.

In "Unclear vision", Colomina interprets glass as a communication mechanism; she develops an argument that parallels medical imaging technologies' influence on the human body and the transparency in modern architecture (2009). Thereby she conceptualizes an architectural element, glass, as a communication apparatus. For Colomina, glass precisely represents the act of communication as when reading a newspaper brings "the outside in" and sending a letter "gets the inside out". Moreover, she claims that as the fluidity of communication systems increases, glass "literally takes over more and more of a building" (Colomina, 2009, p. 78). Colomina's conceptualization translates an architectural element into a type of media. This claim, on the one hand, opens new possibilities by enlarging what is recognized as media; on the other hand, it attributes a new character to the use of glass in architecture.

Additionally, in “Information obsession: the Eameses' multiscreen architecture” Colomina deals with the interdisciplinary design practices of Charles and Ray Eames in the postwar period (2001). As technological by-products of the war, communication technologies start to disseminate vastly in this period, becoming integral to the promotion of nations’ power. Simultaneously their impact penetrates into everyday life and results in a duality where the boundaries between publicity and privacy erode. This threshold can be argued to constitute the primary concern of Colomina, most obviously in *Privacy and Publicity* and *Domesticity at War*. However, in “Information Obsession: the Eameses' multiscreen architecture,” she pays particular attention to the space of media without using any explicitly articulated theoretical tool. Instead, she deploys the concepts of space and media in tackling Eames's multimedia installation, hence elaborates a novel dimension of space that spring from information technologies. According to Colomina, “spaces are defined as arrays of information, collected and constantly changed by the users” (2001, p. 218). Colomina’s critical look in this article reverses both the static conception of space and the limited frontiers of technological interfaces. As a result of this hybridizing mode, she proposes the space of information as something between physical and virtual.

In the same context, postwar America, Reinhold Martin grapples with corporate architecture by addressing media theorist Marshall McLuhan (2003). However, Martin draws more on *Mechanical Bride* and less on *Understanding Media*. To construct a cybernetically informed theoretical structure, Martin mainly refers to McLuhan and Gyorgy Kepes and, at times, their interaction with Giedion. He thus attempts to expound on the organizational complexity, which he describes as “networks of networks”. In this conceptualization, the meanings of both medium and architecture are enlarged. Martin deals with architecture both on theoretical and practical levels. His reference to Kepes enables him to unite cybernetics with aesthetics via the issues of control and communication. In this exploration, architecture is presented as a medium that bridges science with art. On the other hand, he elaborates the curtain wall, a physical architectural element, as a means that communicates information at multiple scales. By unfolding the potential of this element to receive and transmit information, he discovers new conceptual meanings of architecture and media. In other words, the features and prospects of architectural elements in a particular typology are tackled with a lexicon informed by cybernetics. This conception enables to develop not only a unique and architectural meaning for “organizations” but also embodies the invisible aspects of corporate architectures via their visible components. In the end, he describes the networks embedded in one system, i.e., architecture, in relation to another complex entity, i.e., communications media (Martin, 2003).

In addition to Marshall McLuhan, whose influence on architecture has various paths, the ideas of German literary scholar and media theorist Friedrich Kittler are worth mentioning for the impact of media theory on architecture. However, the relation of Kittler’s ideas to new conceptions of space is less direct and therefore hard to trace. Yet, his unique perspective that underscores the materiality of discourses and his deployment of media as a methodological source bring about genuine paths that are followed by his successors. These continue to influence theories on urban space particularly. The strong position Kittler acquires in media theory owes to his determined endeavors that underline the primacy of media for discourse. Developing a unique approach that combines post-structuralist understanding with the materiality of media, his *Discourse Networks*

1800/1900 (initially published in 1985 under the title *Aufschreibesysteme 1800/1900*) extends Foucault's formulation and strives to include all technical media. In line with his materialist approach, Kittler adopts a mechanistic tone in his writings and lays the emphasis on the hardware. The intersection of his ideas with space can be found most avowedly in "the City is a Medium". Originally published in 1988, this work reflects a techno-materialist media approach within a specific context; that is city space. Kittler embarks on to describe the city through a set of actions and operations by paralleling media and city. The analogical link Kittler builds involves three acts; storage, transmission, and reproduction. He considers buildings, vaults, archives, monuments, tablets, and books as storage facilities. In contrast, the city appears to be the medium that is capable of transmitting the complex culture stored in the facilities as mentioned earlier. For Kittler, the complex human order of the city reflects an elevated condition in comparison with the limitedness of present electronic mechanisms of storing and transmitting information (1996).

Along the same line and under the influence of both Kittler and McLuhan, Scott McQuire examines the contemporary city as "a media-architecture complex" in *Media City* (2008). Basing his claim on "the proliferation of spatialized media platforms" and "hybrid spatial ensembles", he demarcates his focus as media city rather than digital city for two reasons. First, to accentuate "a longer and more diverse history of the mediated production of urban space", and second to combine the ideas of the aforementioned two key figures. McQuire takes 'media' as an environment in McLuhan's sense but also interprets the city as a 'medium' in Kittler's sense. Synthesizing two crucial approaches to media on the city scale, McQuire transplants media theory into public and private spaces and social life in the contemporary city.

Similar to McQuire in grappling with the mediated city, yet diverging via her theoretical basis, Shannon Mattern tackles the urban space and media relationship from a materialist and media archaeological viewpoint. Mattern draws on the ideas of Friedrich Kittler, Errki Huhtamo and Jussi Parikka. In that sense, her endeavor can be pinpointed within the boundaries of media archaeology. Nonetheless, different from these theorists, she proposes to take archaeology in the literal sense and pursues a literal "excavation of the deep material history" of the city (Mattern, 2017). Thus, she, on the one hand, changes the medium of the city in a way to include infrastructural layers and the spaces in between them; on the other hand, she simultaneously develops not only just materially accentuated but a spatially informed theory for media archaeology.

Table 3 - The list of studies that appropriate media in the hybridization mode

	Thematic Category	Name, Author and Year of the Study	Mode of Appropriation
1	Space	Warped Space: Art, Architecture, Anxiety in Modern Culture Vidler, A. 2000	hybridization
2	Urban Digital Media	*The City is a Medium Kittler, F. A. and Griffin, M. 1996	hybridization
		The Media City McQuire, S. 2008.	hybridization
		Deep Mapping the Media City Mattern, S. 2015	hybridization
3	Media Architecture		
4	Film Medium	*Montage and Architecture Eisenstein, S, 1989 [orig. 1940]	hybridization
5	Networks	The Organizational Complex. Martin, R. 2003	hybridization
6	Information Technologies	Information Obsession: the Eameses' Multiscreen Architecture Colomina, B. 2001	hybridization
		Unclear Vision Colomina, B. 2009	hybridization
7	Representation		

Some studies are hard to categorize with regard to Ostwald. This challenge primarily stems from a dichotomy where the origin of theory/ theoretical tool lies in a discipline different from media but as a concept, media possesses a central role in the content. The lines that demarcate theoretical tool from what is examined is not always clear, and this creates certain situations where categorization becomes impossible. These studies might show the characteristics of hybridization, but they hybridize with a discipline that is different from media theory. Such a case can be observed in *Warped Space* by Anthony Vidler, where Vidler mainly draws from psychoanalytical theory in providing a new poetics of negative space saturated by digital media. In his endeavor, Vidler underscores the impact of the digital both on the perception of space and the materiality of architecture. Due to his theoretical background informed by psychoanalysis, Vidler mainly highlights the “post-psychoanalytical imaginary” of space.

As the diversity of the approaches mentioned above reflects, the polymorphous nature of architecture media interplay becomes visible in various studies. It might be due to this character that, medium can be easily adapted to new meanings and generates fresh conceptions. In hybridization, networks and information technologies dominate other themes. Most often, the potential of these immaterial and infrastructural components is explored via architectural terms. While architecture proffers dimensionality and corporeality in the physical world, information technologies intervene in many spatial processes. Therefore, discussions that are triggered by information technologies and networks also entail interrogation of an aspect of space that is hybrid in character. This space which is born out of the interaction between concepts that govern microelectronics and their corporeality, oscillates between labels as “information space or the space of information”. This liminal space can be traced across different scales. Furthermore, the elaboration of the city medium with such an approach consolidates this potential and points to a materialist shift in the organization of the immaterial.

Multi-directional Appropriation

The third phase of the model, "multi-directional appropriation" comes into sight as the most complex mode of appropriation. It indicates the use of already combined concepts. In a sense, this use refers to the recalibration of a concept developed in a terrain that is not architectural but draws from architecture, mostly analogically and for "gaining authority" (Agacinsk, 1992). It is for this reason that the borrowed concept/theory functions in multiple directions. This is quite evident in transactions between philosophy and architecture. Tschumi skillfully summarizes this centuries-long interplay with a couple of sentences: "Philosophy once imported its metaphors (foundations, structure, etc.) from architecture. In turn, architecture imported concepts from philosophy (from positivism to post-structuralism) and also exported polemics (postmodernism)" (Tschumi & Ingraham, 1992). The third model of appropriation owes much to this "metaphoric and metonymic presence of architecture within diverse disciplines" (Ostwald, 1999). Additionally, for the appropriation to be considered multi-directional, there should be a return to the discipline.

For media, the multi-directional mode of appropriation has its best outlook in Marshall McLuhan's and Mark Wigley's overlapping ideas. In developing "prosthetic theory," Wigley (1991) places architecture next to communication technologies and explains both as extensions of the body. Remarkably, as shown in Figure 1, this idea originates in *Civilization and Its Discontents*, where Freud (1930/2010) enumerates the tools that civilizations developed to compensate for the "deficient" body parts. Here, Freud regards dwelling as an extension to substitute the absence of the mother's womb, which is the first lodging^v. Wigley takes this idea further and describes how the body is being transformed via these artificial extensions. The transformation Wigley hints at the shift from mechanical to digital, which results in architecture's relocation within electronic space (1991).

Consideration of architecture as an extension of the body resounds in Marshall McLuhan's media theory as well. In *Understanding media: the extensions of man*, McLuhan (1994) claims medium as the extension of the body. As McLuhan propounds, storing and channeling energy becomes possible with the extensional layer of the skin and clothing. Clothing's near but younger "twin" housing indirectly extends the internal control mechanism of the organism. Hence collective means to achieve "storing heat and energy" is materialized as housing. In other words, McLuhan conceives shelter as an indirect extension of the bodily control mechanism. This parallel McLuhan draws between clothing and architecture reminds one of Gottfried Semper's four elements. In *The four elements of architecture*, Semper (1851/1989) questions not only the origin of architecture but the origin of elements that define space and links the four primary techniques with four elements of architecture. Regarding the hearth, he addresses ceramics and the function of a building; the framework to carry roof is linked with carpentry and tectonics; and the mound with masonry and stereotomy; lastly, the enclosing membrane is connected with the textile arts. Textile and hearth appear as recurring elements, both addressed by Semper and McLuhan. Yet, the relationships they established between clothing and architecture differ by a narrow margin. While Semper seeks certain traces in the traditions of "costume" to align it with tectonics, McLuhan develops a rather phenomenological approach; he deploys architecture as the material existence of human's being in the world.

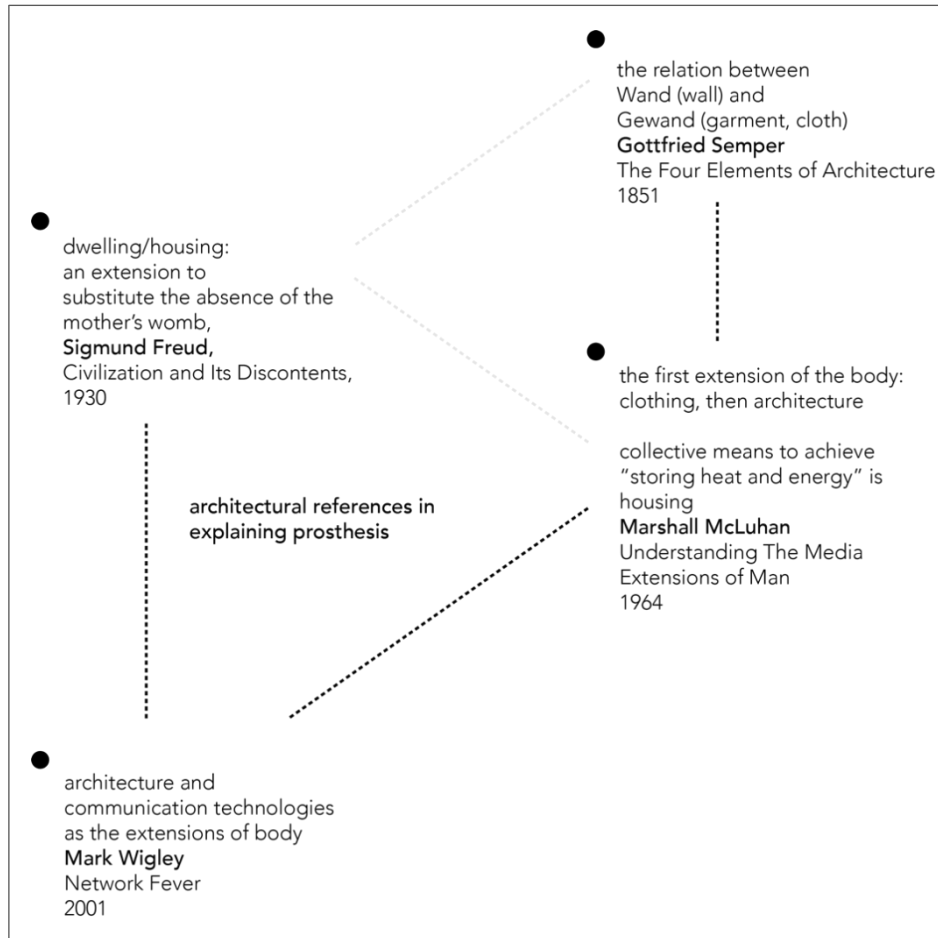


Figure 1 - A diagram that explains the multi-directional relations behind the idea that "architecture is an extension of the body" (created by the author).

Beyond its positioning next to communication technologies, Wigley's theory of prosthesis contains more comprehensive meanings for architecture. Wigley deploys the concept metaphorically to explain architecture's physical and conceptual extension into the university, the organizational habitat of the "thesis". Moreover, he exhibits how the idea is always architectural and how architectural discourse is a prosthesis that draws from and extends toward debates of other disciplines. His references to technology do not transform into a coherent and robust body of arguments within the text. Instead, they stay as discrete, empowering parts at times serving to strengthen his overall argument; architecture's shifting positions as the assembler of the institution of university and as assembled part within it. Still, at the end of the text, Wigley recalls his technological concern and presents his *coup de grâce*; he claims that both the status of the architectural object and architectural discourse were displaced when electronics took command and housed both the theorist and the theory. For Wigley, this displacement cannot be theorized because prosthetics cannot be disciplined. Retrospectively, Wigley's resignation from the theorization of the digital can be seen as a form of reaction. The article dates to a critical period when the discussions around computer-based information technologies intensified. Since the early

1990s, there have been multiple attempts to digest the emergence of the digital medium; these have been either finding a way to absorb and act within the digital or withdrawing from such an enterprise.

Though Wigley resigns from dealing with prosthetic theory in the digital realm, what he puts forward is quite relevant and holds great potential for architecture's digital existence. As he points out by drawing from Freud, prostheses are the products of culture. These human-made replacements stand for artificial extensions to substitute or supplement what is absent. As a prosthesis, the camera not only substitutes the human eye but also reproduces the seen object. For this reason, placing architecture next to other technological extensions of the body is only a partial answer. Technology generates architecture's prostheses, and neither the character of this constitution nor their link with the originating physical body finds an answer in Wigley's account.

The prosthetic theory is not Wigley's only study where he grasps the issue by considering its roots and manages to handle his focus with its theoretical origins. "Network Fever" starts with a whining tone where Wigley points to the dominance of nets in many discussions since "nowhere escapes the net" (2001). He diagnoses this omnipresent phenomenon as the precursor that leads to the dissolution of architectural objects into information. By delving deep into the details of an eight-day boat trip around the Greek Islands, which brought together quite influential theorists, Wigley aims to show the impact of Buckminster Fuller's ideas on McLuhan's studies. According to Wigley, Fuller had been describing technology as an extension of the body since his first book, *Nine Chains to the Moon*, in 1938. Moreover, Fuller advocated a radical architecture enabled by the "worldwide dwelling services network model" to replace the traditional one. Based on this, Wigley claims that Fuller visualized global networks long before they arrived and that McLuhan's ideas on media as the extension of the body, as well as his conception of the global village, owe to this meeting and Fuller's studies. However, the travels of these concepts in architecture mostly neglect its base source in Fuller and are developed with regard to McLuhan. Therefore, Wigley's study can be argued to be an essential example to understand what is disguised as coming from media theory is already developed in architecture; it just thickens during its mobility across the fields.

On the other hand, it is possible to come across situations where theoretical tool seems to come from some other discipline but carries essential ideas developed elsewhere. At first sight, this might seem like a hybridization with a field different from media, just in the case of Vidler's *Warped Space* (2000). Yet, in the analysis and conceptualization, media becomes influential, and its meaning is affected by the theoretical operations. Hence, both the sense of architecture and media transform during the process. Such a case can be traced in Ellsworth's, *Places of Learning* (2004). Specifically, in the chapter "Media Architecture and the Moving Subject of Pedagogy", Ellsworth develops a theoretical framework via concepts from contemporary philosophy, mainly with respect to Elizabeth Grosz, and from cultural theory. Her alternative approach to pedagogy strives to explore the joint contributions of architecture and media to imagine the subject of pedagogy as a moving subject. In this endeavor, Ellsworth deals with the embodied experiences of space and time. In relation to Grosz and Eisenman, she touches upon the idea of architecture as "the housing or clothing of the bodies, matter, and spaces". Conceiving media as a technology modeled and implicated in architecture, she suggests seeing "media as membranes- as interfacing of inside to outside, outside to inside". Interestingly, these inside-outside relations are just the reverse of what

Colomina suggests in conceptualizing architectural elements, i.e., glass as a communicatory tool. Moreover, the basis of the idea that Ellsworth develops concerning Grosz and Eisenman is actually no different than Fuller’s and McLuhan’s ideas that regard technology as the extension of the body. Therefore, Ellsworth’s attempts to interpret media via the characteristics of architecture and vice versa is nothing but multi-directional appropriation whose linkages are so ramified that it disguises as a new idea.

Many medium originated techniques can be seen to ‘migrate’ to architecture. In its original discipline of film theory, the impact of montage on the film structure is elaborated by the productions of Soviet filmmakers Lev Kuleshov, theories of Sergei Eisenstein, and Dziga Vertov. However, a close reading of these seminal studies reveals that there is not a uniform theory of montage. Yet, be it a “linkage” (Kuleshov) or “collision” (Eisenstein), montage structures the whole to form a synthesis in the viewer's mind. Most avowedly, after Eisenstein's introduction, the theory of montage established its strong position between architectural ideation and moving-image. Eisenstein, who considers architecture a pre-cinematic media, allocates a vital role to architecture in his montage theory. In his study written between 1937 and 1940 and reappeared in *Assemblage* in 1989, he tackles the arrangement of shot impressions, put in different terms ‘visual arrangements constructed via movement’. By addressing Choisy’s descriptions of the Acropolis in *Histoire d'architecture*, Eisenstein aligns montage sequences with the rhythm of the building. Based on this, it can be claimed that architecture lies at the heart of Eisenstein’s montage theory. The role of sequences as a design method and to represent space are developed by architects with direct or indirect references to Eisenstein. Le Corbusier’s “combination of perspectives and views from the eyes of the spectator”, Rem Koolhaas’ fragmenting and reassembling approach, and Tschumi’s designing the architecture experience via the layers of movement, space and event appear as the most visible examples of the montage’s impact in architectural theory in the 20th century (Kioumarsı, 2016).

Table 4 - The list of studies that appropriate media in the multi-directional mode.

	Thematic Category	Name, Author and Year of the Study	Mode of Appropriation
1	Space	Media, Architecture and the Moving Subject of Pedagogy Ellsworth, E. 2004	multi-directional
2	Urban Digital Media		
3	Media Architecture		
4	Film Medium	Structures and Sequences of Spaces Moretti, L. 2002	multi-directional
		Sequences in architecture: Sergei Eijzenstejn and Luigi Moretti, from images to spaces Molinari, C. 2021	multi-directional
5	Networks	Network Fever Wigley, M. 2001	multi-directional
6	Information Technologies	*Prosthetic Theory: The Disciplining of Architecture Wigley, M. 1991	multi-directional
7	Representation		

As a concept that carries intrinsic linkages to architecture, montage is accompanied by the concept of sequence during its migration to architecture. In the 21st century, this filmic couple keeps generating new theoretical frameworks in architecture. They sustain to be crucial tools, still

preserving the theoretical roots embedded in Eisenstein's theory, yet mounting on it. As Molinari discusses in detail with respect to Luigi Moretti, montage becomes a compositional tool in the design that brings the successions and variations of spaces based on "geometry, size or pressure". In "Structures and Sequences of Spaces" (1952), Moretti employs the idea of "sequential order" to amplify the pivotal role of "empty space as the locus of experience in architecture". Unlike Eisenstein, who grapples with a sequence of images, Moretti deals with the elements placed in sequence, that is, the spaces and their volumetric qualities (Molinari, 2021). Moretti's approach both intersects and differs from Eisenstein's theory of montage. In brief, the multi-directional travel of montage starts in film theory when Eisenstein develops it by drawing on architecture. Then it pervades back into architecture and becomes a theoretical tool to design, to think about, and to organize relations among different spatial arrangements.

It is not rare to come across multi-directional appropriation in studies that deal with architecture and media. Drawing from what is already stated and discussed is just the natural flow of knowledge accumulation. This dynamic mobility of concepts and vagueness around the origin of ideas form Wigley's central focus in "Network Fever", whereas it is also possible to see other examples in which neither the sources with the same arguments are addressed nor even recognized; the same statements may arise with different outlooks. For instance, what Ellsworth's work signals is a hindered understanding of Fuller's and McLuhan's ideas, whose origin in Ellsworth appears elsewhere. On the other hand, due to the popularity of McLuhan's work, media as the extension of the body has become such a benumbed argument that referring to it does not require any in-depth discussion or recognition of its base in Fuller. Nevertheless, it is the multi-directional appropriation that enables to trace the origin of ideas as discursive objects, the emergence surface of these objects, and the disciplinary ties within that emergence. Therefore, multi-directional appropriation provides an in-depth look into the field. Additionally, as revealed by Molinari with reference to Eisenstein and Moretti, this mode allows constructing a novel approach to the already combined set of ideas. Despite the architectural origins of Eisenstein's theory of montage, Moretti formulates montage and sequence as a compositional tool in the visual and sensational arrangement of spaces.

CONCLUSION

By appropriating concepts and theories from other disciplines, architecture's theoretical discourse constantly transforms. The analyses in this article help better understand this transformation with reference to media. It can be said that via uni-directional appropriation in theoretical discourse, architecture's disciplinary boundaries are enlarged. Architecture's discursive area expands with the emergence of new discursive objects because this mode acts as a propagator rather than a transformer. Theories and concepts appropriated without modification open up novel discussions without touching the central premises of the discipline. In this mode, it becomes easy to delve into new territories. In enabling to probe architecture's external relations, media mostly converges to representations in different mediums. This mode is open to combinations where the conceptual bodies of both architecture and media remain intact, yet they intersect and act together. Studies dealing with media-architecture can be recalled as the supreme example of this appropriation where media continues to carry its general meaning, that is, communicatory means, yet exists with

architecture. Similarly, the discourse around urban digital media evolves from the research on media-architecture and extends into urban space. What is discussed with relation to public space and with relation to media-architecture merge; so, the changing character of urban space via media facades and other mediated components appears as a new territory of research. Dealing with the intricate relations in spaces where media is produced forms another example of this expansion. Additionally, as the inevitable result of computer-aided design, the digital medium infiltrates the issue of representation. Moreover, the constant circulation and dissemination of architectural objects in cyberspace triggers this as a crucial matter of inquiry. Thus, the digital medium's capacity as a representation environment appears as a new field of inquiry. In the same vein, the affinities between architecture and cinema, which primarily rest on the concept of movement, inaugurate a discourse around the space of the film medium. The representation of space in film predominantly overlaps with architectural concerns. Thus, cinematic space turns into an architectural matter. As all these examples and their accompanying analyses presented in the article demonstrate, uni-directional appropriation mode opens new paths. A spatial explanation of this 'transformation' can be stated as 'surface expansion'; alternative issues and concerns start to enter architecture's agenda in an 'additive' manner. In brief, uni-directional appropriation operates horizontally and expands the territory of architectural theory by adding up new ideas or areas of research without affecting core disciplinary values.

Hybridization differs from uni-directional appropriation because it usually has an impact on the architectural premises as well. Depending on the appropriated concept or theory, via hybridization novel and unnoticed visions for architecture are generated. These new perspectives owe their existence neither solely to media nor architecture. This mode can be argued to operate at the boundaries of the discipline, and it contributes to the discipline's permeability. Hybridization's function differs from the uni-directional mode because it affects what is understood from architecture or an essentially architectural concept. For instance, exploring the medium of the city via theories and concepts of media allow recalibrating the scope of city space; both the spaces of infrastructure and different layers that cities generate for centuries enter into the discourse via this perspective. On the other hand, learning from city space and manifold operations embedded within it enable to reconsider organizational processes behind media technologies. These deep and relatively more elusive approaches test architecture's resistance to novel conceptions; studies that operate as hybridization somehow deal with the limits of what is architecture and what is architectural. Hybridization positions architectural theory on a different level by changing the flexibility of its boundaries. While considering architecture as a medium is an oft-repeated idea that has different interpretations in many studies, utilizing architecture as a medium enables one to theorize new attributions for space. These range from information conveying characteristics of architectural elements to the liminal space between information environments and spaces that house these technologies.

Lastly, multi-directional appropriation can be argued to operate vertically and to increase the profoundness of the appropriated theory or concept. This verticality can be understood as the uncovering of an accumulated work by various theorists. This mode of appropriation, therefore, results in the deepening of knowledge rather than increasing the surface area as claimed in the uni-directional mode. This enables to develop a comprehensive and profound understanding of the

interplay between media and architecture. Multi-directional appropriation manifests the entangled migration of the idea that architecture is an extension of the body, which makes it the primary communication medium. This shared origin between architecture and media has different accentuations in different theories where its modifications initiate new discussions. Due to this shared origin, architectural theory can be seen to gestate even more theoretical and conceptual appropriations via its interaction with media. From a different perspective, the intrinsic presence of architecture in the development of montage theory takes another shape when montage has been utilized as a tool of design via the composition of spatial sequences.

The miscellaneous relationships that architecture establishes with media generate a vast literature, which is entangled by different types, concepts, and theories of media. By showing the internal links among this web of relations, this study maps and carves out certain themes in architecture media relationship, then categorizes and analyzes different modes of appropriation in the studies produced in the 21st century. These analyses are developed with respect to a limited selection in the article, nevertheless this selection is deemed useful in discussing different modes of appropriations. All three modes as presented by Ostwald can be seen in architecture-media relationship. The modes of appropriations are not theme dependent, but certain concepts such as media-architecture are more likely to be appropriated in uni-directional sense, while some theories, such as McLuhan's media theory, are more likely to be disguised and reappear in architectural discourse after multiple mobilities.

With these results, this study locates the theoretical impacts of media in the discipline. Comprehending multiple borrowings from media might be helpful for architects who engage with media in their theoretical attempts. Based on this awareness and in-depth understanding of the operations of media in architecture, one can understand that the problem of media in architecture does not pertain to the 21st century. Even though theoretical studies produced in the 21st century are tackled in the article, discussions reveal that many media-saturated ideas in architecture originate from postwar developments and theories that emerged during or after this period.

Acknowledgements

The author would like to thank Prof. Dr. İnci Basa for her encouragement and advises.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support was received for conducting the research and preparation of the article.

Ethical Statement

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/D/E/F/G/H

ENDNOTES

i. The “little narratives” is used with reference to Lyotard in the following context “We no longer have recourse to the grand narratives-we can resort neither to the dialectic of Spirit nor even to the emancipation of humanity as a validation for postmodern scientific discourse. But as we have just seen, the little narrative [petit récit] remains the quintessential form of imaginative invention, most particularly in science”.

ii. These organizations vary from Media-Architecture Conference to Media Facades Festival and more recently to Media Architecture Biennale.

iii. Despite the Western literature that forms the main focus of the study, there are many studies that deal with architecture and media from various perspectives in Turkish context. To reflect the Turkish context with reference to thematic categorization of this study, two databases TRIndex-TRDizin - and The Council of Higher Education National Theses Center (YÖK Ulusal Tez Merkezi) were scanned via Turkish keywords ‘mimarlık’ for architecture and ‘medya’ for media. Though the selected Turkish studies were excluded from the list, they were addressed in the body of the article when needed. These studies predominantly deal with cyberspace and appropriate terms and concepts of media in uni-directional mode:

Serhat Kut, 2013, Sibertektonik Mekan (Cybertectonic Space), Unpublished PHD Dissertation, Istanbul Technical University. Bilgen Boyacıoğlu-Dundar, Ozlem Erdogdu-Erkarslan, Tulay Erenoglu, 2015, Küresel Mimarlık Pazarında Yeni Bir Araç Olarak Dijital Medya (Digital Media as a new Tool in the Global Architecture Market). *Mimarlık*, (384), 74-77. Hanife S. Tasdelen, 2018, Mimarlığın Dijital Habitusu, Erken Tasarım Sürecinde İnternet Kullanımı, (Digital Habitus of Architecture: Internet Using in the Early Design Phase) Unpublished Master Thesis, İstanbul Technical University. Kubra B. Erdem, 2021, Yeni Medyada Mimarlık Eleştirisi ve Yayıncılığı (Architectural Criticism and Publishing in New Media). Unpublished Master Thesis. İstanbul Technical University. Işıl Esen, Pınar Dinç-Kalaycı, 2021, Rise and Functions of New Media in Architecture: An Investigation via Archdaily. *GRID Architecture, Planning and Design Journal*, 4(1), 1-25.

For media-architecture theme, it is possible to point out two dissertations that tackle the use of media as facades or other design elements in architecture: Işıl Aksu, 2022, Mimarlıkta etkileşimli Medya Tasarımlarının Fayda Potansiyellerinin İncelenmesi (Investigation of the Utility Potentials of Interactive Media Designs in Architecture). Unpublished Master Thesis, Eskişehir Technical University. Demet Basaran, 2016, Medya Cepheleri ve Mimarlık İlişkisinin İncelenmesi (Researching the Relationship Between Media Facades and Architecture), Unpublished Master Thesis, İstanbul Technical University. These as well appropriate concepts and terms of media in uni-directional mode.

iv. Most of the books published around the issue dates 2010s. However, the emergence of these ideas might be roughly located to 1990s.

v. Freud describes as following: “With every tool man is perfecting his own organs, whether motor or sensory, or is removing the limits to their functioning. Motor power places gigantic forces at his

disposal, which, like his muscles, he can employ in any direction; thanks to ships and aircraft neither water nor air can hinder his movements; by means of spectacles he corrects defects in the lens of his own eye; by means of the telescope he sees into the far distance; and by means of the microscope he overcomes the limits of visibility set by the structure of his retina. In the photographic camera he has created an instrument which retains the fleeting visual impressions, just as a gramophone disc retains the equally fleeting auditory ones; both are at bottom materializations of the power he possesses of recollection, his memory. With the help of the telephone, he can hear at distances which would be respected as unattainable even in a fairy tale. Writing was in its origin the voice of an absent person; and the dwelling-house was a substitute for the mother's womb, the first lodging, for which in all likelihood man still longs, and in which he was safe and felt at ease."

REFERENCES

- Agacinsk, S. (1992). Shares of invention. *D: Columbia Documents of Architecture and Theory*, 1.
- Aksu, I. (2022). Mimarlıkta etkileşimli medya tasarımlarının fayda potansiyellerinin incelenmesi (Investigation of the utility potentials of interactive media designs in architecture). Unpublished Master Thesis, Eskişehir Technical University.
- AlYousefi, A. (2019). Genres of 'architectural theory now?'. *Architectural Research Quarterly*, 23(4), 300-303. doi:10.1017/S1359135520000019
- Bal, M. (2002). *Traveling concepts in the humanities: A rough guide*. University of Toronto Press.
- Basaran, D. (2016). Medya cepheleri ve mimarlık ilişkisinin incelenmesi (Researching the relationship between media facades and architecture), Unpublished Master Thesis, İstanbul Technical University.
- Blacksell, R. & Walker, S. (2016). Architecture and the spaces of information. *Architecture and Culture* 4 (1).
- Boyacıoğlu D. B., Erkarlan. E. O., & Erenoglu, T. (2015). Küresel mimarlık pazarında yeni bir araç olarak dijital medya (Digital media as a new tool in the global architecture market). *Mimarlık*, (384), 74-77.
- Brown, J. (2018). *Mediated Space*. Riba Publishing.
- Brynskov, M., Dalsgaard, P., and Halskov, K. (2015). Media architecture, engaging urban experiences in public space. In J. Lossau (Ed.), *The uses of art in public space*. Routledge.
- Buckley, C. (2019). *Graphic assembly: montage, media and experimental architecture in the 1960s*. University of Minnesota Press.
- Cairns, G. (2013). The architecture of the screen: essays in cinematographic space. Intellect books.
- Cairns, G. (Ed.). (2017). *Visioning technologies: the architectures of sight*. Routledge.
- Colangelo, D. (2021). We live here: media architecture as critical spatial practice. *Space and Culture*, 24(4), 501-516. doi:10.1177/1206331219843809
- Colomina, B. (1991). Domesticity at war. *Assemblage*, (16), 14-41.
- Colomina, B. (1994). *Privacy and publicity*. The MIT Press.
- Colomina, B. (1999). The private site of public memory, *The Journal of Architecture*, 4 (4): 337-360.
- Colomina, B. (2001). Information obsession: the Eameses' multiscreen architecture, *The Journal of Architecture*, 6(3), 205-223.

- Colomina, B. (2009). Unclear vision. In M. Bell and J. Kim (Eds.), *Engineered transparency: The technical, visual, and spatial effects of glass*. Princeton Architectural Press.
- Cryslar, C. G., Cairns, S. & Heynen, H. (2012). Introduction – 1: Architectural theory in an expanded field. In S. Cryslar, S. Cairns and H. Heynen (Eds.), *The sage handbook of architectural theory*. Sage Publications.
- Dorrian, M. & Kakalis, C. (Eds.). (2020). *The place of silence: Architecture / Media / Philosophy*. Bloomsbury.
- Eisenstein, S, Bois, Y. & Glenny, M. (1989). Montage and architecture. *Assemblage*, 10, 110-131.
- Ellsworth, E. (2004). *Places of learning: Media architecture pedagogy*. Routledge.
- Erdem, K. B. (2021). Yeni medyada mimarlık eleştirisi ve yayıncılığı (Architectural criticism and publishing in new media). Unpublished Master Thesis. Istanbul Technical University.
- Esen, I., & Dinç-Kalaycı, P. (2021). Rise and functions of new media in architecture: an investigation via Archdaily. GRID Architecture, Planning and Design Journal, 4(1), 1-25. <https://doi.org/10.37246/grid.776887>
- Freud, S. (2010). *Civilization and its discontents* (Reprint ed.) W.W. Norton and Company. (Original work published 1930).
- Hays, K. M. (Ed.). (1998). *Architecture theory since 1968*. MIT Press.
- Häusler, M. H., Tomitsch, M. & Gardner, N. (2010). *Infostructures: a transport research project*. Freerange Press
- Häusler, M. H., Tomitsch, M. & Tscherteu, G. (2013). *New media facades – a global survey*. Hoxton Mini Press.
- Hight, C. (2009). Meeting the new boss: after the death of theory. *Architectural Design*, 79(1).
- Kandemir, O. (2012). Bilişim teknolojileri ile dönüşmekte olan mimarlık nesnesi ve maddesiz öğeleri (Impacts of information technologies on the architectural object and its immaterial attributes). Unpublished Ph.D. Dissertation. Istanbul Technical University.
- Kioumarsis, N. (2016). Montage and architecture: a method for temporal design. Unpublished Master Thesis. The Pennsylvania State University The Graduate School College of Arts and Architecture.
- Kittler, F. A. (1990). *Discourse networks: 1800/1900*, ed. Michael Metteer and Chris Cullens. Stanford University Press.
- Kittler, F. A. & Griffin, M. (1996). The city is a medium. *New Literary History*, 27(4), 717–29.
- Kut, S. (2013). Sibertektonik mekan (Cybertectonic space), Unpublished Ph.D. Dissertation, Istanbul Technical University.

- Leach, N. (Ed.) (1997). *Rethinking architecture: A reader in cultural theory*. Routledge.
- Liotard, J. F. (1984). *The postmodern condition: a report on knowledge*. Manchester University Press.
- Martin, R. (2003). *The organizational complex*. The MIT Press.
- Mattern, S. (2015). *Deep mapping the media city*. University of Minnesota Press.
- McGrath, B., & Gardner, J. (2008). Cinematics: embodying architectural representation in the digital age. *Architectural Theory Review*, 13(1), 29–51. doi:10.1080/13264820801915104
- McLuhan, M. (1994). *Understanding media: the extensions of man* (Rev. ed.). The MIT Press.
- McQuire, S. (2008). *The media city*. Sage.
- Micconi, A. & Serra, M. (2008). “On the concept of medium”, *International Journal of Communication* 13(2019). Eva Horn “There are no media” *Grey Room* 29, (2008): 6–13.
- Molinari, C. (2021). Sequences in architecture: Sergei Eizenštejn and Luigi Moretti, from images to spaces, *The Journal of Architecture*, 26(6), 893-911.
- Moretti, L. (2002). Structures and sequences of spaces, in *Luigi Moretti: works and writings*, ed. by Federico Bucci and Marco Mulazzani. Princeton Architectural Press, 177–81.
- Nesbitt, K. (Ed.). (1996). *Theorizing a new agenda in architectural theory*. Princeton Architectural Press.
- Ostwald, M. (1999). Architectural theory formation through appropriation. *Architectural Theory Review*, 4(2), 52-70.
- Semper, G. (1989). *The four elements of architecture and other writings* (H. F. Mallgrave and W. Hermann, Trans.). Cambridge University Press. (Original work published 1851).
- Tasdelen, H. S. (2018). Mimarlığın dijital habitusu, erken tasarım sürecinde internet kullanımı, (Digital habitus of architecture: internet using in the early design phase) Unpublished Master Thesis, İstanbul Technical University.
- Troiani, I. & Kahn, A. (2016). Film as architectural theory. *Architecture and Culture*, 4(3), 485-498.
- Tscherteu, G., Pop, S. Stalder, U. & Struppek, M. (2012). *Urban media cultures*. Avedition.
- Tschumi, B. & Ingraham, C. T. (1992). Afterwords: architecture and theory conference. D: *Columbia Documents of Architecture and Theory*, 1.
- Vidler, A. (2000). *Warped space: Art, architecture, anxiety in modern culture*. The MIT Press.
- Wiethoff, A. & Hussmann, H. (Eds.). (2017). *Media architecture: using information and media as construction material*. De Gruyter.
- Wigley, M. (2001). Network fever. *Grey Room*, (4), 82-122.
- Wigley, M. (1991). Prosthetic theory: The disciplining of architecture. *Assemblage*, (15), 6-29.



Wilson, R. (2015). *Image, text, architecture: the utopics of the architectural media*. Routledge.

BIOGRAPHY OF THE AUTHOR

Duygu Hazal BEZAZOĞLU (Res. Asst.)

Received her B.Arch in Architecture from Istanbul Technical University and M.Arch in Architecture from Middle East Technical University. She worked as a Research Assistant at Middle East Technical University between the years of 2015-2020. Currently she continues to her Ph.D. in Architecture at Middle East Technical University and works as a Research Assistant at Muğla Sıtkı Koçman University. Since 2018, she is an editorial member of İdealkent-Journal of Urban Studies. Major research interests include architecture and media; history and theory of architecture; feminist theory; urban space and everyday life.

Determination of the indoor air quality and occupancy satisfaction in architecture studios during model making process

Merve TUNA KAYILI¹, ORCID: 0000-0002-3803-8229
Canoer YETİŞ², ORCID: 0000-0002-3791-5306

Abstract

In this study, measurements were performed to determine the indoor air quality and thermal comfort, evaluated to ASHRAE standard during the model making process of the students in the studios where architectural education was given, and whether the low indoor air quality obtained had an effect on the health of the students was determined by the survey method. As a result of the measurements, it was determined that the size of the studio space was largely effective in maintaining the indoor air quality for a long time, and although the natural ventilation continued uninterrupted during the model making, the indoor quality in the studios reached the values that would threaten the health of the students. In addition, it was determined that female students were more disturbed by the low indoor quality than male students.

Highlights

- In the design of model studios, appropriate space and opening window sizes are important in ensuring indoor air quality.
- The materials used in model making cause high levels of emissions, where even natural ventilation is insufficient.
- Significant physical symptoms were observed in the students due to the emissions released by the model materials.

Keywords

Architecture studio; Model making;
Indoor air quality; Thermal comfort;
Occupancy satisfaction; Physical
symptoms

Article Information

Received:

01.12.2021

Received in Revised Form:

25.10.2022

Accepted:

12.01.2023

Available Online:

30.01.2023

Article Category

Research Article

Contact

1. Department of Architecture, Karabuk
University, Safranbolu, Karabük,
Türkiye

archmervetuna@gmail.com

2. Institute of Graduate Programs,
Karabuk University, Karabük, Türkiye

arcaneyetis@gmail.com



Maket yapımı esnasında mimarlık stüdyolarının iç mekân hava kalitesinin ve kullanıcı memnuniyetinin belirlenmesi

Merve TUNA KAYILI¹, ORCID: 0000-0002-3803-8229
Caner YETİŞ², ORCID: 0000-0002-3791-5306

Öz

Bu çalışmada, mimarlık eğitiminin verildiği stüdyolarda öğrencilerin maket yapımı sırasında iç hava kalitesi ve ısı konforu üzerine ölçümler yapılmış, ASHRAE standardına göre değerlendirilmiş ve elde edilen düşük iç hava kalitesinin öğrencilerin sağlığını etkileyebilecek düzeyde etkisinin olup olmadığı anket yöntemi ile belirlenmiştir. Yapılan ölçümler sonucunda, stüdyo büyüklüğünün iç mekân hava kalitesinin uzun süre korunmasında büyük oranda etkili olduğu, maket yapımı sırasında doğal havalandırmanın kesintisiz devam etmesine rağmen stüdyolarda iç mekân kirleticilerinin öğrencilerin sağlığını tehdit edecek değerlere ulaştığı tespit edilmiştir. Ayrıca kız öğrencilerin erkek öğrencilere göre iç mekân kalitesinin düşük olmasından daha fazla rahatsız oldukları belirlenmiştir.

Öne Çıkanlar

- Maket stüdyolarının tasarımında uygun mekân ve açılır pencere boyutları iç mekân hava kalitesinin sağlanmasında önemlidir.
- Maket yapımında kullanılan materyaller doğal havalandırmanın dahi yetersiz kaldığı yüksek oranda emisyonu neden olur.
- Öğrencilerde maket materyallerinin saldıgı emisyonlardan dolayı belirgin fiziksel semptomlara rastlanmıştır.

Anahtar Sözcükler

Mimarlık stüdyosu; Maket yapımı; İç mekân hava kalitesi; Isıl konfor; Kullanıcı memnuniyeti; Fiziksel belirtiler

Makale Bilgileri

Alındı:
01.12.2021
Revizyon Kabul Tarihi:
25.10.2022
Kabul Edildi:
12.01.2023
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

- Mimarlık Bölümü, Karabük Üniversitesi, Karabük, Türkiye
archmervetuna@gmail.com
- Lisansüstü Eğitim Enstitüsü, Karabük Üniversitesi, Karabük, Türkiye
arcaneyetis@gmail.com

INTRODUCTION

Learning is a process that produces a permanent behavior change. To sustain this process in a quality way, physical, spatial, social, and psychological comfort conditions such as thermal, visual, and acoustic comfort, as well as the air quality, must be ensured in the learning space. Academic success declines in educational spaces with inadequate comfort conditions (Annesi-Maesano et al., 2013; Wargocki and Wyon, 2013, 2017). Indoor air quality (IAQ) plays an important role in learning success (Bakó-Biró et al., 2012). Many scientific studies have proven that IAQ has a direct impact on students' performance of the study and thus influences academic success (Bogdanovica et al., 2020; Gilliland et al., 2001; Mendell and Heath, 2005; Mohai et al., 2011; Shendell et al., 2004; Stabile et al., 2017). Classroom air quality is associated with various diseases such as asthma, rhinitis, and rhinoconjunctivitis (Fsadni & Montefort, 2013; Madureira et al., 2015). One of the main objectives of architectural education, which includes concepts from many different disciplines and is versatile, is to establish the link between theory, research, and practice (Djabarouti and O'Flaherty, 2019), and classrooms and studios designed accordingly are used in the educational process. Architectural studios are settings where models are made to implement drawings and learning by doing, and verbal and visual information transfers are done as a requirement of architectural education. In this sense, it is necessary to give great importance to the internal comfort conditions during the design phase of these places where several functions are realized. The courses in which learning by doing/practicing takes place in architectural education are design and construction (or construction knowledge) courses. Even though verbal and visual information is passed on to the student at a high level, the student's experience of the process through making models ensures that the learning is permanent and that he/she can anticipate the problems he/she may encounter in practice (Düzenli et al., 2017; Elias-Özkan and Hadia, 2015). For this reason, the process of learning with models is an integral part of architectural education (Elias-Özkan and Hadia, 2015) and it takes place together with the act of drawing in studios. During model making processes in studios, significant changes in indoor air quality can occur, which can also be perceived sensorially. Because of the deterioration of indoor air quality during model-making activities, which can last 7-8 hours or more in architectural education, students experience symptoms such as fatigue, headaches, itchy nose, and sore throat at the end of the day, and due to these, a decrease in their performance and productivity may occur. For this reason, designs of these spaces are done taking into account sufficient windows to ensure thermal and visual comfort and air quality (Bostancı Başkan and Şerefhanoglu Sözen, 2006; Musa et al., 2012a, Nasir et al., 2011), design and

use skills, and social and psychological needs. Openings and ventilation rates (Turanjanin et al., 2014) and the choice of the right and healthy material (Niu and Burnett, 2001) are also important.

It is possible to group the factors affecting the air quality of studio spaces where architectural education takes place as indoor and outdoor factors. Indoor factors are pollutants originating from inside the space, such as building materials and paints used in the space (Gao et al., 2018; Jovanović et al., 2014; Liang et al., 2021). External factors, on the other hand, can be defined as the pollutants that users bring into the room and that reduce the indoor air quality together with materials used in the room. Materials used in model making process (Mishra et al., 2015) along with the internal factors caused by the wrong choice of building materials in architectural studios reduce the air quality of the space as external pollutants. Volatile Organic Compounds (VOCs) released from stationery materials such as superglue, wooden sticks, various types of paper and cardboard used in modeling (Destailats et al., 2008; Kuśtrowski et al., 2018; Mishra et al., 2015; Pegas et al., 2011; Raysoni et al., 2017; Zhang et al., 2006), and particulate matter can affect air quality in the studio. For this reason, it can be said that the architectural studios serving different work styles are at higher risk in terms of indoor air quality. It is imperative to provide effective natural ventilation in these spaces, which must also be supported by active ventilation systems in case of insufficient weather conditions. In this context, it is important to study the indoor air quality of architectural studios to determine the amount and type of ventilation required for architectural education studios. The purpose of this study was to determine the indoor air quality of the classroom before and during model making in architectural studios and to determine student satisfaction with indoor air quality before and after model making.

Regarding the indoor environment comfort (IEQ) of architecture studios, Musa et al. focused on lighting and temperature in UKM architecture studio spaces to achieve better IEQ (Musa et al. 2012a, 2012b). Nasir et al. (2011) discussed aspects of considering IEQ in creating a conducive learning environment. However, the literature review has shown that there is no study investigating the indoor air quality of architectural studios. Therefore, this study has the distinction of being the first study to determine the indoor air quality during the model making process in architecture studios. The study inspires architects and designers in the design of architecture schools and emphasizes that indoor air quality is an important parameter in ensuring student comfort.

MATERIALS AND METHODS

Studio description

This study was conducted in Safranbolu, Turkey, which has a humid subtropical (Cfa) climate with cool winters and warm summers based on the Köppen-Geiger climate classification (MGM, 2016). It was carried out in a building of the architecture department located in a low-traffic area in the northern suburb of Safranbolu (Figure 1-a, Figure 1-b). Two architecture studios were chosen as the study area (their characteristics can be seen in Table 1). The studios were naturally ventilated with the help of operable windows. The wind-rose analysis, created according to the location and direction of the studios, is provided in the Figure 2-a, Figure 2-b. Wall heating with radiator was

used in the studios during the survey periods. Aerated concrete block wall construction and double glazed windows with aluminum frames had been used in the architecture department building.

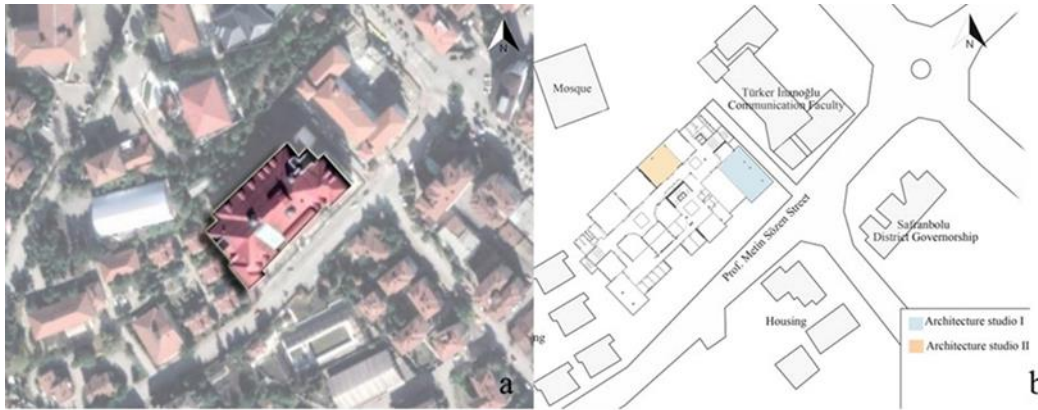


Figure 1 - a. Location of the building b. Surveyed studios.

Table 1 - Studio properties.

Studio	Plan	Area	Windows	Occupancy	Elevation	Volume	Volume/ Number of people
Architecture Studio I		261m ²	13 windows (80*120) in two side curtainwall	45	Southeast	730.8 m ³	16.24
Architecture Studio II		174m ²	6 windows (80*120) in one side curtainwall	33	Northwest	487.2 m ³	14.7

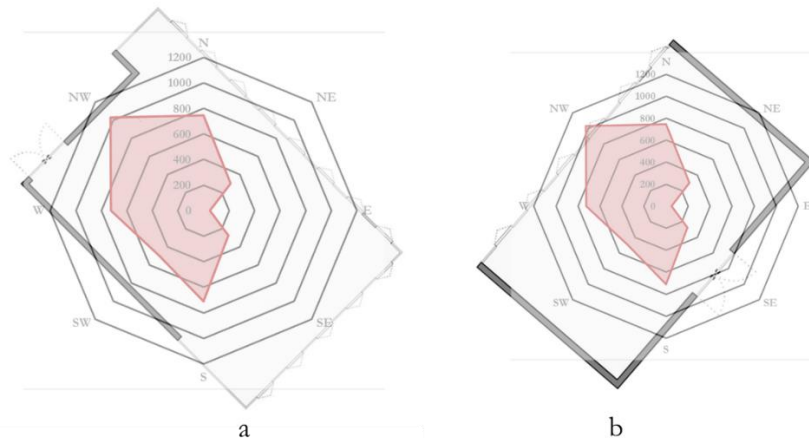


Figure 2 - a. Architecture studio I wind-rose scheme b. Architecture studio II wind-rose scheme.

On-site measurement

Indoor air quality measurements (temperature, relative humidity, CO₂ concentration and TVOCs, PM_{0.3}, PM_{2.5}, and PM₁₀) have been performed in two architectural studio locations with a difference in direction in a similar ratio of volume/number of people within the scope of the study. Measurements have been taken for four days covering model construction in both studios to increase calibration in measurement results, and these measurements have been averaged for each studio. Given that the type of material used during model construction and the number of users used at similar levels, measurements in each studio for two days were sufficient. According to the EPA Air Sensors Placement and Installation Guide, 3 different points of air circulation, which are not available in ventilation circulation, are uniformly distributed throughout the site, and sensors are placed at 1.5 meters (breathing level) above these 3 different points, which are determined by the same manual (Figure 3). In the manual, measuring periods can be determined, depending on the nature of the instruments being measured and the total time, for at least 15 minutes. According to this article, the measurement results were obtained from the devices during 30 minutes, taking into account the properties of the devices and the nature of the pollutants. The initial measurements, which were measured while the studio was empty, continued until the model making process was completed (the environment of the studios during the model making process is given in Figure 4). However, measurements were interrupted during the students' lunch break (between 12:15-13:30) and the studio was ventilated by opening the windows for 75 minutes. Doors and windows were kept closed during the measurements. When indoor air quality reached alarming levels (TVOCs: 9.99 ppm), windows were opened and measurements continued. Windows were opened at 15:00 for Studio I and at 14:15 for Studio II. Since Studio II had a smaller volume, it took less time for the indoor air quality to reach alarming levels. The reason for continuing the measurements after the windows were opened was to determine the effect of natural ventilation on the indoor air quality of the room and whether it was sufficient. There is no mechanical ventilation system in both studios. The device specifications are summarized in Table 2. As can be

seen in Table 3, the temperature, relative humidity, and CO₂ concentration values were evaluated based on the threshold limit values (TSVs) established by the ASHRAE standard, while the TVOCs, PM_{0.3}, PM_{2.5}, and PM₁₀ values were evaluated based on the limit values established by the EXTECH. In the previous literature studies, there are indoor air quality studies with a small number of environments, but with effective results (Stabile et al., 2017, Gao et al., 2014).

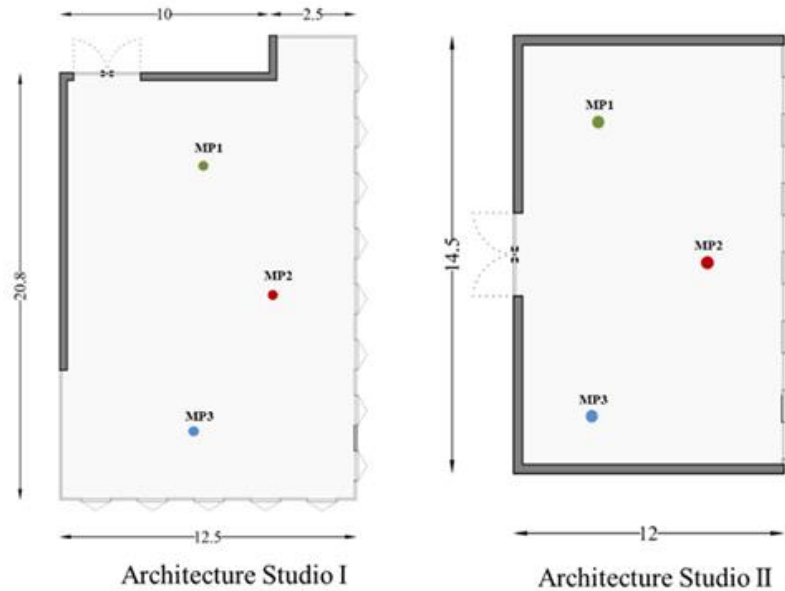


Figure 3 - Measurement points in studios.

Table 2 - Measuring devices and features.

Probe/sensor Parameter	Measuring range	Resolution	Accuracy	Channels
<i>Extech CO250</i>				
CO ₂	0-5000 ppm	1 ppm		
Temperature	-10 to 60°C (14 to 140°F)	0.1°F/°C		
Relative Humidity	0.0 to 99.9%	0.1 %		
<i>Extech VFM200</i>				
VOCs	0.0 to 9.99 ppm (ppm)	0.01 ppm	±5%	
<i>Extech VPC300</i>				
PM 0.3, 2.5, 10				0.3, 0.5, 1.0, 2.5, 5.0, 10 µm

Table 3 - The threshold limit value for the parameters.

Parameters	ASHRAE	Parameters	EXTECH
Temperature (°C)	22.5-25.5	PM _{0.3} (µm)	100000
Humidity (%)	30-60	PM _{2.5} (µm)	545
CO ₂ (ppm)	1000	PM ₁₀ (µm)	68
TVOCs (ppm)	2		



Figure 4 - Environment of the architecture studios during model building.

Questionnaire Survey

A total of 45 and 33 subjective responses to the questionnaires were combined in Studio I and Studio II, respectively. As a fieldwork procedure, measurements of the physical variables of the classroom were combined with the subjective survey that recorded students' perceptions of the immediate thermal environment to understand their comfort and thermal conditions in the classroom. To determine the impact of pollutants occurring during the model making process on indoor comfort, students were asked the same questions before and after model making, and the responses were compared. Some items of the survey included thermal sensation vote (TSV) and indoor air quality vote, which were prepared by using the ASHRAE seven-point scale (ASHRAE 55, 2017). In addition, users were asked if they experienced one or more of the sick building syndrome symptoms, such as headaches, fatigue, breathing difficulties, and nasal congestion, as a function of indoor air quality.

RESULTS

Results of spot measurements

Table 4 presents descriptive statistics related to the thermal environment and indoor air quality during model making hours (10:00-17:30) for 4 days. The average temperature and relative humidity for each studio during the measurement period (i.e., 10:00 a.m. to 5:00 p.m. over 4 days of sampling) are shown in Table 4. Studios were sampled on for 4 days, with an average indoor temperature of 18.7°C and an outdoor temperature of 2.3°C. The average indoor relative humidity was 32% and the outdoor relative humidity was 56%. The prevailing wind direction was South-Southeast, which means the wind direction was from the street to the architectural building. During the model making process, high CO₂ and TVOCs concentrations were detected in both studios on 4 separate days. During the measurements, the windows were opened so as not to endanger the health of the students when the amount of TVOCs in the indoor space exceeded the maximum value that the instrument could measure. However, acceptable indoor TVOC levels could not be achieved until the model making process was completed. During all-day measurements, Mean TVOCs were determined as 6.06 ppm for Studio I, while it was determined as 6.67 ppm for Studio

II, which had a smaller volume. The mean CO₂ concentration for Studio I was 789.5, and 950.1 ppm for Studio II. The fact that the TVOCs levels are above the allowed levels even though the windows were opened after a certain period of time during the measurements poses a risk to the health of the students. As a result, it was found that the mean PM levels were within the acceptable levels. The mean PM_{0.3} PM_{2.5} and PM₁₀ values were 36072, 183 and 22.5 and 39819, 198 and 22.2 for Studio I and Studio II, respectively.

Temperature and humidity

The temperature and humidity values in the architecture studios were measured before the students entered the studio and were found to be 17 °C and 30.3%, respectively. After the measurements started, the temperature in both studios increased until noon due to the number of students and their activities, while it decreased during the lunch break because the students left the studio and the doors and windows were opened. The temperature values obtained during the measurements in the studios remained between the values recommended by ASHRAE until the windows were opened (between 10:30 and 12:00) and decreased below the recommended values after the windows were opened (Figure 5). This situation can be interpreted as the fact that natural ventilation, which is continuous in the winter in model studios, may lead to a reduction in thermal comfort in classrooms. Whereas the relative humidity in Studio II was within the recommended values, it remained below the recommended values in studio I throughout the measurements. It can be said that this situation can cause students to experience some symptoms such as dryness of throat and nose and respiratory problems.

Table 4 - Spot measurement results for studios.

Studios	Parameters	Maximum	Minimum	Mean	SD
Studio I	Temperature (°C)	24.1	17.7	21	7.8
	Relative Humidity (%)	30.8	26.4	28.6	6.4
	CO ₂ (ppm)	1114.5	492	789.5	419.2
	TVOCs (ppm)	9.99	1.64	6.06	2.5
	PM _{0.3}	54,389	23,429	36,072	8,385.8
	PM _{2.5}	271	126	183	37.1
	PM ₁₀	42	13	22.5	7.2
Studio II	Temperature (°C)	23	13.7	19.7	5.75
	Relative Humidity (%)	42	31.8	35.4	6.2
	CO ₂ (ppm)	1554	414.5	950.1	402.5
	TVOCs (ppm)	9.99	1.67	6.67	2.79
	PM _{0.3}	55,616	19,880	39,819	1,2052.4
	PM _{2.5}	312	105	198	68.3
	PM ₁₀	40	10	22.2	6.6
Outdoor (Mean for 4 days)	Temperature (°C)			2.3	
	Relative Humidity (%)			56	
	CO ₂ (ppm)			406	
	TVOCs (ppm)			1.05	
	PM _{0.3}			35,289	
	PM _{2.5}			372	
	PM ₁₀			58	

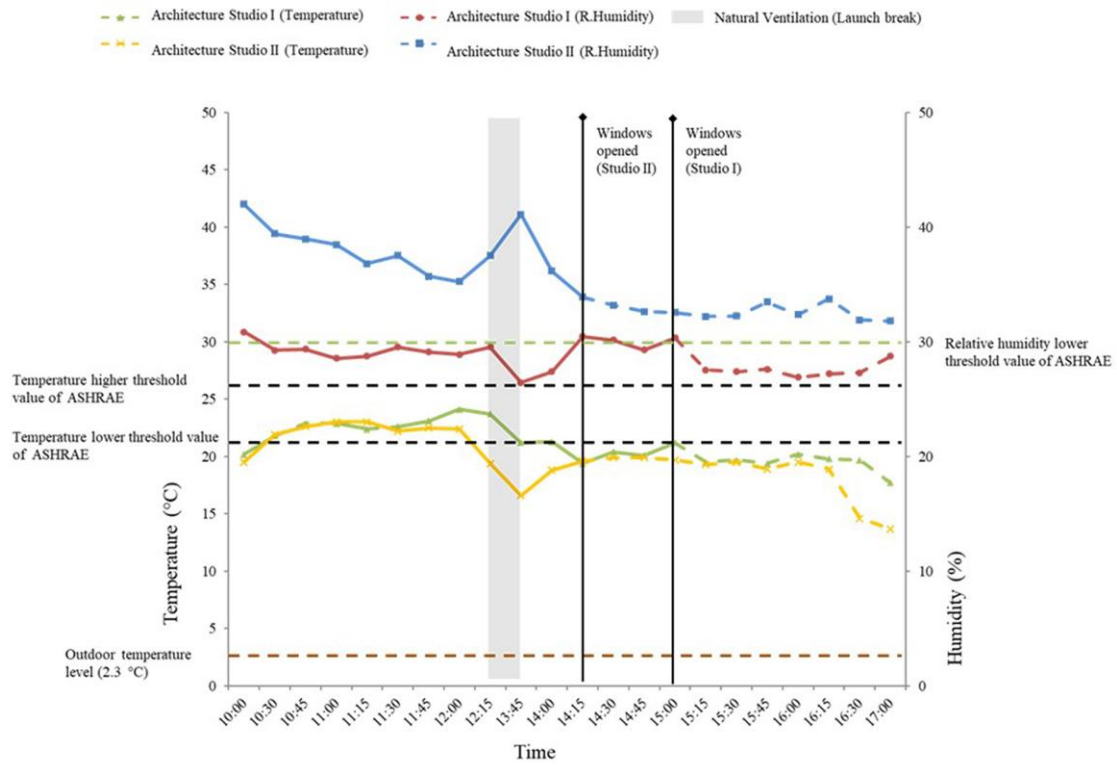


Figure 5 - Thermal measurements in studios.

Temperature-based thermal comfort and humidity values in Studio I and II were determined using the CBE Thermal Comfort Tool in accordance with ASHRAE 55-2020, EN -16798. For Studio I and II, the thermal comfort with closed windows was neutral (PMV: -0.31, PPD: 7% and PMV: -0.35, PPD: 8%, respectively). When the maximum value that the device could measure was observed during the TVOCs measurements, it was seen that the thermal comfort changed from neutral to slightly cool (PMV: -0.56, PPD: 12% and PMV: -0.67, PPD: 14% for Studio I and II, respectively) due to the low outdoor temperature when the windows were open (Figure 6 & Figure 7). When both studios were evaluated in terms of thermal comfort, it was found that the dissatisfaction rate per person was higher in the studio II when the windows were open.

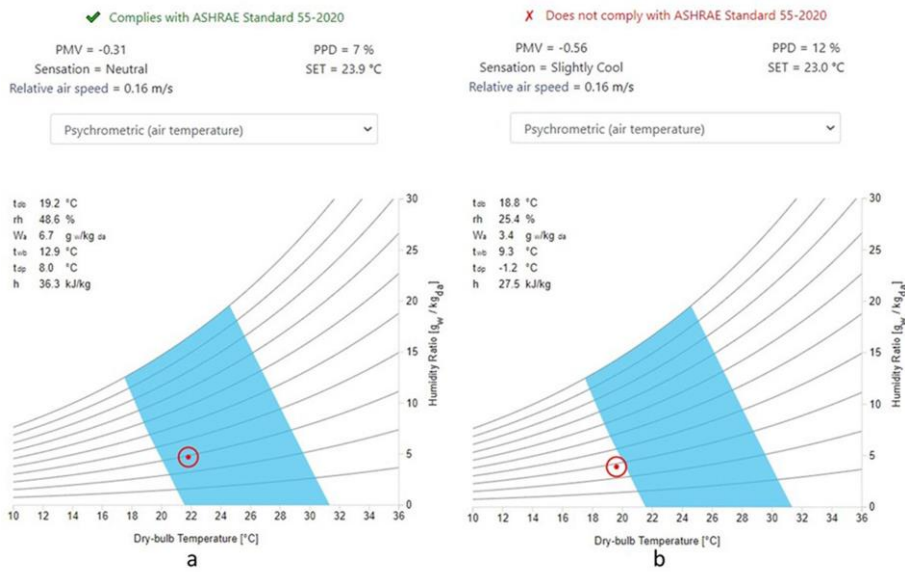


Figure 6 - a. Thermal comfort when windows were closed in Studio I b. Thermal comfort when windows were open in Studio I (CBE Thermal Comfort Tool ASHRAE-55, EN-16798).

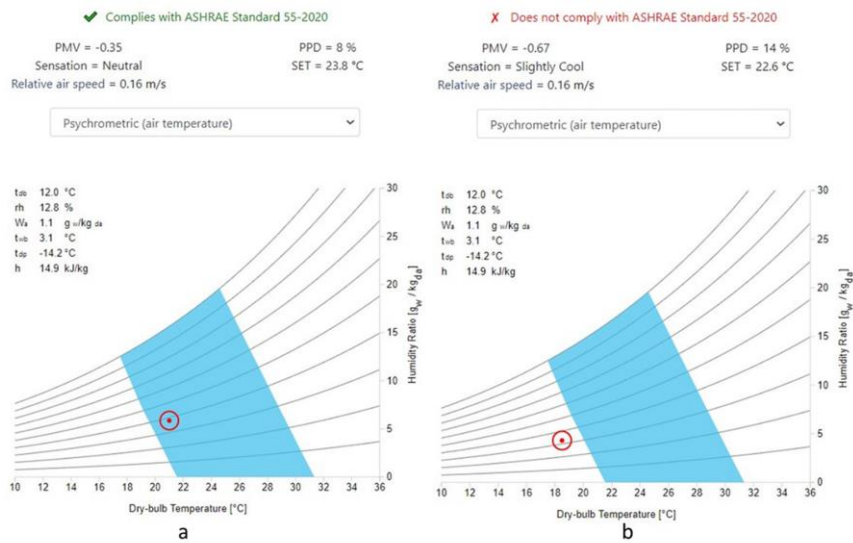


Figure 7 - a. Thermal comfort when windows were closed in Studio II b. Thermal comfort when windows were open in Studio II (CBE Thermal Comfort Tool ASHRAE-55 EN-16798).

CO₂ concentration

In Studio I and II, the CO₂ concentration increased as a function of time, and this increase was faster and higher although the number of subjects in Studio II was smaller than in Studio I. This is because the volume of Studio I (730.8 m³) and accordingly the amount of fresh air is higher than in Studio II (487.2 m³) (Franco et al., 2019). As can be seen in Figure 8, the limit value (1000 ppm) was reached 45 minutes after the start of model making in Studio I, while this situation was observed after 30 minutes in Studio II. The reason for the high CO₂ concentration observed in a

short period of time might be that students showed both cognitive and physical efforts during the model making. That is, the human CO₂ exhalation is often correlated with metabolic rate, and this is also related to the activity in question (Persily, 1997). The CO₂ concentration, which decreased when the windows were opened at noon, reached the limit of 1000 ppm within 15 minutes in studio II. This result shows that insufficient room volume and insufficient amount of fresh air is a major problem for indoor air quality (Franco et al., 2019; Simanic et al., 2019). Although the CO₂ concentration comes to an acceptable level when the windows are open in the studio, this does not seem possible especially in winter since it causes a reduction in thermal comfort. As can be seen in Figures 5-7, the temperature values dropped below the comfort limits from the moment the windows were opened. Therefore, it is recommended to install a mechanical ventilation system in studios with a high number of users. High CO₂ concentrations detected in the environment may lead to a decrease in student productivity and cause symptoms such as fatigue, dizziness, and headaches (Fernandez-Agüera et al., 2019; Myhrvold et al., 1996; Satish et al., 2012).

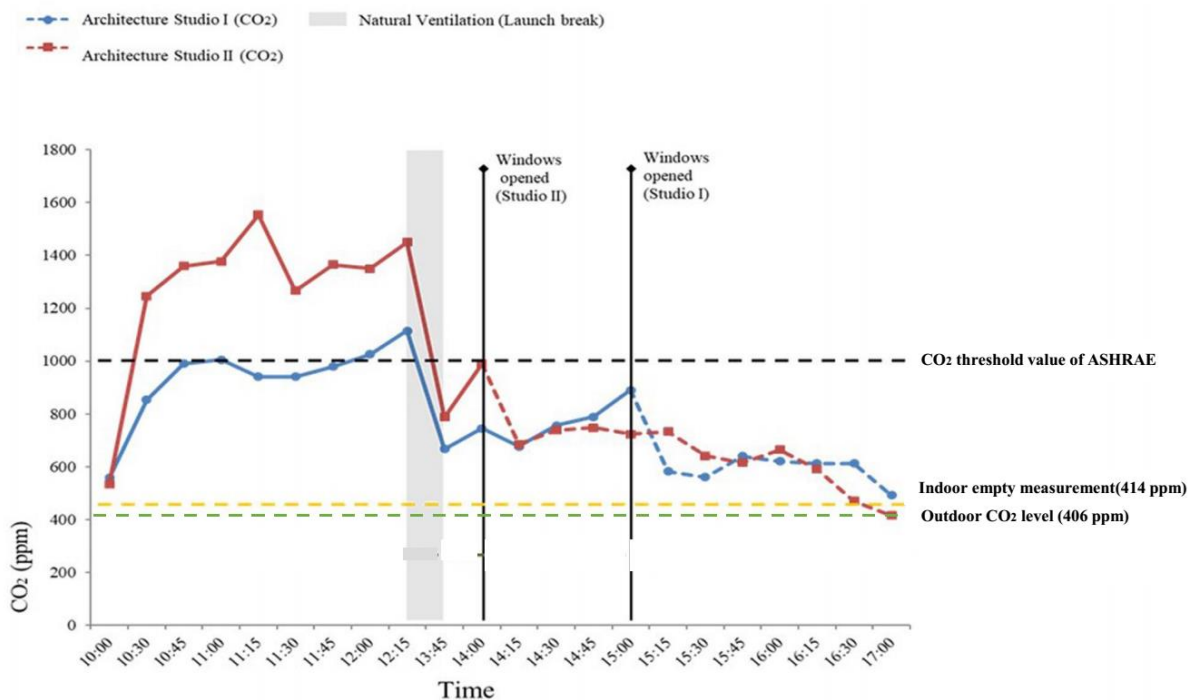


Figure 8 - CO₂ concentrations in studios.

TVOCs

When the TVOCs concentrations for both studios were examined, it was observed that the TVOCs concentration in the environment exceeded the limits in about 15 minutes after the start of the model making process in studio I, while the value was above the limit in studio II from the moment of the delivery of materials for model-making due to the smaller space (Figure 9). It is believed that this increase is due to the stationery and superglue used during model making (Kuśtrowski et al., 2018; Madureira et al., 2015; Raysoni et al., 2017). During the model making process, a very high concentration (9.74 ppm) was observed in the middle of the day (12:00 h) in both studios. These levels, which can be described as 5 times the limit value, can cause diseases such as low lung function, asthma, and bronchitis in students (Mother-Maesano et al., 2013; WHO, 2010). Although

the levels decreased with natural ventilation lasting 1.5 hours at noon, they did not fall below the limits. It was also found that the natural ventilation should be higher for Studio I because the blow-out time of the polluted air was prolonged due to the large volume. The TVOCs concentrations were 4.81 ppm for Studio I and 3.42 ppm for II at the time when students continue to build models after lunch. These levels, measured after natural ventilation, are in a hazardous range for student health. Depending on the room sizes, the time when the instruments reached the 10 pmm limit, which is the maximum value that the instruments can measure in a studio environment, was 15:00 for Studio I and 14:15 for Studio II. Therefore, it can be said that the small-volume studio loses indoor air quality in a shorter time during the model-making process (Franco et al., 2019).

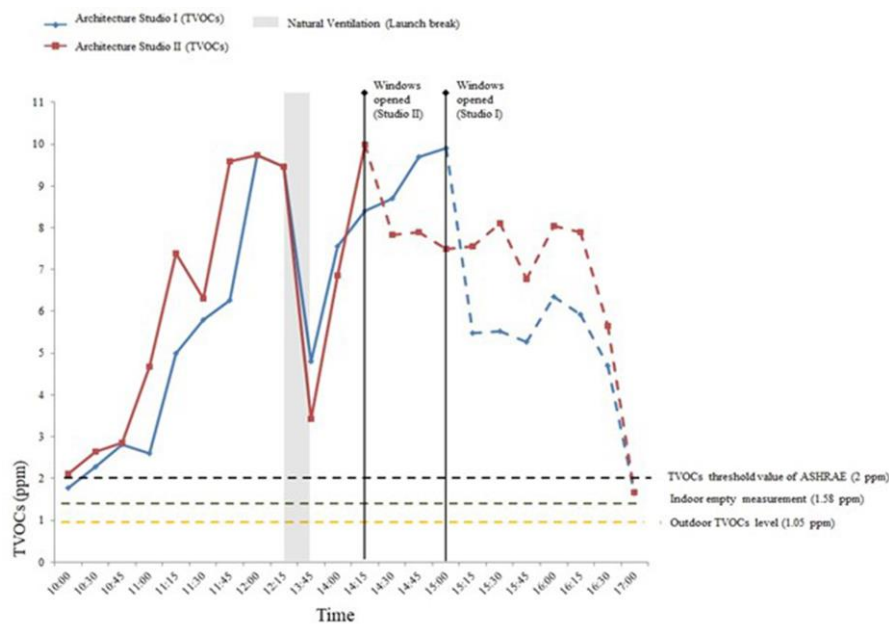


Figure 9 - TVOCs values in studios.

Particulate matter (PM)

With the maximum values at 12:00 for Studio I and II (45895 and 55616, respectively), the particulate matter ($PM_{0.3}$) levels in both studios remained below the limits (Figure 10). It can be said that the reason for the maximum values at 12:00 was that the students in the studios were on lunch break. With the completion of the model-making process in the studios at 16:00 and then the start of studio cleaning by the students, the $PM_{0.3}$ levels increased until 17:00 and reached 54384 in Studio I and 45236 in Studio II at 17:00. $PM_{2.5}$ particulate matter and PM_{10} coarse particulate matter levels were below the limits for both studios (Figures 11, 12).

The $PM_{2.5}$ level reached maximum values of 211 and 282 at 11:45 am for Studio I and at 12:00 pm for Studio II, respectively. It has also been observed in many studies that $PM_{2.5}$ levels increase at times when mobility increases (Guo et al., 2017, Zhang et al., 2016). As shown in Figure 11, the maximum $PM_{2.5}$ level was observed as 271 μm for Studio I and 128 μm for Studio II after the cleaning activities started. After the cleaning activity started, the PM_{10} level also increased, from 42 at 16:15 for Studio I, to 40 at 16:30 for Studio II (Figure 12).

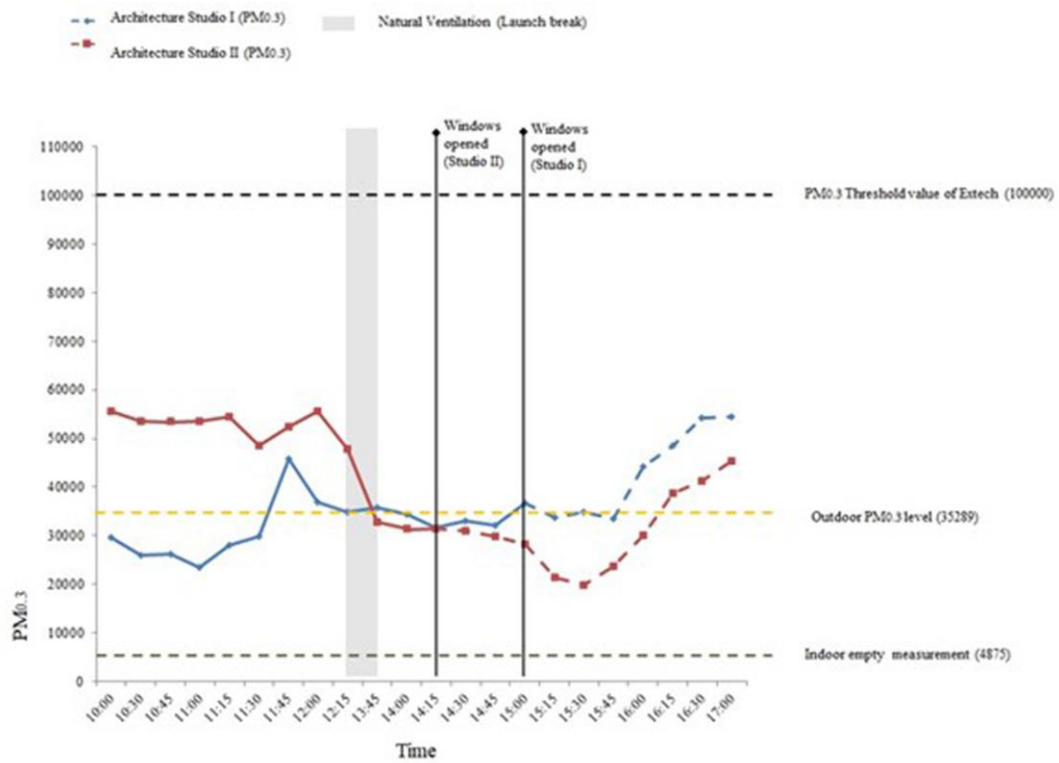


Figure 10 - PM_{0.3} values in studios.

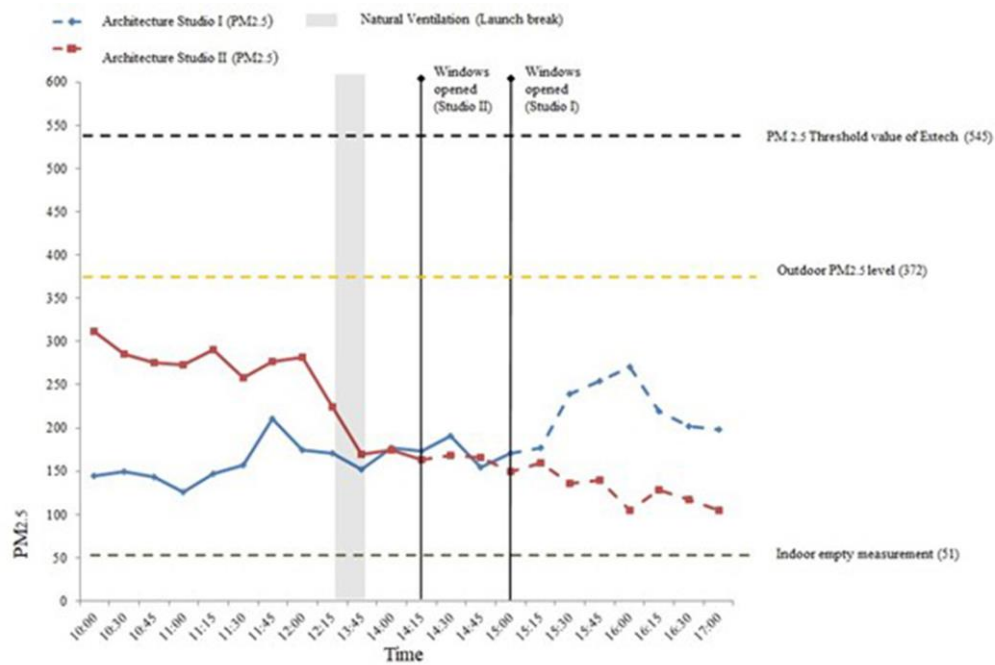


Figure 11 - PM_{2.5} values in studios.

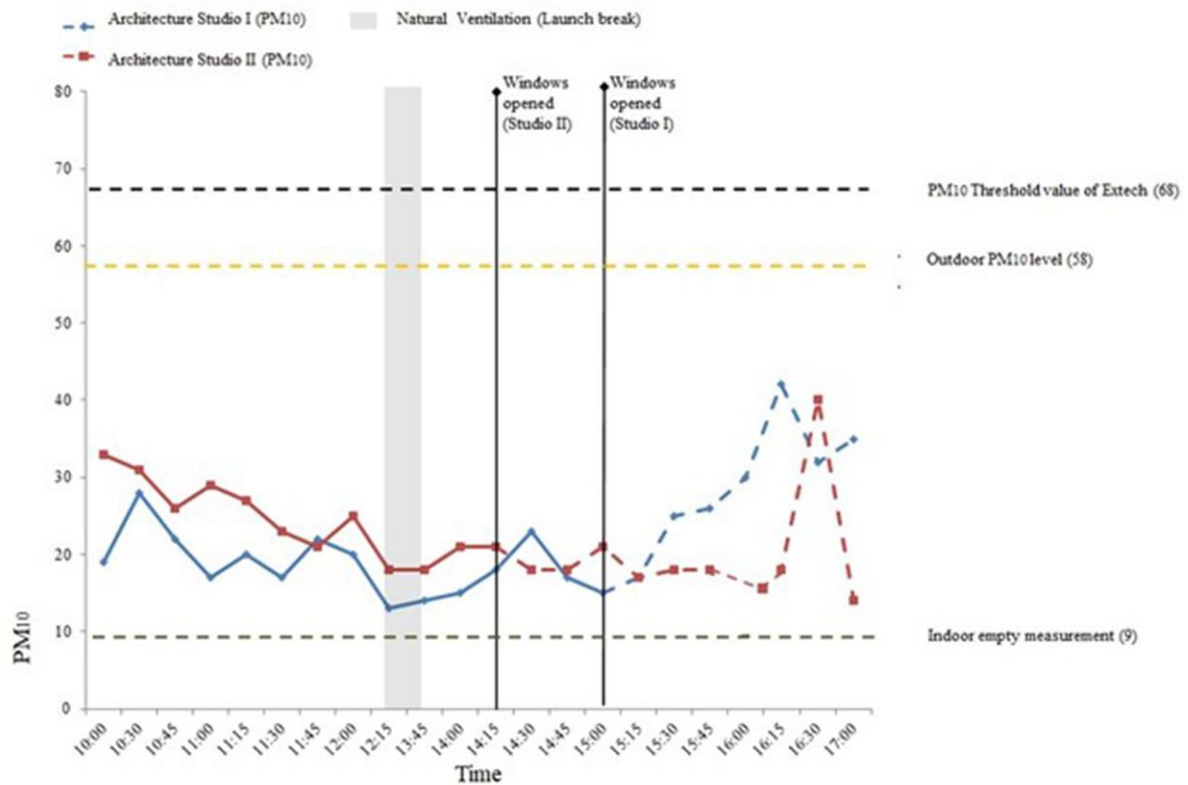


Figure 12 - PM₁₀ values in studios.

Questionnaire Results

A questionnaire consisting of 12 questions was used to determine the satisfaction levels of the users regarding the comfort conditions of the studios. In addition to questions about indoor comfort conditions, the questionnaire also included questions about the presence of possible symptoms observed in individuals and whether these symptoms disappeared after leaving the building.

When the demographic data of the individuals interviewed in Studio I and II were examined, it was found that the age ranged from 19-22 years and the mean age was 20.7 years. In the questions directed to the individuals, a 7-point Likert scale response option, ranging from much poor (1) to much better (7), was presented.

In the survey conducted before the model making process in Studio I and II, participants indicated to feel poor (3), while they indicated to feel much poor (1,2) after the model making process. As can be seen in Table 4, while the users described indoor air quality as poor (3.1) before model making, they described it as much poor (1.1) after the completion of the model-making process. It can be said that the users' ratings related to thermal comfort and air movement velocity before and after the model-making process were similar, but their satisfaction level regarding air movement velocity increased due to the air flows that occurred as a result of the ventilation of the environment after the completion of the model-making process.

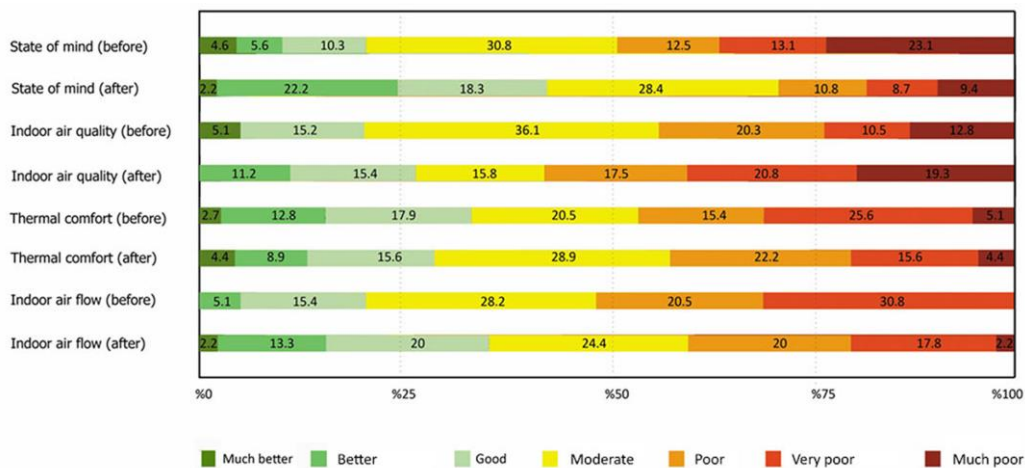


Figure 13 - Indoor air quality and thermal comfort questionnaire results for Studio I.

As can be seen in Figure 13, while 48.7% of the Studio I users felt psychologically poor (poor+very poor+much poor) before the model making process, this percentage decreased to 28.9% after this process. Before model making, 43.6% of the users described indoor air quality as poor, 20.3% as good, and 36.1% as moderate. It can be observed that these values changed to 57.6%, 26.6%, and 15.8% respectively after the model making process. The increase in poor feelings towards indoor air quality after the model making process can be explained by the pollution of indoor air due to activities in the room. Considering thermal comfort and air movement rate, it can be seen that before the model making process, 46.1% of the users described the thermal environment conditions as poor, 33.4% as good, and 20.5% as moderate. After the model making process, the satisfaction level regarding thermal comfort increased due to the increase in ambient temperature compared to the morning hours. Looking at the responses to the air movement speed questions, it is seen that 51.3% of the users described the air movement speed as poor before the model making process. This rate decreased to 40% with the movement of stagnant air in the environment in parallel with the opening of the windows after model making.

In Studio II, 34.5% of the users felt mentally poor before the model making process, and this percentage increased to 85% after this process (Figure 14). It was found that before model making, 36.5% of the users described indoor air quality conditions as poor, 13.8% as good, and 49.7% as moderate. These rates were found to be 86%, 5.3%, and 8.7% respectively after the model making. Compared to Studio I, the increase in the poor feeling of users in Studio II can be explained by the relationship between the size of the room and the number of users.

In terms of the thermal comfort conditions, it can be seen that the users are more satisfied with the indoor thermal conditions before the model making process. While thermal comfort conditions were defined as poor by 41.3% of the users and good by 13.8% before model making, these values changed to 60.6% and 6.1% respectively after model making. Air movement velocity was classified by 41.3% of the users as poor and by 17.3% as good before the model making process. Unlike Studio I, the decrease in satisfaction with air movement speed in Studio II after the model making process even when a window is open in the environment can be explained by factors such as lack of adequate fresh air, orientation status, and people/area ratio.

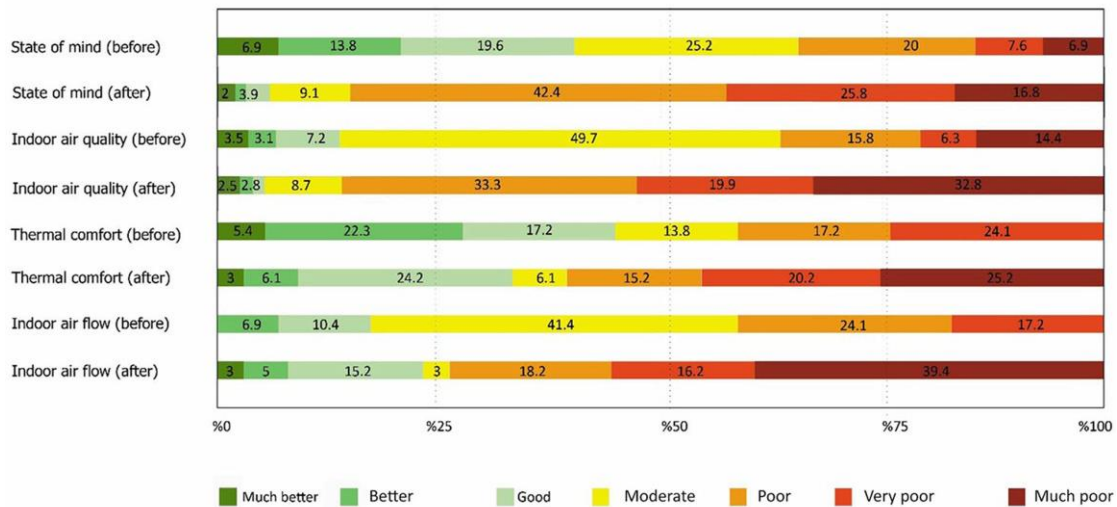


Figure 14 - Indoor air quality and thermal comfort questionnaire results for Studio II.

In order to determine the symptoms of the sick building syndrome in the questionnaire, the users were asked questions about possible symptoms and whether these symptoms were alleviated when they left the building. It was determined that Studio I users most frequently complained of fatigue (89.7%), headaches (43%), poor performance (33.3%), and eye itching (23.1%) (Figure 15). After the model making process, all symptoms increased except fatigue, headache, and eye itch. This shows that students come to the studio tired and with some symptoms. It can be said that the increase in the number of users experiencing symptoms such as bad smell (42.2%), dizziness (28.9%), and shortness of breath (26.7%) after the model making process is due to the increase in the amount of CO₂ and TVOCs in the room. In their study conducted in office buildings, Lu et al. (2015) showed that the symptoms of nasal congestion, shortness of breath, irritability, and dizziness developed in parallel with VOCs. In their study carried out using measurement and questionnaire methods, Fernandez-Aguera et al. (2019) found that dizziness, dry skin, headache, and fatigue symptoms were associated with increased CO₂ concentration. In their study conducted in selected office buildings from different countries, Sakellaris et al. (2020) found that most common symptoms observed were eye irritation, headache, drowsiness, and fatigue, and these symptoms were mainly caused by VOCs and CO₂. When these symptoms were evaluated considering the gender factor, it was found that women had more symptoms than men and complained more about their environment.

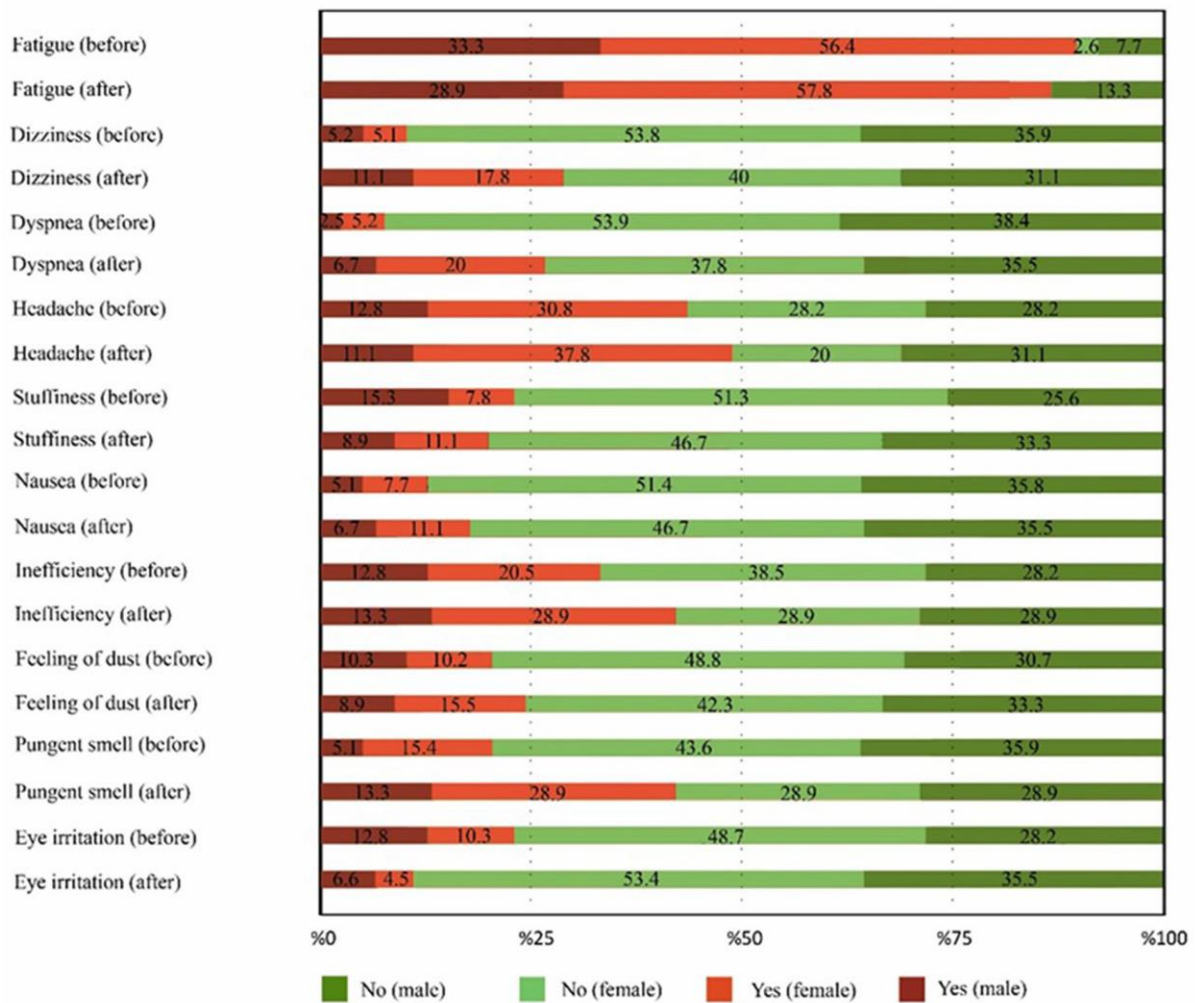


Figure 15 - Symptoms related to IAQ for Studio I.

As can be seen in Figure 16, results showed that the users in Studio II complained most about fatigue (58.6%), inefficiency (31%), headache (27.6%), and dyspnea (20.7%). After the model making process, increases were observed in all mentioned symptoms, and the most increased symptoms were inefficiency (72.7%), dyspnea (69.7%), headache (69.7%), pungent smell (66.7%), feeling of dust (60.6%), and dizziness (48.5%). Considering the similar demographic characteristics and activity status of the subjects, it can be said that the presence of more symptoms in Studio II than in Studio I and the increase of each symptom after the model making process may have been due to the smaller space, insufficient fresh air, and low space/user ratio. When the symptoms were evaluated taking into account the gender factor, it was seen that similar to Studio I, women had more symptoms and complained more than men.

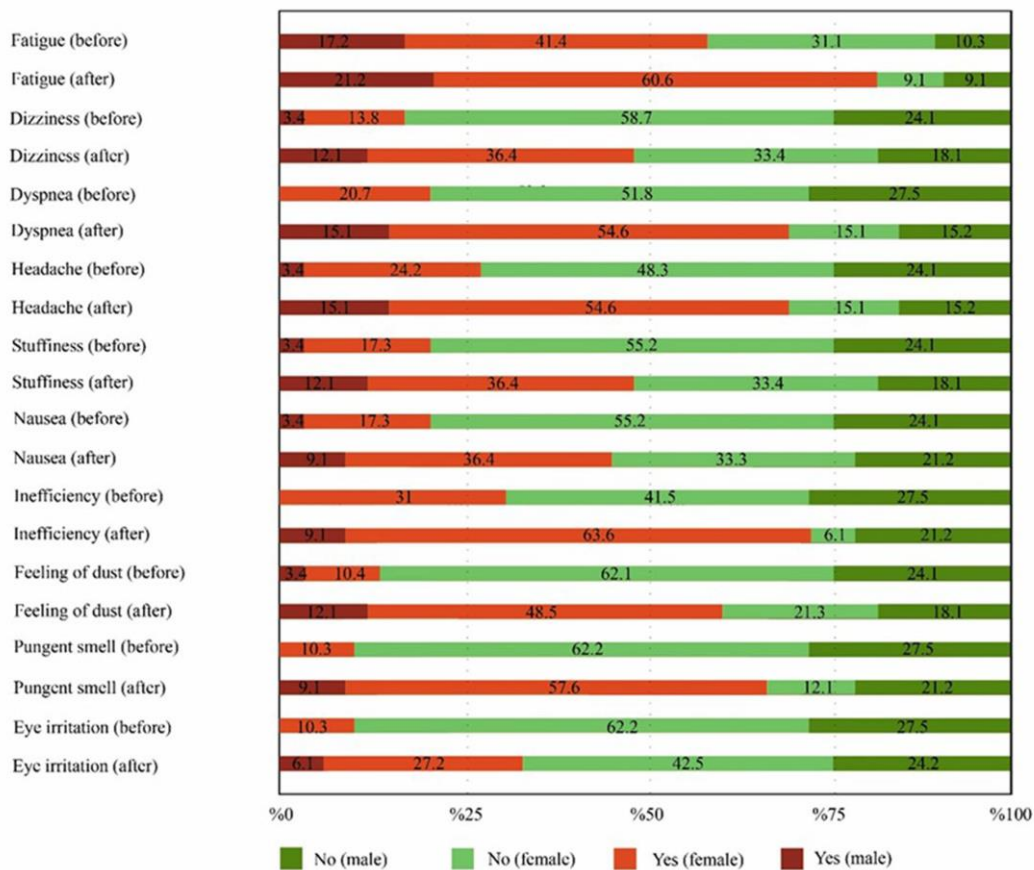


Figure 16 - Symptoms related to IAQ for Studio II.

CONCLUSION

Insufficient fresh air in architecture studios is one of the problems that hinder the intense training pace of architecture students. This problem is mostly experienced during the model making process in the studio. In addition to materials used by students for model making, inappropriate ventilation conditions and inadequate room volumes cause students to experience health problems during model-making processes. Thermal, visual, and acoustic comfort parameters play a role in studio design. In addition, measurements of thermal comfort, air pollutants, and real data obtained from field studies conducted with architecture students are important for optimizing IAQ and thermal comfort of studios. In this study, IAQ and thermal comfort status during the model-making process in architecture studios in the winter season was investigated and the effect of this situation on students was studied. The data obtained in the study is empirical evidence of the need for mechanical ventilation in addition to natural ventilation in studios.

Results of the study conducted on two studios showed that the TVOCs level reached 9.74 ppm approximately 2 hours after the start of the model-making process. This value was 5 times higher than the threshold limit value. In the studios, the CO₂ level reached 1000 ppm, which is the threshold value set by ASHRAE, within 30-45 minutes. Thermal comfort is also crucial in terms of the quality of students' study environment. The results of this study, which was also supported

by a survey, revealed that when the windows were opened, thermal comfort in the studios and students' satisfaction with thermal comfort decreased. These results show the importance of improving the thermal situation and IAQ in studios.

This study presents data on the relationship between indoor air quality and thermal comfort, which should be taken into account in the design of studios in buildings where architecture classes are taught, as well as indoor air quality and satisfaction of users with thermal comfort during the model making. Separating modeling studios from drafting studios and grouping studios with similar ventilation needs in a specific area, as well as zoning space for energy efficiency, are among the recommendations. In addition, given the number of students who will use the space, it is important to include additional mechanical ventilation systems in cases where natural ventilation and fresh air cannot be provided. Future studies should focus on the quantitative relationships between the number of students, studio space, and fresh air required in architectural model studios, which were not investigated in this study.

Acknowledgements

The authors thank the Scientific Research Unit of Karabuk University for the financial support provided for the study. We also thank the students of Karabuk University Department of Architecture who participated in the study.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

This study was funded by Karabük University Scientific Research Center (Contract No. FDT 2020-2218).

Ethical Statement

Ethics committee approval (Decision no: 2020/03-15) was obtained from Karabük University. All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/H

AUTHOR 2: E/F/G

REFERENCES

- Annesi-Maesano, I., Baiz, N., Banerjee, S., Rudnai, P., Rive, S., Sinfonie Group (2013). Indoor air quality and sources in schools and related health effects. *Journal of Toxicology and Environmental Health, Part B* 16(8), 491-550. DOI: 10.1080/10937404.2013.853609
- ASHRAE, 55 (2017). Thermal Environmental Conditions for Human Occupancy, in Atlanta, Georgia: American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. http://arco-hvac.ir/wpcontent/uploads/2015/11/ASHRAE_Thermal_Comfort_Standard.pdf
- Bakó-Biró, Z., Clements-Croome, D.J., Kochhar, N., Awbi, H.B., Williams, M.J. (2012) Ventilation rates in schools and pupils' performance. *Building and Environment*, 48, 215-223. DOI: 10.1016/j.buildenv.2011.08.018
- Bogdanovica, S., Zemitis, J., Bogdanovics, R. (2020). The effect of CO2 concentration on children's well-being during the process of learning. *Energies*, 13(22), 6099. DOI: 10.3390/en13226099
- Bostancı Başkan, T., Sözen Şerefhanoglu, M. (2006). Dersliklerde görsel konfor ve etkin enerji kullanımını-bir örnek derslik aydınlatması. (Turkish) "Visual Comfort and Efficient Energy Use in Classrooms Lighting – A Field Study of Classrooms Lighting" *Megaron*, 1.2(3), 143-153. <https://app.trdizin.gov.tr/dokumangoruntule?ext=pdf&path=CrnWZGRsXTjRjLjWxD978OSUAL2jXitizhVYmCxNvH55i17y72f60ZdhXjBfHwGff91V2nVIO9jllq5Memy8R3RGJC63zqAxfVCzSBtW2agDunfm5aaAY1p6m0CVVIWif7B8ZZMVtrNgA78MadUDugISy7hYTgyfPbe5DZ5MUD9l7n2uogm3ZhccaBI33TlznZ1VO>
- Destailats, H., Maddalena, R.L., Singer, B.C., Hodgson, A.T., McKone, T.E. (2008). Indoor pollutants emitted by office equipment: A review of reported data and information needs. *Atmospheric Environment*, 42(7), 1371-1388. DOI: 10.1016/j.atmosenv.2007.10.080
- Djabarouti, J, O'Flaherty, C. (2019) Experiential learning with building craft in the architectural design studio: A pilot study exploring its implications for built heritage in the UK. *Thinking Skills and Creativity*, 32, 102-113. DOI: 10.1016/j.tsc.2019.05.003
- Düzenli, T., Yilmaz, S., Alpak, E. M. (2017). The effects of model making on design and learning in landscape architecture education. *Eurasian Journal of Educational Research*, 17(70), 121-134. DOI: 10.14689/EJER.2017.70.7
- Fernández-Agüera, J., Campano, M.Á., Domínguez-Amarillo, S., Acosta, I., Sendra, J.J. (2019). CO2 Concentration and occupants' symptoms in naturally ventilated schools in Mediterranean climate. *Buildings*, 9(9), 197. DOI: doi.org/10.3390/buildings9090197
- Franco, A., Leccese, F., Marchi, L. (2019). Occupancy modelling of buildings based on CO2 concentration measurements: an experimental analysis. In: *Journal of Physics: Conference Series*, 1224(1), 012016. DOI: 10.20944/PREPRINTS201907.0136.V1
- Fsadni, P., Montefort, S. (2013). School indoor air quality and allergen exposure. *Malta Medical Journal*, 25(3). <http://2013.Vol25.Issue3.A2.pdf>
- Gao, M.P., Deng, Z.Y., Nie, L., Shao, X., An, X.S. (2018). Content levels and compositions characteristics of volatile organic compounds (voc) emission from architectural coatings based on actual measurement. *Huan jing ke xue= Huanjing kexue*, 39(10), 4414-4421.

- Gao, J., Wargocki, P., Wang, Y. (2014). Ventilation system type, classroom environmental quality and pupils' perceptions and symptoms. *Building and Environment*, 75, 46-57.
- Gilliland, F.D., Berhane, K., Rappaport, E.B., Thomas, D.C., Avol, E., Gauderman, W.J., London, S.J., Margolis, H.G., McConnell, R., Islam, K.T., Peters, J.M. (2001). The effects of ambient air pollution on school absenteeism due to respiratory illnesses. *Epidemiology*, 12(1), 43-54. DOI: 10.1097/00001648-200101000-00009
- Guo, H., Cheng, T., Gu, X., Wang, Y., Chen, H., Bao, F., Shi, S., Xu, B., Wang, W., Zuo, X., Zhang, X., Meng, C. (2017). Assessment of PM_{2.5} concentrations and exposure throughout China using ground observations. *Science of the Total Environment*, 601, 1024-1030. DOI: 10.1016/j.scitotenv.2017.05.263
- Jovanović, M., Vučićević, B., Turanjanin, V., Živković, M., Spasojević, V. (2014). Investigation of indoor and outdoor air quality of the classrooms at a school in Serbia. *Energy*, 77, 42-48. DOI: 10.1016/j.energy.2014.03.080
- Kuśtrowski, P., Rokicińska, A., Kondratowicz, T. (2018). Abatement of volatile organic compounds emission as a target for various human activities including energy production. *Advances in Inorganic Chemistry*, 72, 385-419. DOI: 10.1016/bs.adioch.2018.05.004
- Liang, X., Sun, X., Lu, Q., Ren, L., Liu, M., Su, Y., Wang, S., Lu, H., Goa, B., Zhao, W., Sun, J., Gao, Z., Chen, L. (2021). VOC emission inventory of architectural coatings and adhesives for new buildings in China based on investigated and measured data. *Atmospheric Environment*, 245, 118014. DOI: 10.1016/j.atmosenv.2020.118014
- Lu, C.Y., Lin, J.M., Chen, Y.Y., Chen, Y.C. (2015). Building-related symptoms among office employees associated with indoor carbon dioxide and total volatile organic compounds. *International Journal of Environmental Research and Public Health*, 12(6), 5833-5845. DOI: 10.3390/ijerph120605833
- Madureira, J., Paciência, I., Rufo, J., Ramos, E., Barros, H., Teixeira, J.P., de Oliveira Fernandes, E. (2015). Indoor air quality in schools and its relationship with children's respiratory symptoms. *Atmospheric Environment*, 118, 145-156. DOI: 10.1016/j.atmosenv.2015.07.028
- Mendell, M.J., Heath, G.A. (2005). Do indoor pollutants and thermal conditions in schools influence student performance? A critical review of the literature. *Indoor Air*, 15(1), 27-52. DOI: 10.1111/j.1600-0668.2004.00320.x
- MGM, (2016). Turkey.
https://www.mgm.gov.tr/FILES/iklim/iklim_siniflindirmalari/koppen.pdf
- Mishra, N., Bartsch, J., Ayoko, G.A., Salthammer, T., Morawska, L. (2015). Volatile organic compounds: characteristics, distribution and sources in urban schools. *Atmospheric Environment*, 106, 485-491. DOI: 10.1016/j.atmosenv.2014.10.052
- Musa, A.R., Abdullah, N.A.G., Che-Ani, A.I., Tawil, N.M., Tahir, M.M. (2012). Indoor environmental quality for UKM architecture studio: An analysis on lighting performance. *Procedia-Social and Behavioral Sciences*, 60, 318-324.(a) DOI: 10.1016/j.sbspro.2012.09.386
- Musa, A.R., Abdullah, N.A.G., Che-Ani, A.I., Tawil, N.M., Tahir, M.M. (2012). Temperature analysis for indoor environmental quality (IEQ) of UKM architecture studio. *Procedia-Social and Behavioral Sciences*, 60, 575-581. (b) DOI: 10.1016/j.sbspro.2012.09.425

- Mohai, P., Kweon, B.S., Lee, S., Ard, K. (2011). Air pollution around schools is linked to poorer student health and academic performance. *Health Affairs*, 30(5), 852-862. DOI: 10.1377/hlthaff.2011.0077
- Myhrvold, A.N., Olsen, E., Lauridsen, O. (1996). Indoor environment in schools—pupils health and performance in regard to CO₂ concentrations. *Indoor Air*, 96(4), 369–371. http://www.aretas.ca/sites/default/files/imce_images/Indoor%20Environment%20in%20Schools%20%E2%80%93%20Pupils%20Health%20%26%20Performance%20in%20Regard%20to%20CO2%20Concentrations.pdf
- Nasir, A.R.M., Musa, A.R., Che-Ani, A.I., Utaberta, N., Abdullah, N.A.G., Tawil, N.M. (2011). Identification of indoor environmental quality (IEQ) parameter in creating conducive learning environment for architecture studio. *Procedia Engineering*, 20, 354-362. DOI: 10.1016/j.proeng.2011.11.177_PmLomHKjVxQ0kaypacw9A2i_rCQJrw2-mg=&contentType=application/pdf
- Niu, J.L., Burnett, J. (2001). Setting up the criteria and credit-awarding scheme for building interior material selection to achieve better indoor air quality. *Environment International*, 26(7-8), 573-580.
- Özkan, S.T.E., Hadia, H.A. (2015). The impacts of model-making on learning environment: (learning-by-doing), conference: high professional institute for comprehensive professions. *Albums Researches of the 5th Scientific Conference At: Libya*. https://www.researchgate.net/profile/HatemHadia/publication/329352009_The_Impacts_of_Modelmaking_on_Learning_Environment_Learning-by-Doing/links/5c02e77f92851c63cab329c0/The-Impacts-of-Model-making-on-Learning-Environment-Learning-by-Doing.pdf
- Pegas, P.N., Alves, C.A., Evtyugina, M.G., Nunes, T., Cerqueira, M., Franchi, M., Pio, C.A., Almeida, S.M., Freitas, M.C. (2011). Indoor air quality in elementary schools of Lisbon in spring. *Environmental Geochemistry and Health*, 33(5), 455-468. DOI: 10.1007/s10653-010-9345-3
- Persily, A.K. (1997) Evaluating building IAQ and ventilation with indoor carbon dioxide (No. CONF-970668-). American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, GA (United States).
- Raysoni, A.U., Stock, T.H., Sarnat, J.A., Chavez, M.C., Sarnat, S.E., Montoya, T., Holguin, F., Li, W.W. (2017). Evaluation of VOC concentrations in indoor and outdoor microenvironments at near-road schools. *Environmental Pollution*, 231, 681-693. DOI: 10.1016/j.envpol.2017.08.065
- Sakellaris, I., Saraga, D., Mandin, C., de Kluizenaar, Y., Fossati, S., Spinazzè, A., Cattaneo, A., Mihucz, V., Szigeti, T., de Oliveira Fernandes, E., Kalimeri, K., Mabilia, R., Carrer, P., Bartzis, J. (2020). Association of subjective health symptoms with indoor air quality in European office buildings: The OFFICAIR project. *Indoor Air*, 31(2), 426-439. DOI: 10.1111/ina.12749
- Satish, U., Mendell, M.J., Shekhar, K., Hotchi, T., Sullivan, D., Streufert, S., Fisk, W.J. (2012). Is CO₂ an indoor pollutant? Direct effects of Low-to-Moderate CO₂ concentrations on human decision-making performance. *Environment Health Perspectives*, 120, 1671–1678. DOI: 10.1289/ehp.1104789
- Shendell, D.G., Prill, R., Fisk, W.J., Apte, M.G., Blake, D., Faulkner, D. (2004). Associations between classroom CO₂ concentrations and student attendance in Washington and in Idaho. *Indoor Air*, 14(5) 333-341. DOI: 10.1111/j.1600-0668.2004.00251.x

- Simanic, B., Nordquist, B., Bagge, H., Johansson, D. (2019). Indoor air temperatures, CO2 concentrations and ventilation rates: Long-term measurements in newly built low-energy schools in Sweden. *Journal of Building Engineering*, 25, 100827. DOI: 10.1016/j.job.2019.100827
- Stabile, L., Dell'Isola, M., Russi, A., Massimo, A., Buonanno, G. (2017). The effect of natural ventilation strategy on indoor air quality in schools. *Science of Total Environment*, 595, 894–902. DOI: 10.1016/j.scitotenv.2017.03.048
- Turanjanin, V., Vučićević, B., Jovanović, M., Mirkov, N., Lazović, I. (2014). Indoor CO2 measurements in Serbian schools and ventilation rate calculation. *Energy*, 77, 290-296. DOI: 10.1016/j.energy.2014.10.028
- Wargocki, P., Wyon, D.P. (2013). Providing better thermal and air quality conditions in school classrooms would be cost-effective. *Building and Environment*, 59, 581-589. DOI: 10.1016/j.buildenv.2012.10.007
- Wargocki, P., Wyon, D.P. (2017). Ten questions concerning thermal and indoor air quality effects on the performance of office work and schoolwork. *Building and Environment*, 112, 359-366. DOI: 10.1016/j.buildenv.2016.11.020
- World Health Organization Health and environment in Europe: progress assessment (No. EUR/55934/BD/1). Copenhagen: WHO Regional Office for Europe 2010. https://www.euro.who.int/__data/assets/pdf_file/0010/96463/E93556.pdf
- Zhang, G., Spickett, J., Rumchev, K., Lee, A.H., Stick, S. (2006). Indoor environmental quality in a 'low allergen' school and three standard primary schools in Western Australia. *Indoor Air*, 16(1), 74-80. DOI: 10.1111/j.1600-0668.2005.00405.x
- Zhang, Y., Sun, Y., Du, W., Wang, Q., Chen, C., Han, T., Lin, J., Zhao, J., Xu, W., Gao, J., Li, J., Fu, P., Wang, Z., Han, Y. (2016). Response of aerosol composition to different emission scenarios in Beijing, China. *Science of the Total Environment*, 571, 902-908. DOI: 10.1016/j.scitotenv.2016.07.073

BIOGRAPHIES OF THE AUTHORS

Merve TUNA KAYILI (Assoc. Prof. Dr.)

Merve Tuna Kayılı received her undergraduate degree from Faculty of F.T. Fine Arts and Design (2008), Karabük University and her MArch (2010) and PhD degrees (2016) from Gazi University. She has been working as an academic at Karabük University since 2009 and currently acting as a full-time Assoc. Prof. Dr. at the Department of Architecture. Construction materials, energy efficient building, indoor air quality and sustainable building design principles are among her major of interests.

Caner YETİŞ (M.Arch)

Caner Yetiş received his undergraduate degree (2018) and March (2021) from Faculty of F.T. Fine Arts and Design (2018), Karabük University. He is candidate of Ph. D at Karabük University. He has been working as an academic at Karabük University since 2019 and currently acting as a part-time Instructor at the Department of Architecture. Construction materials, thermal comfort and indoor air quality are among his major of interests.



Class and space: Residential differentiation in industrial city Karabük

Beyza ONUR¹, ORCID: 0000-0001-8246-9571

Abstract

As a result of the industrialization struggles in the Republican period, the Karabük Iron and Steel Factory was established in 1937, and new areas were planned for factory employees of different social statuses. This article investigates the effects of social class on spatial formation in Karabük, an industrial city in Turkey. The article discusses the reflection of class positions and stratification on space by referencing David Harvey's theory of "class structure and residential differentiation." In addition to the theoretical perspective, the spaces of the working class, middle class, and upper-middle-class in Karabük were investigated in the study that included archival research. When the positions and architectural qualities of the structures in settlements where the working class, middle class, and upper-middle-class were located were examined, it was observed that the space was organized depending on the social class hierarchy. Accordingly, the spatial inequalities and divisions brought by the capital system also determined the hierarchy of the urban structure. Residential differentiation, which is not a product of the self-preferences of individuals, was formed as a result of production relations that led to changes in urban space, and different groups of classes experienced differentiation in the possibilities of access to resources. In this respect, urban space production is related to the class issue.

Highlights

- Social class differences are an important factor that shapes urban space.
- Residential differentiation is produced by forces arising from the capitalist production process.
- Residential differentiation occurs when different class groups experience differentiation in their access to social resources.

Keywords

Urban space; Urban theory; Social classes; Residential differentiation

Article Information

Received:

14.12.2021

Received in Revised Form:

22.06.2022

Accepted:

07.09.2022

Available Online:

30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Karabük University, Karabük, Türkiye

beyzaonur@karabuk.edu.tr



Sınıf ve mekan: Endüstri kenti Karabük'te mekansal farklılaşma

Bezza ONUR¹, ORCID: 0000-0001-8246-9571

Öz

Cumhuriyet dönemindeki sanayileşme mücadelelerinin sonucu olarak 1937 yılında Karabük Demir Çelik Fabrikası kurulmuş ve fabrikanın farklı sosyal statülerdeki çalışanları için yeni alanlar planlanmıştır. Bu makale, Türkiye'de bir sanayi kenti olan Karabük'te sosyal sınıfların mekansal oluşum üzerindeki etkilerini incelemektedir. Makale, sınıfsal konumların ve tabakalaşmanın mekâna yansımaları, David Harvey'in "sınıfsal yapı ve mekansal farklılaşma" teorisine referansla tartışmaktadır. Çalışmada, teorik perspektifin yanında, arşiv araştırmalarından yararlanılmıştır ve Karabük'te işçi, orta ve üst orta sınıfın mekânları incelenmiştir. İşçi, orta ve üst-orta sınıf için üretilen yapıların konumları ve mimari nitelikleri değerlendirildiğinde mekânın, sosyal sınıf hiyerarşisine bağlı olarak örgütlendiği gözlemlenmiştir. Kapital sistemin getirdiği mekansal eşitsizlik ve ayrılmalar, kentsel yapının hiyerarşisini de belirlemiştir. Bireylerin kendiliğinden tercihlerinin bir ürünü olmayan mekansal ayrışma, üretim ilişkilerinin kentsel mekânda değişime yol açmasıyla ve sınıfsal grupların kaynaklara erişim olanaklarında farklılaşma yaşamasıyla oluşmuştur. Bu yönüyle kentsel mekânın üretimi sınıf meselesiyle doğrudan ilişkilidir.

Öne Çıkanlar

- Sosyal sınıf farklılıkları, kentsel mekânı şekillendiren önemli bir faktördür.
- Mekansal farklılaşma, kapitalist üretim sürecinden kaynaklanan güçler tarafından üretilir.
- Mekansal farklılaşma, farklı sınıfsal grupların sosyal kaynaklara erişimlerinde farklılaşma yaşamasıyla ortaya çıkar.

Anahtar Sözcükler

Kentsel mekan; Kent teorisi; Sosyal sınıflar; Mekansal farklılaşma

Makale Bilgileri

Alındı:

14.12.2021

Revizyon Kabul Tarihi:

22.06.2022

Kabul Edildi:

07.09.2022

Erişilebilir:

30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Fakültesi, Karabük Üniversitesi, Karabük, Türkiye

beyzaonur@karabuk.edu.tr

INTRODUCTION

After the 19th century, the social structure also transformed with changes in production relations. Accordingly, discussing new class positions within the social structure is possible. Especially at the end of the 19th century, the concept of class appears as a stratification style. When defining the concept of social class, it is necessary not to perceive it as a categorical formation. While social classes form the social structure, groups' space is limited by a narrower framework. In social classes, different classes do not need to know each other. As a result, social classes show disorganization in space (İnce, 2017, p. 296). On the other hand, social inequality, one of the determining factors in social relations, refers to the state of inequality in terms of gender, capital, class, status, reputation, and educational status in society (Marshall, 1999; İnce, 2017, p. 296).

In this context, the situation of social inequality also brings differentiation within the same space. In urban spaces, differentiation is often experienced in the context of status. For example, the distribution of professional occupation categories qualified as blue-collar and white-collar workers in space reveals a residential differentiation (Massey et al., 2009, p. 78). Due to residential differentiation, resources cannot be distributed evenly in urban areas, leading to a differentiated socio-economic structure in the urban area. In cities where socio-economic characteristics differentiate, social status, professional and cultural characteristics, lifestyles, and income level cause individuals to be positioned in different areas of the urban area, and these socio-economic differences shape the space.

Regarding this view, David Harvey's theory of class structure and residential differentiation is significant. Before introducing the theory, Harvey mentions three factors that cause social differentiation. These are the main factors based on the power relationship between capital and labor, division of labor, specialization, consumption patterns, and lifestyle and social relations established in the previous mode of production. According to the theory, residential differentiation is produced by forces arising from the capitalist production process. This differentiation process is not the choice of individuals. Spatial units are social interaction environments that significantly affect individuals' values, consumption practices, and consciousness. Residential differentiation is a complementary effect within the processes in which class relations and social differentiations are produced (Harvey, 1992; Duru & Alkan, 2002, p. 161).

Based on Harvey's theory, this article aimed to establish its originality by re-reading the Yenışehir district via a specific theory. So the aim of this article, based on such a perspective, is to analyze how the different class positions that became evident with industrialization in Karabük in the first

half of the 20th century shaped the urban space and what kind of differentiation these classes created in the urban space. For this article, it is important to analyze the spaces belonging to different social classes in the context of their location and architectural qualities. Thus, to perform this analysis, housing and social structures belonging to the middle class, upper-middle class and working-class settled in Yenişehir and Ergenekon districts in Karabük were examined through archival data. The KIFS archive was scanned for primary archive data. In addition, a literature review was conducted by examining the studies of Çabuk (2017), Kaya (2011), Özkan-Altınöz (2016), and Öktem (2004). They studied the industrialization process and spatial development of the city of Karabük. And the relationship of residences, which are basic living spaces, with social structures was also studied. The space-society relationship in the Yenişehir region, which was chosen as the case location, was examined in the context of Harvey's theory for this aim. In order to analyze this process, it is important to determine the housing areas, social facilities, architectural qualities of the houses, and access of the houses to the social areas in the Yenişehir district that belong to different class groups. For this reason, the analysis strategy of the study is to examine the relationship of the working class, middle class and upper-middle class with these areas by marking the locations of educational buildings (iron and steel primary school, primary school of Yenişehir, iron and steel middle school, high school of trade, officers' club, engineers' club, cinema of Yenişehir, social building, garden with pool and stadium in the area.

When the historical background that guides the spatial development of the industrial city of Karabük is examined, it is evident that the Iron and Steel factory is the most important factor. The early twentieth century witnessed many large-scale industrial projects in Turkey. These industrial projects were not only established as industrial buildings but also designed as places of application of Turkey's modernization ideology (Asiliskender, 2009, p. 112). In fact, the new Republic considers factories a holistic social engineering and social formation tool beyond just a production unit. Industrialization, one of the founding elements of modern Turkey, has been used to organize society while transforming and differentiating it (Kahraman, 2004; Durukan Kopuz, 2018, p. 35).

The iron-steel factories of Karabük were seen as a key development in the country's move toward industrialization. Thus, the agreement for the Karabük investment was signed between Sümerbank and the English Brassert company in 1936. The agreement to establish the factory also created expectations about constructing of new residential areas (Özkan Altınöz, 2016, p. 364). While the factory was built in Karabük in 1937, Sümerbank embarked on a major zoning movement. The main reference in this zoning movement was the Yenişehir Plan, which was prepared in 1938. The district, called "Yenişehir" and designed by architect-urban planner Henri Prost, is the model that the British call "Garden City." This universal approach was also utilized in planning other Sümerbank factory campuses. Within the garden city concept produced by Prost in the first half of the 20th century, residential areas and other social living spaces were planned for the working class, middle class, and upper-middle class (Çabuk, 2017, p. 74). Özkan (2015) also discusses establishing a social class hierarchy in the Yenişehir district. There is a plan in Yenişehir, developed by French planner Henry Prost, in which social stratification is deepened, and employees own houses based on their social position.

According to Cengizkan (2000), housing types based on status, with diverse lifestyle origins, class, and layer expressions, such as worker's house, boss's house, officer's house, and manager's house,

have been the focus of architectural design processes in every period of industrialization. According to Özkan Altınöz (2016, pp. 366-367), the Yenışehir district provided socially and spatially separated areas to its inhabitants, whereby each employee's living quarters were organized according to socially determined setting rules. Notably, the social infrastructure was intended to keep different classes of people within their social groups. Each class can be seen to have possessed its unique infrastructure. Sometimes, members of a particular class were prohibited from trespassing in areas belonging to other classes by restrictive membership regulations. This social segregation was particularly effective in the various social clubs, which were critical to the development of social life in Karabük. The earliest ones were designed following the hierarchical employee status arrangement. In other words, this construction indicates that social stratification has started to dissolve in the urban setting.

The subject of social segregation in the Yenışehir district, which Çabuk and Özkan also emphasized, has been the subject of this article. However, this article examines this author's observations regarding Harvey's theory and aims to re-read the city via this theory. In the light of the theoretical inferences mentioned above, research will be carried out to examine the industrial city of Karabük. In this research, the industrial city of Karabük was investigated in light of the above-mentioned theoretical assumptions. As a result of these investigations, it was seen that the segregation and differentiation experienced in urban space had a class aspect. These segregations are a condition that has been created outside of individuals' preferences. In this aspect, urban space maintains its quality of being class and political.

THEORETICAL FRAMEWORK

Spatial inequalities brought by capitalism also determine the hierarchy of urban structures (Akgün, 2014). Therefore, it is possible to mention many theories in the context of the relationship between class and space. One of the most important of these is David Harvey's theory of class structure and residential differentiation. In this study, the reflection of class positions and space stratification is discussed regarding Harvey's theory. However, first of all, the theories in class are discussed by referring to the literature.

Theories on Social Classes

In the sociology studies of the last century, the subjects of class and social stratification occupied an important place. The class subject, which constitutes one of the most important areas of discussion in the science of sociology, can be considered a "place" or "hierarchical relationships" held within the social structure (Onur, 2017). Instead of thinking class, one of the concepts used to explain a situation of inequality, as a 'category,' it is necessary to treat it as the social role a person has and the socio-political relationships built-in in everyday life. Classes are the basis of social inequalities and discriminations, and class differences built on these inequalities and discriminations are relationships reproduced within social processes (Alpman, 2019, p. 381). The concept of class has been used to characterize social groupings or hierarchies among people. This usage is especially noted as a concept that qualifies the working class (Calvert, 1982; Öngen, 1994, pp. 55-58). The arrangement of the space in which communities live is also built according to a system based on a

hierarchy. Therefore, in the following stages of the study, the concept of the class will be examined first in the literature, and then how space is shaped, segregated, and differentiated depending on the class structure will be conveyed.

The use of the class concept in the traditional sense arises in two ways (Akbaş, 2011). These two uses become concrete in Marx and Weber's theories of class. "Class" is the basis of social analysis in Marx's theory, while it constitutes the views of social differentiation and stratification in Weber's theory. Marx and Weber's class theories constitute classical theories, and thus the class theories produced in the current sociological literature are based on these theories (Edgel, 1998, p. 81). According to Marx, who points out that class relations are at the root of social differentiation, the defining phenomenon of classification is the relations of production. In other words, the main determinant of class relations is the material production system. Classes exist within the social production system as those who have the means of production and those who do not. The concept of proletariat, the class of laborers, who have to sell their labor force for a living since they have no means of production, is meant (Marx & Engels, 1976).

One of the most important criticisms of Marx's social analysis belongs to Weber. Compared to the concepts used by Marx, Weber has a very different paradigm. In Weber's theory, the concept of class has two determinants: these are classes based on ownership and classes formed depending on status differences. According to Weber, what constitutes class relations is market relations. The basis of this grouping is "status" (Margin, 1987; Akbaş, 2011). During the post-industrial period, the class positions of the segment formed by groups such as engineers, lawyers, and psychologists called "staff" were controversial. In post-industrial societies, the source of debates related to the middle classes, whose existence was undeniable, was actually based on the concern that the contradiction between class and status should be named. Uca (2016, p. 23) mentions two backgrounds of the middle-class formation. The first background has been formed by adapting people not working in manual labor to the capitalist system. Those people develop their cultural and social capital but do not own the means of production in a changing form of production. Instead, they know the changing value of the merchandise and are masters of market relations. The second background that makes up the middle class is those who know the working class closely, have an influence on them, and help the capital owner regulate the forces of production. With the development of machine technology, labor has become a part of the machine. Despite the struggle of the working class to protect its labor, mechanization has continued; the desire to produce more efficient machines, on the other hand, has enabled professions such as technicians and engineering that could repair and maintain to gain importance.

According to Poulantzas, political and ideological relations are also structural determinants of class (Akbaş, 2011). Poulantzas states that the distinction between brain and manual labor differentiates roles in social position. The distinction between brain and manual labor represents an ideological distinction (Poulantzas, 1976). Poulantzas indicated that the new petty bourgeoisie is not of the working class. Furthermore, in the context of the productive labor/non-productive labor criterion, Poulantzas questions the relationship of the new petty bourgeoisie with the working class, characterized by brain labor, especially within engineering and technicians. On the other hand, Wright, who developed a Weberian analysis along with Marxism, mentions an approach based on the concept of exploitation. Wright's most important concept that can be associated with the topic

of the middle class is the concept of "contradictory class locations." This concept was created to show contradictory positions in class relations. For example, in capitalist production, the group of auditors and managers have adapted to the production relationships of the capitalist domination to a point, and these are authorized persons (Wright, 2014, p. 61).

Also, the term "precariat," which has a current place in social class theories, is used by Guy Standing. While defining the precariat, Standing (2011, p. 8) can be argued to have attempted an analysis based on class and status with reference to Weber. Standing talks about the types of the precariat and lists them as part-citizens, temporary workers, part-time workers, contractors, call center workers, and interns. Standing (2014, p. 104) notes that there are also belts from the "middle class" to the precariat. Standing argues that the precariat is not "part of the working class or the proletariat." "The majority of workers are unionized and collectively bargained," he adds, "with established ways of promotion, parent-understandable job titles, and local employers whose names and characteristics are familiar, long-term, regular, and specific." He states that he has the impression of "a society where he works at regular hours." Likewise, Standing (2011, p. 8) points out that the precariat has none of the social-contractual relations of the proletariat. While the precariat is expressed as a new "class in the process of formation" (2014, p. 9), it is underlined that it is not a "working class or proletariat" (2014, p. 20). Precariat also responds to this need for a new language and term. While the precariat is defined as a new category that loses its proletarian role, works in precarious jobs (2014, p. 18), and is not the "working class or proletariat," it is emphasized that it should be differentiated from the working poor and precarious employment. Therefore, the precariat points to a whole new segment.

Although various theorists produce different paradigms for the concept of the middle class, the middle class represents basically a state of being an interim class because class analyses are no longer in a bipolar structure today. The middle classes, also called white collars, cannot be defined only by economic indicators. This mass of people working in the service sector increases capital by representing it, working for it, and receiving wages. In this aspect, they present a state of being in a contradictory position. Thus, the concept of the middle class emerged in 20th-century class theories. One of the determining factors for this study is the concept of the middle class, which emerged after Marxism's critiques. Also, in sociology, the upper-middle class is the social group constituted by higher status members of the middle class. This is in contrast to the term lower middle class, which is used for the group at the opposite end of the middle-class stratum, and to the broader term middle class. There is considerable debate as to how the upper middle class might be defined. According to Weber, the upper middle class consists of well-educated professionals with postgraduate degrees and comfortable incomes. The upper-middle class mostly defines those working in higher professional positions with higher incomes and social status. (Aslan, 2012). Carchedi (1977, p. 89) describes the upper-middle classes as paid managers and supervisors. It has neither economic nor legal ownership of the means of production. It fulfills the function of capital. It is the one that suppresses the capital while performing its function. On the one hand, it is on the side of the capitalist and on the other hand, it is on the side of labor. The upper-middle class consisting of managers, job security, higher wages, social conditions, etc. compared to the working class. It has advantages in terms of possibilities (Goldthorpe, 1996).

Urban Space and Harvey's Theory of Class Structure and the Residential Differentiation

Social theorist and geographer David Harvey establishes a close relationship between the development of capitalism and urbanization. In *Social Justice and the City*, where he discusses economic inequality, social justice, and urban experiences, he aims to expand the boundaries of the field covered by the discipline of geography and provide it with a scope and quality that will provide a perspective towards society. Instead of asking "what is space," this study explores how diverse human behaviors create different spatial forms and the linkages between space and social power and power relations. (Harvey, 2003, p. 83). Also, Harvey bases the city on the class struggle within the framework of capitalism. Harvey's articles about the city and its struggles are brought together in his book *Spaces of Capital* (Harvey, 2012, p. 424). Here, in a wide and connected field ranging from geography to economics and urban studies, there are important articles in which the dimensions of geography and space are added to Marxism and social theory, and the geopolitics of capitalism is examined. According to Harvey (2012), there is an inevitable relationship between accumulation processes and the built environment. And urbanization should be seen as a spatially based social process. In other words, it is a class-based process. Cities produced after the industrial revolution have become places where the segregation between social classes deepens. Capital reshapes urban spaces in line with its interests and excludes the low-income segment.

In *Rebel Cities*, in a context starting from Harvey Lefebvre and his famous "Right to the City" proposal and extending to the debates about today's cities and the city, it reaches a framework that requires the overthrow of the capitalist system with a revolutionary movement. In this work, Harvey examines the forms of struggle for the city in relation to the processes of capital accumulation in American cities since the 1980s (Harvey, 2013, pp. 174-179). The "theory of class structure and residential differentiation" produced by Harvey, following these views, is the focus of this article. According to Harvey (2002, p. 11), residential differentiation occurs because capitalist relations of production lead to changes in urban space, and social segments experience differentiation in the possibilities of access to resources. Education, health, transport, and communications are the basic public services. Inequalities experienced by various segments of the urban population in public infrastructure opportunities arise as a result of residential differentiation. Residential differentiation should be explained within the framework of the reproduction of social relations in capitalist society (i.e., by social differentiation). Residential differentiation reflects a differentiation that leads to segregation in many areas and becomes a loop. In other words, each social status unit can settle in differentiated spaces in the form of blue-collar and white-collar groups. Harvey argues that all of these are shaped by the individual's will. Harvey puts forward several assumptions to associate residential differentiation with social structure.

These assumptions are based on the continuous expansion of capital in a rapidly increasing urbanization process (Harvey, 2002, p. 14). According to Harvey's theory:

- Residential differentiation should be explained within the framework of the reproduction of social relations in capitalist society.
- Spatial units, neighborhood units, and local communities are unique social interaction environments that will significantly affect the values, expectations, consumption habits, market equipment, and states of consciousness of individuals.
- The separation of large population densities into different communities serves division of class consciousness in the Marxist sense. Thus it makes difficult the transformation from capitalism to socialism through class warfare.
- However, residential differentiation models reflect and embody many of the contradictions in capitalist societies. Consequently, the processes that generate and maintain them are areas of instability and conflict.

With these assumptions that he has put forward, Harvey mentions a forced relationship between residential differentiation and social order. By emphasizing neighborhood units, Harvey draws attention to local communities' impact on their environment. However, there are material conditions of capital accumulation in the background of this effect. The spaces where the communities live are the spaces where the labor force suitable for the place of production is reproduced. Thus, the white-collar labor force is reproduced in a white-collar neighborhood unit, while the blue-collar labor force is reproduced in a blue-collar neighborhood unit (Kurban & Akman, 2019, p. 3268). According to Harvey's theory, the residential differentiation model is as in Figure 1.

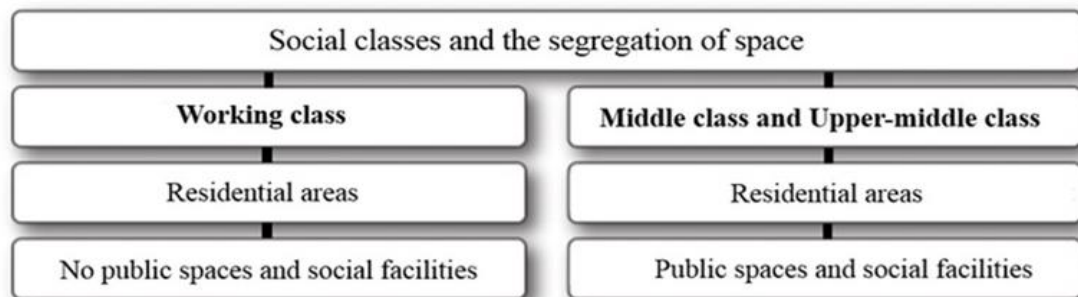


Figure 1 - Residential differentiation Model According to Harvey's Theory.

The relationships between values, consciousness, ideology, and life experience are crucial. To continue the debate at this point, Harvey emphasizes that forces outside individuals will produce preferences and choices. If residential differentiation is largely already established, individuals have to adapt their preferences to it. The market and power mechanisms destroy the chances of choice. When the power mechanism makes a decision on settlement, this situation is no longer open to choice (Harvey, 1992, p. 148). Consequently, according to Harvey, residential differentiation is produced by powers from the capitalist production process; it should not be perceived as the product of people's autonomous and spontaneous preferences. Therefore, instead of seeing residential differentiation as a system of preferences formed based on social relations, we need to perceive it as a process in which social differentiation is produced and maintained.

Although this article is re-reading the urban space through Harvey's theory, it should be reminded of the theoretical contribution of Engels' *Housing Problem* on the urban space. Engels makes a historical and theoretical contribution to class politics in a wide space by approaching the problems of regional equality, environment, and urbanization not as a contradiction between capitalist society and nature-derived from abstract intellectual determinations but as the real contradiction inherent in a capitalist society, the contradiction of labor and capital, and social classes. In the *Housing Problem*, Engels states that there is almost no housing shortage in cities established as industrial cities from the beginning. Undoubtedly, what is meant here is not that the real housing problem of the working class is not experienced in such cities but that no remarkable concrete debate on the housing problem has come to light in these cities. Or on the contrary, just as labor exploitation is normalized in a concrete place where the housing deficit has become evident, under the dominance of political processes, the real housing problem of the working class, which is at the level of a general law of capitalism, is rendered invisible as if it were normal, and interest, despite all its temporariness, is a certain housing deficit, or it can be focused on the housing deficit of the bourgeoisie.

In light of this theoretical assessment in the context of class structure and residential differentiation, a brief history of Turkey will be mentioned first in this article. Then, in the Karabük-Yenişehir region, an assessment of how urban space has been produced and differentiated based on the class structure fed by economic, cultural, and symbolic indicators will be conducted.

KARABÜK AND PLANNING RESIDENTIAL DIFFERENTIATION

Karabük was considered important for this study in the context of being an industrial city that reflects the development policies of the Republican period in Turkey. Moreover, especially Yenişehir and Ergenekon districts, which are specially planned for factory staff, constitute the case study of this article. Thus, in this chapter, a theoretical reading of these areas will be made in the context of Harvey's urban theory mentioned above.

The Emergence of Industrialization and Hierarchical Differentiation of Space in Karabük

In the early twentieth century, Turkey's Republican rule inherited an economy that depended mostly on agriculture rather than industry (Özkan Altınöz, 2016, p. 363). As a result, many institutions have sprung up to help with industrialization. The Turkish Industry Credit Bank was established to assist in the financing of government-owned and operated industrial undertakings. The Industry and Mine Bank was established to fund the organizational capacity of the two key sectors of the economy; the Government Industrial Office was tasked with activating industrial investment policy, and the Government Industrial Office was tasked with activating industrial investment policy. (Tuna, 2009; Özkan Altınöz, 2016, p. 364). The management and investment strategies were then integrated to establish heavy industry in the country. Sümerbank was founded to establish iron-steel mills. Their feasibility analysis for investment in the Karabük area discovered that it was far from coal reserves and steel beds, resulting in higher production costs. However, their evaluation had to consider broader strategic and military goals, making it a suitable location for such an investment. In 1936, Sümerbank and the English Brassert business linked a deal for

the Karabük venture. On 3 April 1937, the president laid the foundation for the factories to be built and installed by a British business. (Tümertekin, 1954; Özkan Altınöz, 2016, p. 364).

The agreement for the factories' construction also raised anticipation for developing new residential zones and cities. Dr. Martin Wagner, a German architect, predicted that new cities, such as Karabük, would arise from these industrial districts and that the Sümerbank Karabük Iron–Steel Factories would raise hopes for the construction of modern city houses in the vicinity. Even after the establishment of Karabük's municipality in 1938, Sümerbank's requirements remained to shape significant developments in the city (Fındıkoğlu, 1962). It was not easy to establish such a large-scale industry. The iron–Sümerbank operated steel factories, but the permanent staff was difficult to come by due to worker concerns about workplace safety and conditions. The industries' administration was frequently troubled by this issue; therefore, Sümerbank was urged to write to the Turkish Ministry of Justice regarding the idea of creating a prison in the area to supply factory workers. However, this system of solitary confinement was not a practical option. Sümerbank wanted a permanent team that was well-trained. As a result, it was decided that their incomes would be increased in tandem with improving their living conditions. Sümerbank commissioned Henry Prost, a French urban planner, to design a new community known as 'Yenişehir/New City' in 1939 (Özkan Altınöz, 2016, p. 364).

In 1940, 3096 workers, 220 officers, and 26 engineers were registered in the factory. In response to the resulting housing problem, it was decided that Sümerbank create a modern campus for workers, artisans, officers, engineers, and managers who would work within the factory. Sümerbank had the famous French architect-urban planner Henri Prost make the plan of this settlement, called “Yenişehir”, in 1938 (Eröz, 1962; Çabuk et al., 2016, pp. 23-24). Like other Sümerbank factory settlements, many public buildings have been built in the Yenişehir settlement and housing areas (Çabuk, 2017). However, when the designs of the houses and public buildings built for factory employees and their locations on campus are examined, it is clear that the employees' status positions have been considered. As a result, designing the space based on the status differences of the factory employees revealed a two-zone structure in Karabük. As a result, different housing types were created for workers in the Ergenekon district of the city and managers, engineers, civil servants, and workers in the Yenişehir district (Figure 2).



Figure 2 - a) Yenişehir District b) Ergenekon District c) Factory Area (Google Earth, 2021).

The whole campus was planned as two zones by Henri Prost. However, while the Yenışehir district was declared an urban protected area in 1996, the Ergenekon district was excluded from the scope. As a result, a conservation development plan was prepared only for the Yenışehir district, and the Ergenekon district was excluded from the scope of protection. (Çabuk, 2017, p. 82). The residents of the Yenışehir district were segregated into socially and physically divided regions, with each employee's living quarters organized according to socially decided rules. Various groups of workers were lodged here, depending on their employment status. Sümerbank's power in the planning procedures, led by Sümerbank members of staff, was responsible for the hierarchical formation of Karabük at the time (Sümerbank, 1944). The management of the iron–steel companies in the city's core district, Yenışehir, took special care to ensure a stable workforce. Perceptions of the population's social demands in a modern industrial setting were among the factors considered. Hospitals, schools, movies, and different social clubs were all part of their objectives. These sophisticated amenities allowed residents to socialize and spend their leisure time. Different work groups were also assigned their own social gathering areas. The city's second urban section was built alongside the Yenışehir district. The factory supervisors and their families were the target audience for this development. This section's architectural layout was created in the 'siedlung' or 'cite jardin' style, as was the case with all of Karabük's early dwellings (Kessler, 1949; Özkan Altınöz, 2016, p. 366).

Various housing developments were added throughout time after the building began in the 1940s, as seen by the physical differences between the residences built at different times. The city's third portion was set aside for general laborers, whose salaries were lower than those of the other workers. This part of town was closer to the industrial zone (Fig.2). 'Yüz Evler' and 'Dere Evler' were designed as blocks of residences in this third area. The siedlung construction principles were also followed in constructing these blocks (Togay, 1959). On the other hand, the gardens were constructed and laid out to allow for small agricultural operations, which satisfied the workers' families, who had mostly come to the city and were accustomed to country life. On the other hand, the blocks' placement was discovered to hinder workers' family privacy. The concept of a garden city, known as siedlung, emerged at the end of the nineteenth century and was given that term by Ebenezer Howard in 1898. His urban idea included green belts and was intended to house 30,000 people. The fundamental goal of the garden city concept was to relieve urban overpopulation and pollution, which were prominent in industrial towns at the time (Oktay, 2012; Özkan Altınöz, 2016, p. 366). Yenışehir district, as a twentieth-century settlement, followed the same romantic and contemporary route. While interest in nature suggested a continuation of romantic recognition, the building was on the verge of becoming modernist. Siedlung became an architectural language for any modern, urban context in Karabük's case, as it did in many other similar examples in Turkey (Akcan, 2005; Özkan Altınöz, 2016, p. 367).

In addition, those who lived in the Yenisehir district were also located in different places, depending on their status. The factory administration was compelled to begin intense building activities due to the strategic initiatives to attract a permanent workforce to the industrial zone. It's also worth noting that the social infrastructure was designed to retain people in their respective social groups. Each group appears to have had its particular infrastructure, and members of one group were sometimes prevented from trespassing in regions that belonged to other organizations due to tight

membership rules. This social division was especially effective at Karabük's different social clubs, which were vital to the city's social growth. The first ones were built following the hierarchical employee level system; however, as populist policies became more prevalent in the next era, the spatial organization of social infrastructure changed with time. Planners aimed to meet the community's demand to interact with one another across pre-determined segregations when social boundaries blurred. The Worker's Club, established after the 1960s in the heart of Yenışehir District, is a significant example of how the built environment of Yenışehir began to lose the earlier ideals of modern urban planning. In other words, this structure implies that socio-economic stratification in the city had begun to dissipate (Özkan Altınöz, 2016, p. 367).

Housing Areas

The first housing group designed for workers in the Ergenekon district was "Yüzevler." This housing group, which was completed in 1942 and consisted of 190 houses, is single-story and in a row house layout. Some have two floors, and the kitchen unit in these houses is located in the basement. The gardens of the houses were created as an area where workers could continue their traditional habits. Dereevler constitutes other worker houses built after Yüzevler. It is located to the east of the Yenışehir district. They are in a row housing type consisting of ten rows and 163 houses with small gardens. These houses, built in 1945, are single-story and two-room (Kaya, 2011, p. 58). Another example of worker houses in the Ergenekon district is the workers' pavilions. It is one of the first examples of buildings produced in the city together with the factory (Öktem, 2004). The interiors of the workers' pavilions, placed as one-story thin and tall units, were designed so families could live later. All these housings, designed for the worker class, were built with the masonry system (Figure 3).

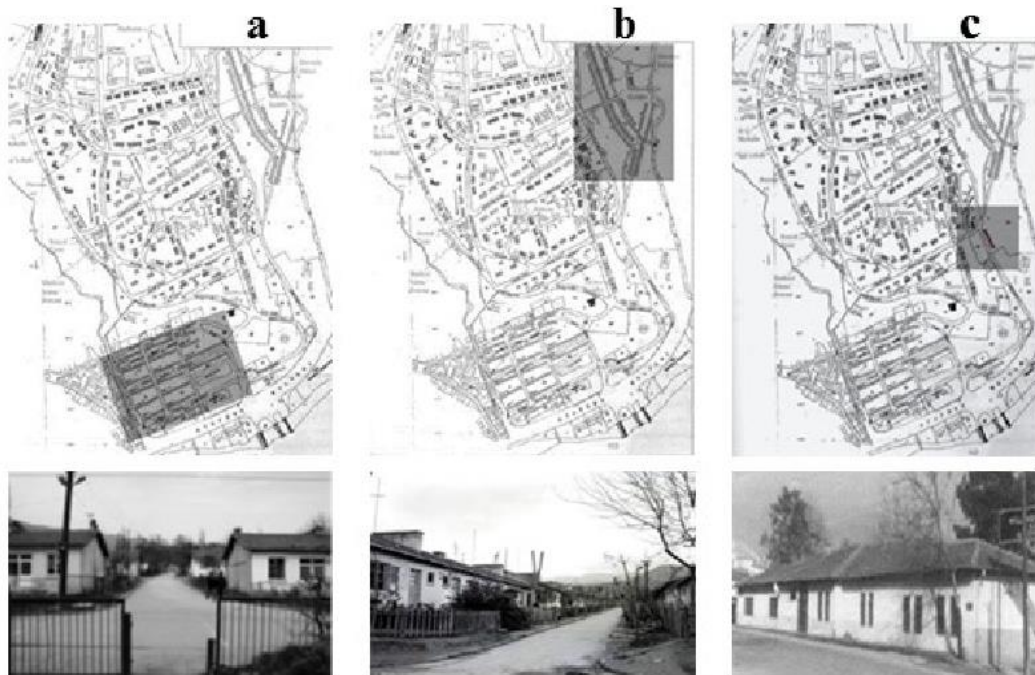


Figure 3 - KISF Worker Houses and Settlements; a) Yüzevler; b) Dereevler; c) Worker Pavilions (Kaya, 2011).

Yenişehir district, the modern face of the city, is a privileged area designed for the factory's managers, officers, and engineers. In this area, there are 3 manager houses, 13 engineer houses, 73 Çamlık houses for senior workers, 20 officer and senior officer houses. In the district, which was at a higher elevation than the Ergenekon district, cinema, clubs, and taverns where employees could continue their social lives were built in addition to houses. Çamlık houses were built for senior workers in the Çamlık area of the Yenisehir district. These houses are the first worker houses built in Yenisehir. Çamlık houses are one-story and consist of 73 blocks. Each block has two houses, and each is 115 m² in size (Çabuk, 2017, p. 85). Some of the Çamlık houses were also designed as twin or row houses consisting of four units. The Bachelor lodgings for engineers, designed by architect Münici Tangör, one of the well-known architects of the period, are located next to the social facilities in the settlement. Münici Tangör, one of the architects of the Republican period, made important contributions to the efforts to create a modern city in Karabük from 1953 to 1963 (Özkan, 2010). The bachelor lodgings do not have kitchens, and food needs are met from the social building. Bachelor lodgings were built with reinforced concrete system and have central heating (Kaya, 2011, p. 66) (Figure 4).

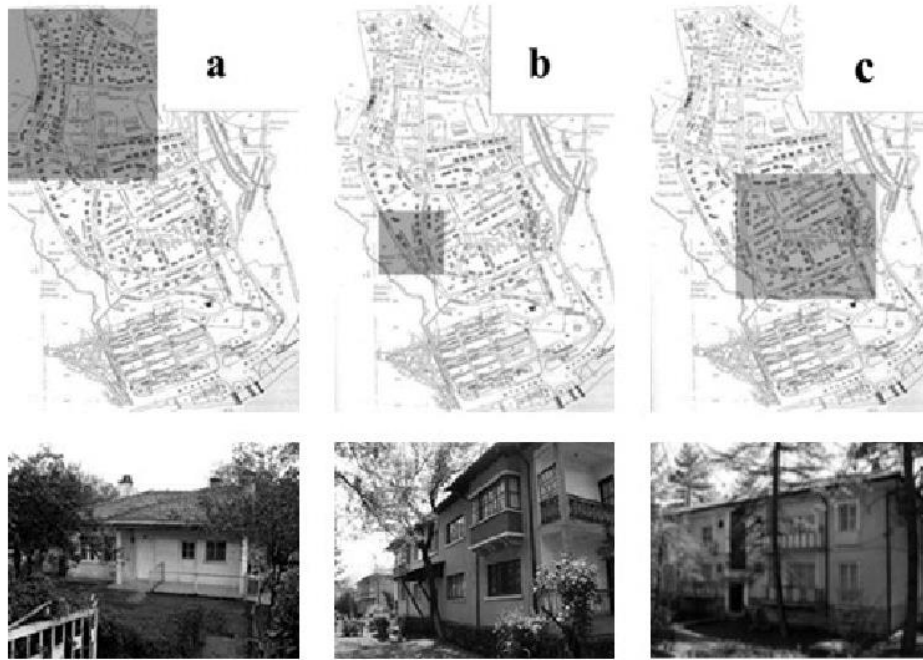


Figure 4 - Middle Class Settlements and Housing Types; a) Çamlık Houses for senior workers b) Bachelor Lodgings for engineers c) Officer Houses (Kaya, 2011).

Another building group designed for senior officers in the Yenisehir district is Kübana houses. These houses, whose architect was Münici Tangör, are the highest floored buildings in the settlement. Kübana houses have four floors and eight apartments. On the facades of Kübana houses, the stairwell is highlighted by vertical lines. There are balconies and windows along the front facade. Balcony parapets and floorings create a horizontal linear effect, while the windows and concrete elements in the stairwell on the facade create a vertical effect (Onur, 2021, p. 672). The structure was built with a modernist approach with both facade and plan solutions. Since

Kübana houses were designed for senior officers in a sense, they are a significant example that confirms the social status-housing relationship (Figure 5). The manager houses, which are 13 in Yenisehir district, are two-story and have a reinforced concrete bearing system. They are located near the area where social and cultural equipment is more in the Yenisehir district. Entrance to the houses is provided by a verandah located on the front facade, and they have central heating. These houses, built in 1939, are cubic structures where the principles of modernism were applied. Finally, the design of general manager houses built for senior managers is similar to that of manager houses. General manager houses, which are 3 in total, are cubic structure examples with garden house typology shaped by modern design principles like other types of manager houses (Figure 5).

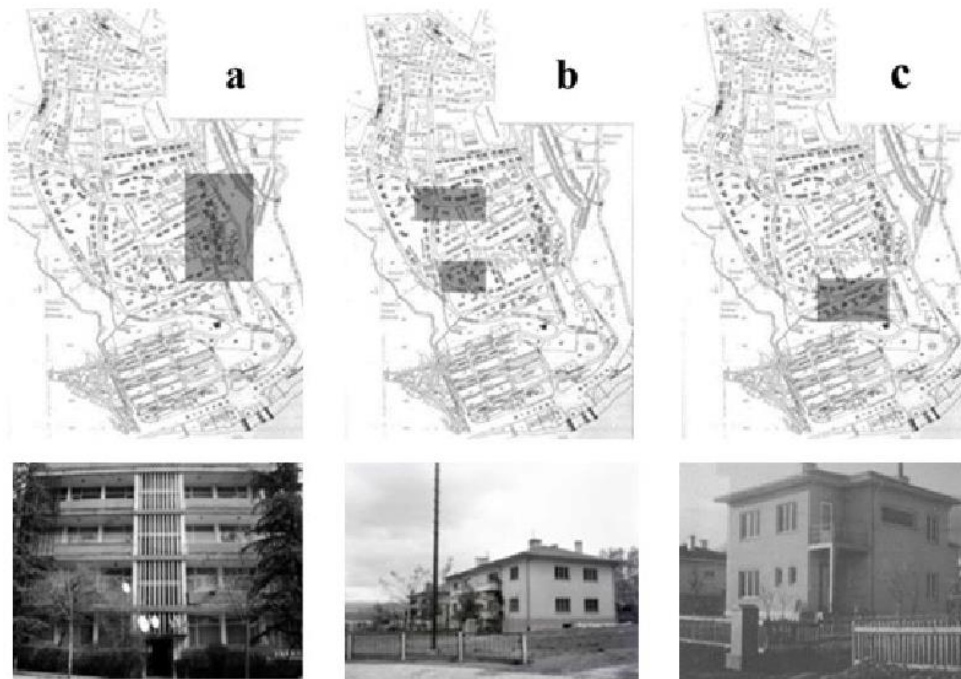


Figure 5 - Upper-middle Class Settlements and Housing Types; a) Kübana Houses for senior officers b) Manager Houses c) General Manager Houses for senior managers (Kaya, 2011).

Public Spaces

Sümerbank has also been involved in zoning efforts for Turkey's social development, in addition to the creation of industrial enterprises. In this context, urbanization operations were carried out in the early years of the factory's inception due to the necessity for housing for employees, and the building of parks, gardens, sports fields, and a bazaar, in addition to single-story and garden houses, was planned (Kütükçüoğlu, 2010). Kardemir (Kardemir Iron and Steel Factory-KISF) has provided various supports and facilities in the fields of health, recreation, village development, religion, and entertainment for its employees and the Karabük people (Karakök, 2010).

In addition to housing in the Yenisehir district, social reinforcement applications have also been made to meet employees' social needs. For this reason, public buildings such as hospitals, schools, cinemas, and clubs belonging to various professional groups have been built over time (Özkan & Çabuk, 2010, p. 361). Significant transformations have occurred in the socio-cultural life of the city

thanks to cinema of Yenişehir, engineers' club, officials' club, sports area as garden with pool, social building, wide roads, and parks (Karakök, 2010) (Figure 6).



Figure 6 - Public Spaces in Yenişehir (adjusted from KISF archive).

As in Figure 1, which visualizes Harvey's theory, no public facilities were planned for the working class. In Yenişehir, different club structures were built for officers and engineers working in the factory. These clubs are places where factory staff can perform their social activities. These clubs have also held various celebrations (Kaştan & Demirci, 2010). These clubs, created for employees, have differed by the status of employees. The Yenisehir district has club structures for three different types of staff. These are the "Officers Club," the "Engineers Club," and the "Workers Club" (Figure 7). However, the Workers Club was built in a later period. The Officers Club was the first club that was built. It was started to be used in 1940. The Engineers Club was built in 1950 as a single-story building. The Workers Club was built in 1967 as a two-story reinforced concrete structure. It was built for workers' wedding events and as a daily entertainment space. With their architectural qualities and spatial contexts, club structures in Yenisehir are an indicator of labor stratification and a representative of status differences (Çabuk, 2017, p. 86). In Karabuk, the main entertainment places of the city have been open-air and indoor cinemas for a long time. There are three indoor cinemas, including the Yenisehir cinema, which has excellent acoustics and is located

in the Yenişehir district. The building was designed not only to be used as a cinema but also to host theater and opera performances. Yenişehir Cinema was designed to meet the needs of wealthy families living in Yenişehir. It is one of the important heritage structures of Karabük Yenişehir Campus, as a structure that has been carefully considered from its planning to the selection of materials (Özkan, 2015, p. 89) (see Fig. 7).

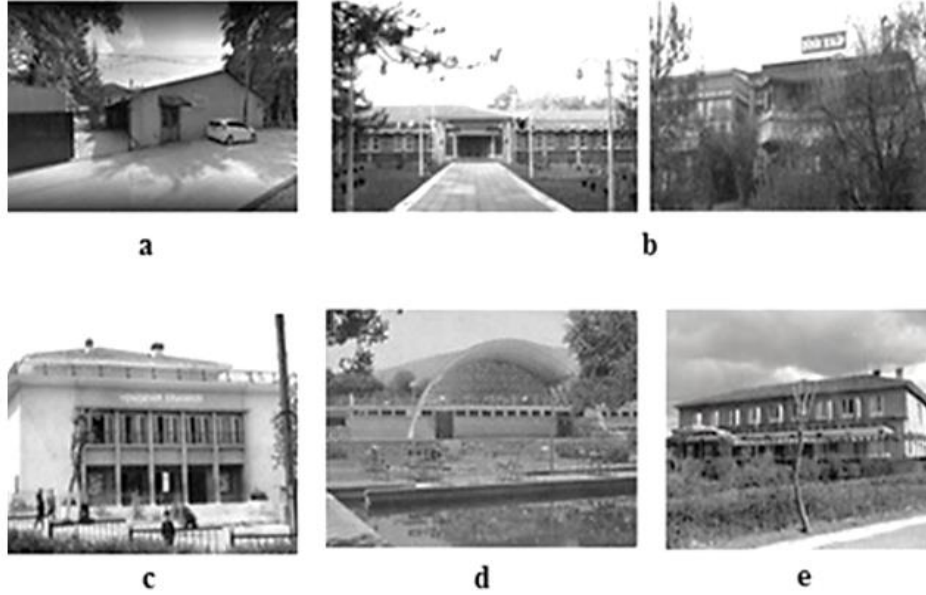


Figure 7 - Clubs and Social Buildings in Yenişehir; a) Club of Officers b) Club of Engineers c) Cinema of Yenişehir d) Garden with Pool e) Social Building (Kaya, 2011).

In addition, the swimming pool, which also serves as a summer amusement place and park in Yenişehir, is one of the most important entertainment places in the city. The swimming pool provides the opportunity to learn swimming for factory employees and the public. The pool was also used as a cafe during summer and for different social activities (Kaya, 2011, p. 76). In addition, in 1958, the Social Building was built as a restaurant, cafeteria, and guest house in the Yenişehir district. It was intended to serve mainly senior guests and bachelor staff. The garden with a pool (see Fig. 7), designed by architect Münci Tangör, was built near the cinema in the Yenişehir district in 1948. The structure is two-story. Closed spaces are observed in the basement, the structure's first floor is semi-open, and its garden is used as open space. Important celebrations and entertainment of the upper-class staff have been held here. In addition, the facility has a restaurant, bar, swimming pool, and cabins (Çabuk, 2017, p. 88).

It is seen in this place that the distinction between men and women disappeared in the early Republican period. Furthermore, the place of sport is very important in the modern society targeted by the Republic. In the 1940s, areas for sports activities were also considered in the Yenişehir region. The stadium, basketball court, and swimming pool in Yenişehir can be shown as examples of sports areas. The stadium's foundation was laid in 1957 and aimed at ensuring public socialization. Like the Yenişehir cinema and the pool garden, the Yenişehir Stadium project was also drawn by architect Münci Tangör (Kaya, 2011, p. 82). With all of these features, the Yenişehir district in Karabük, the Republic's contemporary town, is a model settlement that attracts attention in terms of spatial context and the planned formation of social life. The Yenişehir district has

become a campus representing the state's new regime, ideology, and way of life and has gained importance in achieving international standards.

FINDINGS

It was observed that in Karabük, an industrial city, urban space was transformed depending on industrialization movements. In this transformation process, the presence of social classes in the city also played a role. In parallel with industrialization, social classes became evident in the city, and the upper-middle, middle, and working classes became visible. Throughout the late 1930s, with the establishment of the iron and steel factory, migration from the countryside to the city surged, which also increased the working class in the city. Ergenekon has been where the workers' accommodation needs have been met due to its proximity to the facility. Furthermore, it was discovered that there was a problem of housing shortage. In order to solve this problem, the Yenisehir district of the city was selected, and several social reinforcement areas were constructed in the region, as well as housing. Figure 8 depicts the location of housing and social facilities in the Yenisehir district, which was planned for the middle class and upper-middle class, and the Ergenekon district, which was home to the working class.



Figure 8 - Upper-middle Class, Middle Class and Working Class Housing Areas and Social Facilities (adjusted from KISF archive).

When the housing types built for the working class in the Ergenekon district were examined, it was found that these structures were single-story with small gardens and offered only functional, simple solutions. An example of a specialized architectural design for working-class housing cannot be mentioned. The state built these houses with an understanding of collective production and a common typology. Worker houses were simply close to the factory and did not have a close relationship with other social facilities. Although they were few in number, manager houses and general manager houses, which were built for the upper-income group, were located closest to the social facilities. In addition, it was observed that the housing types built for the officers, managers, and general managers who are factory employees were positioned in the Yenisehir district, which architect Prost specially created with the garden-city planning theory. These housing types in the Yenisehir district were also positioned differently depending on the status of the employees. Houses of the middle class, represented by officials and engineers, were located on the outskirts of the Yenisehir region. In contrast, the houses of managers and general managers, which were upper-middle class, were located in the central area. These upper-middle-class houses were close to the cinema, garden with a pool, clubs, and other social facilities. In addition, it was observed that Kùbana houses, designed for the upper-middle class, formed a border between worker houses and the Yenisehir district (see Figure 8).

The fact that the Yenisehir district is at a higher elevation than the Ergenekon district indicates that area preferences were made consciously. In other words, decision-makers deliberately constructed the settlement and living areas of the upper-middle class in the Yenisehir district, which was located at a higher level than the Ergenekon district. In this sense, it is observed that urban space production is related to class issues and political situations. In the context of residential differentiation, in addition to differences in quality, such as the design and construction technique of upper-middle-class and working-class houses, it is noteworthy that the social facilities were also built in the Yenisehir district which was the campus of the upper-middle class. The working class's access to these social facilities was determined to be constrained as a result of this predicament. Due to this situation, the working class had restricted access to these social facilities. As a result, residential differentiation has made it easier for relatively privileged segments to move away from other social groups and identities that do not resemble them.

DISCUSSION and CONCLUSION

This article evaluated the residential differentiation practices based on class location through Karabük that is an industrial city. In order to make this evaluation, first of all, the literature examining the spatial development process and planning strategies in Karabük was examined. Then, a social settlement analysis of the region was made in the light of archival data and literature reviews of the region examined. Since the information obtained from the study was discussed with reference to a specific theory, it was desired to prove whether Harvey's class structure and residential differentiation theory could be validated for this region. According to archive data obtained from KISF, in the social settlement in Yenisehir district the middle class and upper-middle class are located close to each other and close to social spaces. It is seen that the upper-middle class is located closest to clubs, sports fields and cinemas. The working class, on the other hand, is

positioned the furthest from these social spaces but closest to the factory area. A club for the working class was built only towards the end of the 20th century.

The article, which started this evaluation depending on Harvey's theory of class structure and residential differentiation, concluded that class locations and identities are one of the primary determinants in urban space formation. As mentioned in the theory, residential differentiation has been produced by powers arising from the capitalist production process and is not a product of individuals' own preferences. Therefore, instead of being a system of preferences formed on the basis of social relations, residential differentiation has been the process in which social differentiations are produced and maintained. The practice of residential differentiation of the city was reproduced and interpreted in the context of the industrial settlement in the first half of the 20th century. In this context, the organization of space in Karabuk, an industrial city, has also been formed by economic, sociological, ideological, and political factors.

When the relationship of residential differentiation with social practices is examined, it is seen that the concepts of status, class differences, hierarchy, and privilege are predominant within the emerging concepts. Within the definition of status in the urban area, a division on the basis of professional categories has been also experienced. The distribution of professional occupation categories that are qualified as blue-collar workers and white-collar workers reveals that there is a residential differentiation. It has been determined that the separation of the upper-middle class and working class increases residential differentiation. It is understood that residential differentiation is a strategic production, and concepts associated with the economic politics of space have emerged from the spatial practical relationship. Residential differentiation exists as the practice of physical space through social practices. Residential differentiation has occurred in a nature that reflects and embodies inequality and discrimination in social areas.

In conclusion, as in Harvey's theory, spatial inequality and divisions brought by the capital system have also determined the hierarchy of the urban structure. Residential differentiation, which is not a product of the spontaneous preferences of individuals, has been formed due to the fact that capitalist production relations have led to changes in urban space and different class groups have experienced differentiation in the possibilities of access to social resources. Natural and social resources are not evenly distributed in urban areas, which has also led to a differentiated socio-economic structure and settlement in urban areas. In cities where socio-economic characteristics differ, social status, professional and cultural characteristics, lifestyle, and income level cause residents to settle in different areas of the urban area, and these socio-economic differences have shaped the space. As the study tries to express; Inequalities in the utilization of physical space opportunities by only some segments are an indicator of spatial segregation. With the existence of different social classes that occurred with the change of the mode of production, the urban space has also been transformed and there have been social segregations in the urban space. This situation has resulted in social polarization by emphasizing social class differences. In briefly, Harvey's class structure and residential differentiation theory has been verified in the case area where social and residential differentiation takes place.

LIMITATIONS

The study had limitations due to physical conditions. Only a few of the housing types are existing mentioned in the study. Therefore, the images of the houses were obtained from the archives. And the interiors of the houses could not be reached and no comparison could not been made in this regard. In this way, the limit of the study was created within the scope of the exterior architectural features of the houses, their locations and their access to social resources.

Conflict of Interest Statement | Çıkar Çatışması Beyanı

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement | Finansman Beyanı

No financial support was received for conducting the research and preparation of the article.

Ethical Statement | Etik Beyanı

The author confirms that the article ‘A Planning Examination via Class Structure and Residential Differentiation Theory: The Case of Karabük’ was written with full consideration to ethical norms.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/E/F/G/H

REFERENCES

- Akbaş, K. (2011). *Avukatların Sınıfsal Konumlarındaki Değişim: İstanbul Örneği* (Unpublished doctoral dissertation). Anadolu University, Eskisehir, Turkey.
- Akcan, E. (2005). *Modernity in Translation: Early Twentieth-Century German-Turkish Exchanges in Land Settlement and Residential Culture*. Columbia: Columbia University.
- Akgün, A. (2014). Ayrışma-ayrıştırma temelli mekansal pratiklerin toplumsal pratiklerle ilişkisi üzerine bir çalışma. *İdealkent*, 12(1), 28-39.
- Alpman, P. (2019). Mekân, kimlik, sınıf: farklar neden bir arada barınamazlar?. *İdealkent*, 26(10), 373-401.
- Asiliskender, B. (2009). *Anadolu'da "Modern" Bir Yaşam Kurmak: Sümerbank Kayseri Bez Fabrikası ve Lojmanları*, Fabrika'da Barınmak, Der. A. Cengizkan, Ankara: Arkadaş Yayınevi.
- Aslan, Z. (2012). Geçmişten bugüne eleştirel bir orta sınıf değerlendirmesi, *Toplum ve Demokrasi*, (6), 55-92.
- Bottomore, T. (1990). *Sosyolojik Çözümlemenin Tarihi*. Ankara: Verso Publication.
- Calhoun, D. (1994). *Sociology*. New York: Mc Graw Hill Inc.
- Calvert, P. (1982). *The Concept of Class*. New York: St. Martin's.
- Carchedi, G. (1977). *On the Economic Identification of Social Classes*. England: Routledge and Kegan Paul.
- Cengizkan, A. (2000). Türkiye'de fabrika ve işçi konutları: İstanbul Silahtarağa Elektrik Santrali, *ODTÜ MFD*, 20(1-2), 29-55.
- Çabuk, S., Demir, K. & Gökyer, E. (2016). Cumhuriyet'in yeni kenti Karabük'ün 1937-1988 dönemi mekansal gelişimi ve şehir planları. *Karabük Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 2(2), 20-39.
- Çabuk, S. (2017). *Cumhuriyet Dönemi Karabük Kentinin Biçimlenişi ve Kamu Mekânları*. In Çelikyay S. (ed) *Kamusal Alanların Mekânsal Organizasyonu* (pp. 69-91). Bartın.
- Dahrendorf, R. (1968). *Class and Class Conflict in Industrial Society*. California: Stanford University Press.
- Duru, B., Alkan, A. (2002). *20. Yüzyıl Kenti*. Ankara: İmge Kitabevi.
- Durukan Kopuz, A. (2018). Alpullu Şeker Fabrikası ve işçi konutları, *METU Journal*, 35(2), 29-54.
DOI: 10.4305/METU.JFA.2018.2.7
- Edgell, S. (1998). *Sınıf*. Ankara: Dost Kitabevi.

- Engels, F. (1992). *Konut Sorunu*. (G. Özdural, Çev.) Ankara: Sol Yayınları.
- Fındıkoğlu, F. (1962). *Kuruluşunun XXV. Yılında Karabük*. Türkiye Harsi ve İçtimai Araştırmalar Derneği, Sayı 46, Seri A. İstanbul: Fakülteler Matbaası.
- Goldthorpe, J. H. (1996). Class analysis and the reorientation of class theory: The case of persisting differentials in educational attainment. *British Journal of Sociology*, (45), 481-505.
- Gündoğan, Ö. (2019). Konut sorunu: Engels'in kent kuramına katkısı, *Madde, Diyalektik ve Toplum*, 2(4), 341-347.
- Harvey, D. (1992). *Class structure and the residential differentiation, The Urban Experience*, 2nd edition, UK: Blackwell.
- Harvey, D. (2002). *Sınıfsal Yapı ve Mekânsal Farklılaşma Kuramı*. Ankara: İmge Yayınevi.
- Harvey, D. (2003). *Sosyal Adalet ve Şehir*. (M. Moralı, Çev.) İstanbul: Metis Yayınları.
- Harvey, D. (2012). *Sermayenin Mekânları: Eleştirel Bir Coğrafyaya Doğru*. (B. Kıcı, D.Koç, K. Tanrıyar, S. Yüksel, Çev.) İstanbul: Sel Yayıncılık.
- Harvey, D. (2013). *Asi Şehirler: Şehir Hakkından Kentsel Devrime Doğru*. (A. D. Temiz, Çev.) İstanbul: Metis Yayınları.
- İnce, M. (2017). Toplumsal tabakalaşma ve eşitsizlik. *Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 19(1), 294-319.
- Kahraman, H. B. (2004). *Postmodernite ile Modernite Arasında Türkiye*, İstanbul: Everest Yayınevi.
- Kanbur, R. & Rapoport, H. (2005). Migration selectivity and the evolution of spatial inequality. *Journal of Economic Geography* (5), 43-47. <https://doi.org/10.1093/jnlcecg/lbh053>
- Karakök, T. (2010). *Kardemir ve Karabük*. In: Kuruluşundan Bugüne Karabük ve Demir Çelik Sempozyumu, pp. 281-290, Karabük, Turkey.
- Kaya, S. (2011). *İdeoloji, gündelik yaşam pratikleri ve mekân etkileşiminde Karabük Demir Çelik Fabrikaları yerleşiminden öğrendiklerimiz*. (Unpublished thesis). Gazi University, Ankara, Turkey.
- Kurban, S. & Akman, H. (2019). Aynı mekânda ayrılıklar: David Harvey 'in mekânsal farklılaşma kuramına dair bir değerlendirme. *International Social Sciences Studies Journal*, 5(38), 3266-3273. <http://dx.doi.org/10.26449/sss.1565>
- Kütükçüoğlu, M. (2010). *Millî şef dönemi'nde Karabük* (Unpublished Master Thesis). Marmara Üniversitesi Türkiyat Araştırmaları Enstitüsü, İstanbul, Turkey.
- Mardin, S. (1987). *Max Weber Üzerine*. İstanbul: Hürriyet Vakfı Yayınları.
- Marshall, G. (1999). *Sosyoloji Sözlüğü*. Ankara: Bilim ve Sanat Yayınları.
- Marx, K. & Engels F. (1976). *Komünist Manifesto*. D. J. Struik (Ed.). Ankara: Sol Yayınları.

- Massey, D. S., Rothwell, J. & Domina, T. (2009). The changing bases of segregation in the United States. *The Annals of the American Academy of Political and Social Science*, (626), 74-90.
<https://doi.org/10.1177/0002716209343558>
- Onur, B. (2017). *Beyaz Yakalı Üretken İşçi Olarak Mimar: Meslek Pratiği ve Sınıf Algısı* (Unpublished PhD Thesis). Gazi University, Ankara, Turkey.
- Onur, B. (2021). Endüstri kenti Karabük'ün modern mahallesi Yenişehir'de konut tipolojileri. *Avrupa Bilim ve Teknoloji Dergisi*, (23), 666-677. <https://doi.org/10.31590/ejosat.821267>
- Öktem, S. (2004). *Türkiye Cumhuriyeti'nde Modernleşme Hareketi: Karabük Demir-Çelik Fabrikaları Yerleşim Örneği* (Unpublished Master thesis). İstanbul Teknik Üniversitesi Fen Bilimleri Enstitüsü, İstanbul, Turkey.
- Öngen, T. (1994). *Prometheus'un Sönmeyen Ateşi Günümüzde İşçi Sınıfı*. İstanbul: Alan Yayıncılık.
- Özkan, M. & Çabuk, S. (2010). *Karabük demir-çelik fabrikaları işçi konutları sorununun ve çözüm sürecinin incelenmesi*. In: Kuruluşundan Bugüne Karabük ve Demir Çelik Sempozyumu, April 2010, 357-366, Karabük, Turkey.
- Özkan, M. (2010). *Karabük'te Modern Mimari Oluşumda Yüksek Mimar Münci Tangör ve Yapıları*, Kuruluşundan Bugüne Karabük ve Demir-Çelik Sempozyumu, Karabük Üniversitesi, 1-3 Nisan, Karabük: 367-377.
- Özkan Altınöz, M. (2015). Endüstri kenti Karabük'ün sosyal yaşantısının şekillenmesinde Yenişehir Sineması'nın rolü, *ITOBİAD*, 4(1), 83-99.
- Özkan Altınöz, M. (2016). Karabük industrial heritage site and associated regeneration projects in Turkey, *Turkish Studies*, 17(2), 361-380. DOI: 10.1080/14683849.2016.1166056
- Poulantzas, N. (1976). *Classes in Contemporary Capitalism*. England: NLB.
- Poulantzas, N. (1992). *Siyasal İktidar ve Toplumsal İktidar*. İstanbul: Belge Yayınları.
- Sunar, L. (2018). *Sosyal Tabakalaşma*. İstanbul: İstanbul Üniversitesi Açık ve Uzaktan Eğitim Fakültesi.
- Sümer Bank İnşaat Fen Heyeti. "Sümerbank Amele Evleri." *Arkitekt* 1-2 (1944), 9-13.
- Togay, H. (1959). "İşçi Meskenleri Meselesi." *Arkitekt* 296, 115-116.
- Tuna, S. (2009). *Türkiye'de Devlet İşletmeciliği ve Sümerbank (1932-1939)*, Dünya Ekonomik Krizine Bir Cevap mı? İstanbul: Derlem Yayınları.
- Uca O. (2016). *Türkiye'de Orta Sınıfın Fotoğrafı: Akışlar ve İlişkiler*. İstanbul: NotaBene Yayınları.
- Wright E. (2014). *Sınıf Analizine Yaklaşımlar*. İstanbul: NotaBene Yayınları.

BIOGRAPHY OF THE AUTHOR

Beyza ONUR (Asst. Prof.)

Received her B.Arch. from Karabük University in 2008, M.Arch. from Erciyes University Faculty of Architecture in 2011 and Ph.D. from Gazi University Faculty of Architecture in 2017. In 2014, she was Erasmus student with scholarship at West Pomeranian University and Technology, Faculty of Architecture in Szczecin-Poland. Currently she is Assistant Professor at Karabük University. Major research interests include architecture; sociology of architecture; theory, criticism and method in architecture, planning and design.



Parameters for designing media facades: A research toward different cases from Turkey and other countries

Muammer YAMAN¹, ORCID: 0000-0002-8767-4811
Zeynep Yeşim İLERİSOY², ORCID: 0000-0003-1903-9119

Abstract

The media facades that provide an interactive communication structure for urban users have emerged in the modern period, and the use of these facades has become common. This paper aims to determine the parameters that will affect the process of designing media facades and discover how design-related parameters are distributed in the practices of designing these media facades. For the evaluation process, 14 sample facades that are universally representative and serve different functions in buildings located in Turkey and other countries (control group) were selected. Analyzing these facades is important to reveal the digitalization level and detailed know-how in this regard. Data were compared using the charts for the media facade formations reviewed through observation method. Examining the parameters regarding the designs of media facades through the comparative analysis method plays a key role in predicting the development of media facades in Turkey. According to the comparison results, the media facades in Turkey were not able to catch up with the recent developments. It was observed that the diversification of the use purposes of media facades and the differentiation of the parameters for design were insufficient. As a result, it is thought that the designers and practitioners will be guided by the results obtained through the examples of the media facades.

Highlights

- Design-related parameters for media facades design and application processes have been established.
- Media facades, which have found a new area of development in our country, have been discussed among international architectural samples.
- It has been emphasized that media facade information in architecture can develop with intellectual capital and digital transformation.

Keywords

Digital media; Media façades;
Communication on architecture;
Development of facades; Façade
design

Article Information

Received:
15.01.2022
Received in Revised Form:
08.08.2022
Accepted:
23.10.2022
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Gazi
University, Ankara, Türkiye
muammeryaman@gazi.edu.tr
2. Faculty of Architecture, Gazi
University, Ankara, Türkiye
zyharmankaya@gazi.edu.tr



Medya cepheleri tasarım parametreleri: Türkiye ve diğer ülkelerden farklı örneklemelere yönelik bir araştırma

Muammer YAMAN¹, ORCID: 0000-0002-8767-4811
Zeynep Yeşim İLERİSOY², ORCID: 0000-0003-1903-9119

Öz

Kent kullanıcıları için interaktif bir iletişim yapısı sağlayan medya cepheleri modern dönemde ortaya çıkmış ve kullanımları yaygınlaşmıştır. Çalışmada medya cephesi tasarımı sürecini etkileyecek parametreleri belirlemeyi ve ilgili parametrelerin nasıl değiştiğini araştırmak amaçlanmaktadır. Değerlendirme süreci için Türkiye’de ve kontrol grubu olarak diğer ülkelerde olan ve farklı fonksiyonlara sahip binalardan oluşan 14 örnek medya cephesi seçilmiştir. Bu cepheleri analiz etmek, dijitalleşme düzeyini ve bu konuda detaylı bilgi birikimini ortaya çıkarmak açısından önemlidir. Çalışmada gözlem yöntemi ile incelenen medya cephelerine yönelik çizelgeler kullanılarak verilerin karşılaştırması yapılmıştır. Karşılaştırmalı analiz yöntemi ile medya cephelerinin kullanım amaçları ve tasarımına yönelik parametrelerin araştırılması, Türkiye medya cephelerinin gelişiminde öngörülebilir bulunmak açısından önemli bir rol oynamaktadır. Karşılaştırmaya göre, Türkiye’de bulunan medya cephelerinin son gelişmeleri yakalayamadığı tespit edilmiştir. Medya cephelerinin kullanım amaçlarının ve tasarım parametrelerinin farklılaşmasının yetersiz olduğu görülmüştür. Sonuç olarak, medya cephesi örnekleri üzerinden elde edilen sonuçlarla tasarımcı ve uygulamacıya yol gösterileceği düşünülmektedir.

Öne Çıkanlar

- Medya cepheleri tasarım ve uygulama süreçlerine yönelik tasarım parametreleri oluşturulmuştur.
- Ülkemizde yeni bir gelişme alanı bulan medya cepheleri, uluslararası mimari örnekler arasında yeri tartışılmıştır.
- Mimarlıkta medya cephe bilgisinin entelektüel sermaye ve dijital dönüşüm ile gelişebileceği vurgulanmıştır.

Anahtar Sözcükler

Dijital medya; Medya cepheleri;
Mimarlıkta iletişim; Cephelerin gelişimi; Cephe tasarımı

Makale Bilgileri

Alındı:
15.01.2022
Revizyon Kabul Tarihi:
08.08.2022
Kabul Edildi:
23.10.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Fakültesi, Gazi Üniversitesi, Ankara, Türkiye
muammeryaman@gazi.edu.tr
2. Mimarlık Fakültesi, Gazi Üniversitesi, Ankara, Türkiye
zyharmankaya@gazi.edu.tr

1. INTRODUCTION

Different definitions of facades have been made throughout history. The concept of the facade was defined in the dictionary of architecture (*Rationale Dictionary of French Architecture*) published by Viollet-le-Duc in France in 1858 as follows: "...architectural arrangements on the side facing the street, outdoors or garden..." (Viollet-le-Duc and Ricker, 1858). Accordingly, facades are regarded as building parts that ensure visual communication in a built environment and play a key role in defining the private and public spaces. They are the first building elements noticed when perceiving and assessing buildings on a user scale, which reflects the importance of facade designing. The building facades have physical, sociological, and/or psychological representations. There are variables such as like, complexity, preferences, and impressiveness in the perception and interpretation of different facade systems (Arslan and Yildirim, 2021). All these variables constitute a transinformation between the user and the building. In this sense, building facades are a communication tool in urban areas.

The latest periods of this century indicate that the number of commercial relationships has increased in accordance with globalization, which has consequently made media and digitalization two important concepts. The necessity of media has reached another level as users are filling urban gaps at high rates in their intense urban lives. Moreover, following the advanced and developed digitalization period, efforts have been made to transfer communicational elements from virtual environments to urban usage areas. A meta-materialist communication age has started in the 21st century, which is different compared to the physical areas on the streets. New materials as well as new technologies, advanced computer simulations, electronic systems, and visual and auditory sources have revealed media architecture (Civic-Tovaric et al., 2011). The most distinguishable impact of digital transformation, which has emerged following the last and current industrial revolution, in media architecture is the media facades. This transformation is regarded as the most basic factor regarding the architectural attitudes and innovations in the concept of the facade.

Media facades have held an important place in architecture from the past to the present time. They are used for different purposes and contain a great technological potential and social and cultural values in their backgrounds. They also provide an interactive communication structure for urban users (Mignonneau and Sommerer, 2008). While forming a communicational structure, various elements should be planned in a systematic manner. The data of the environment where media facades are to be designed, the content of the media elements and plans regarding the interaction

between buildings and facades are all a part of the system (Figure 1). Environmental factors consist of significant criteria for the media content to be accessed by users (Moere and Wouters, 2012).

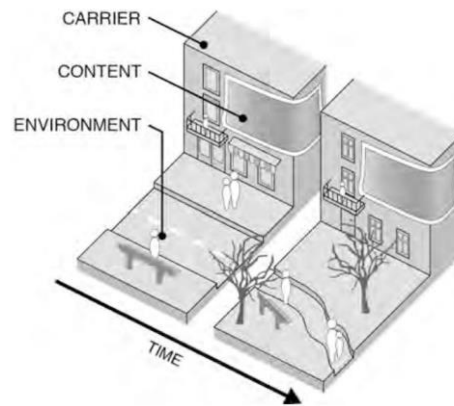


Figure 1 - Components of media facade (Moere and Wouters, 2012).

The concepts of carrier, content, environment (context), and time capture draw attention as significant criteria for building media facades:

- Regarding the concept of the carrier the systems to which media facades can transfer their loads appropriately should exist.
- Regarding the concept of content, feelings and messages conveyed by media facades should be clearly reflected to the users. Moreover, correct instruments should be selected and processed for these contents.
- Regarding the concept of environment, the environment and social structure where media facades are built should receive messages and provide feedback, and
- Regarding the concept of time, the process should be managed in accordance with the density of urban users while building media facades (Dalsgaard and Halskov, 2010).

There are alternatives in forming media facades. These alternatives include front projection facades, back-projection facades, display facades, window animations, illuminant or light-transmitting facades, and mechanical facades (Abdou et al., 2017; Weithoff and Gehring, 2012). In this study, especially the most used display facades in Turkey and illuminating or light-transmitting facades are focused on.

The research problem of this study is to determine whether there is a homogeneous distribution in the designs of media facades in Turkey. Design-related parameters were reviewed as sub-problems to shed light on solving the main problem and to contribute to the process of inferring. The historical development of media facades was conceptually examined, and the information about the parameters regarding the designs of these facades was provided with an extensive literature review. Owing to the potential of making predictions about the case in Turkey with the common relevant practices, a comparative approach was adopted to assess the differing orientations/practices regarding the media facades in Turkey and other countries (control group). Accordingly, control group samples from the countries, the pioneers in the literature of media facades and relevant samples from Turkey, and contain reliable information, were compared in the

evaluation phase. Assessments regarding the use of media facades in Turkey were made at the end of the study.

2. EVOLUTION OF MEDIA FACADES FROM PAST TO PRESENT

The building facades have been the instruments of communication in the history of architecture. What was written on stones, concrete blocks, and wooden items or glasses can be currently conveyed through digital media which has become an integral part of the architecture in the information society of the present time. The modern facade systems built in different manners are significantly different compared to the systems of the past (Stojšić, 2017). Facades were initially used to communicate, and early facade examples contain walls with pictures and letters on them. The decorations and ornaments from the classical periods of architecture indicate certain cultural values, icons, and images (Figure 2-a). Especially, decoration has been an important way of creating meaning and communication through images (Akalın et al., 2010).

The use of facades as instruments of communication can also be seen in the Gothic Period. Sculptures, frescos, and stained glasses were often used in that period (Erkayhan and Tekin, 2016). Elements used during the Gothic period were created to convey religious stories to people (Figure 2-b). Following the industrial revolution, a relationship between the materials and facades was established to show that buildings were the items of strength thanks to the use of new materials. The concept of transparency gained significance with the use of new materials, and the communication between indoors and outdoors became important (Aydoğan, 2009). After the emergence of modern architecture, a pure and simple style was sought after for building facades. However, building facades reflected certain messages as modern architecture followed the functions of forms as an ideological approach. Cases such as the use of functions as input and the emergence of different structures, such as lower floors and upper floors played a key role in shaping the facade designs.

Wall paintings from the previous periods, decorations on the facades, sculpture motives, and illuminated visual billboards are all important for the formation of media architecture in the present time. Billboards built independently from buildings had an important place in the urban pattern in the past. Urban areas became inadequate as sizes and ratios of board elements and the need for urban usage areas increased (Figure 2-c). Facades initially planned to be wide and/or high considering the urban settlement were later used as board elements. Communicational elements used to be hung for people but following the technological advancements, illuminated elements are now used. The illumination of buildings and environments drew attention to buildings and increased people's perception. As a result of using board elements and illumination, media facades emerged (Okur and Karakoç, 2019). Media facades emerged with some technical background outputs and a combination of software and hardware interfaces played a key role in urban communication and interaction (Bergemann et al., 2013). The design of the systems on which the software information is loaded in the background and the outputs obtained with this design need to be transferred to the urban users via a hardware tool through the facade of the building. Media facades are making great changes and transformations with new research and unlimited design ideas day by day.

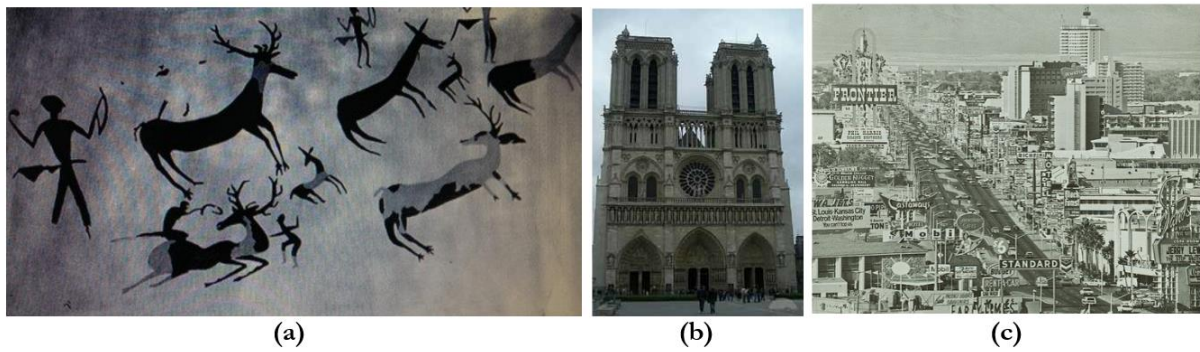


Figure 2 - (a) Wall painting in the Prehistoric period (Durukan, 2014), (b) A church in the Gothic period (Altunöz Yonuk, 2012), (c) A view from Las Vegas (Venturi, Brown and Izenour, 1977).

Types of media facades have increased in line with technological advancements, and the use of different materials and systems has become more common. The entrance facade of the Chanel building in Tokyo was designed as a media facade by Peter Marino, an American architect. Chanel products and ideological orientations of fashion designers were reflected on this facade, and a commercial use was ensured in this regard. (Figure 3-a). Seven hundred thousand embedded light-emitting diodes (LED) on the facade provide a screen at a perceivable resolution. This building is located on the Marronnier corner of Chou Street, a location that is busy and intensely used by people (Tscherteu, 2008). In Turkey, the entrance facade of Iyaşpark Hotel in Isparta has a media facade design which was added later to the building (Figure 3-b). This facade design with the panel elements consisting of 2648 meter LED is a remarkable work capturing attention in the urban centre. The materials used and the system are resistant to external environmental conditions (URL-1). Iluma Shopping Centre in Singapore, designed by WOHA Architects, has a systematic matrix composition and media facade structure generating pixels in appropriate forms (Figure 3-c). Crystal-looking tubes were formed and supported with LED systems (Fritz, 2009). Considering these three modern examples, preferences and uses for the advertising and marketing sectors as the reflection of digital transformation on architecture are interesting. The building facade acting as an instrument of communication serves the purpose of stressing building function and plays a key role in introducing the building to the urban users.

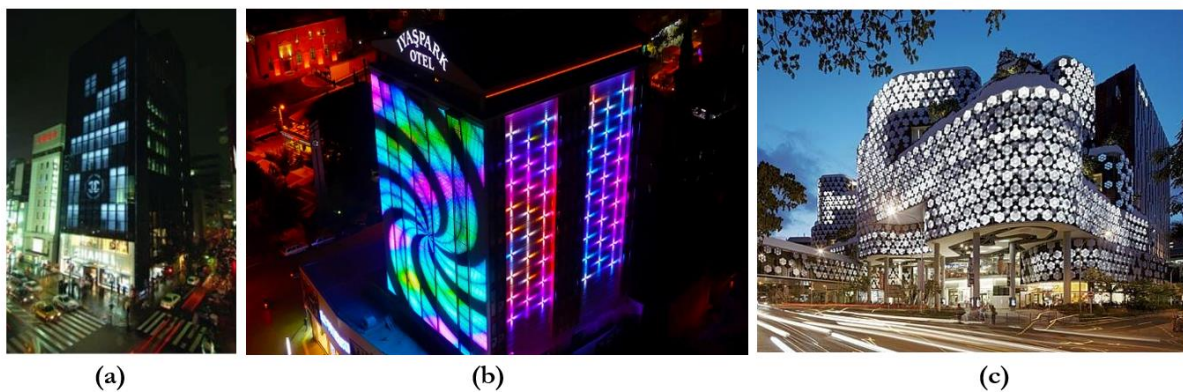


Figure 3 - (a) Chanel Building (Barahona, 2011); (b) Iyaşpark Hotel (URL-1); (c) Iluma Shopping Centre (URL-2)

3. DESIGN-RELATED PARAMETERS OF MEDIA FACADES

Processes of designing, practicing, and using were examined in regard to forming the parameters for designing media facades. Indoor comfort conditions arising from users' needs and assessment of the criteria regarding the urban users should be assessed. Formation of the parameters regarding the design in media facades and building facade systems through the parameters yields important results for users' health, sustainability, and cost-efficiency. Appropriate analysis of designing parameters increases the efficiency achieved from media facades and emerges as the output of a facade design suiting its own targets. The designing team that is responsible for generating the most convenient detail-based solutions on the media facades should include the designing parameters related to media facades in the aesthetic-functional solutions.

3.1. Purpose of Use

A city is a holistic experimental area with its built architectural environment and visual forms (Jang and Kim, 2014). Building digital screens and consideration of television systems transform the modern architecture into the media-performance visuals. Displayed formation should be generated for various purposes, and architectural integration should be arranged appropriately. There are usage forms with targets based on commercial, public service, social communication, artistic and amusement-related, and facade solutions (Brykova and Sbytova, 2019) (Figure 4).

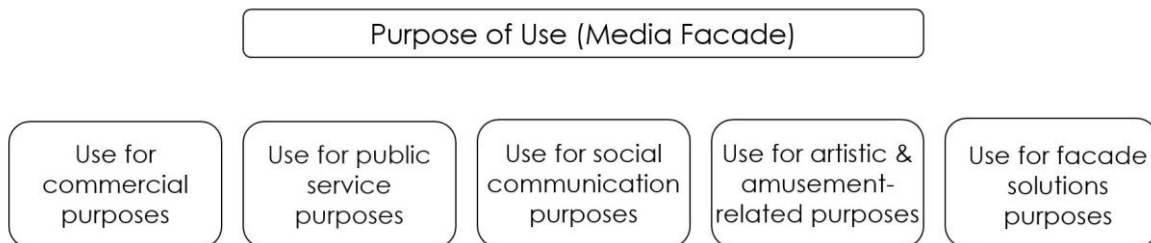


Figure 4 - Classification of media facades according to their purpose of use.

- Use for commercial purposes: Media facades are commonly used for advertisements on an urban scale. These media facades have the systems that work by reflecting certain marketing-related values of shops and malls on facades in the globalized world (Herr, 2012).
- Use for public service purposes: This type of use includes media facades which help urban users be informed about various topics and encouraged to participate in life more. Activities on the urban scale, time (hour and calendar), weather, traffic and transportation information are reflected in this context.
- Use for social communication purposes: Architectural facade surfaces constitute the channels of communication to transfer information. Momentary data transfer is ensured via facades, as well as computation systems and advancements in conveying messages (Moghaddam and Ibrahim, 2016).
- Use for artistic and amusement-related purposes: Media facades as digital art forms provide a different perception to buildings' facades. Gaming-based uses can also be seen in media

facade system formation. People are integrated into the systems, and social unity occurs in the use of media facades for artistic and amusement-related purposes.

- Use for facade solutions purposes: Facade designs should be in a manner to answer user comfort parameters expected from the facades. The facade system should be built at the detail scale in a systematic manner.

3.2. Positioning of Facade

The relationship between the message and urban users is important for the formation of media facades. Based on the message to be reflected, delivering the messages to as many urban users as possible is an important criterion. Using media elements in the appropriate parts of facades and generating program areas provide data for filling urban gaps.

Positioning of the media facades was classified by Civic-Tovarcic et al. (2011) as follows: (i) only on a facade surface, (ii) only on a certain facade surface, (iii) at a hierarchical level based on building height, and (iv) on all facades (Civic-Tovarcic et al., 2011). Such positioning activities should be performed considering the building and urban data, and plans should be made accordingly. The street and its data, surrounding buildings, media facade designs, illumination, heights of trees, reflective surfaces and building usage function should be considered (Schoch, 2006).

3.3. Geometry

Media facade limits, sizes, and ratios are among the important parameters regarding media facade designs. Correct formation of the relationship between the perceptibility of the message, media facade, and the recipient is proportional to the size of the media facade. The limitations in sizing media facades can be flexible. Media facades can be used as two or three-dimensional. Although two-dimensional facades are mainly related to surfaces, three-dimensional facades are formed through the geometry of buildings. These facades have planar, unidirectional, or bidirectional alternatives via the inclined surfaces obtained through the geometry of buildings and facades. However, with the technology of the present time, the three-dimensional quality of media facades is formed through the structure of kinetic and mechanic elements. The third dimension added to the two dimensions increases urban users' perception level.

MegaFaces, designed by Asif Khan for Sochi Winter Olympic and Paralympic Games, is a media facade example with a three-dimensional structure and movement form (Figure 5). The purpose behind its design was to form a monumental value for the athletes as an equalitarian approach. The media facade of this building was structured to be eight meters in height in a way to reflect three portraits in each display. The building has a 3500% magnification rate compared to the face of The Statue of Liberty in the United States. The facade can have a 2.4 meters depth (maximum) as its three-dimension ratio (Khan, 2014).

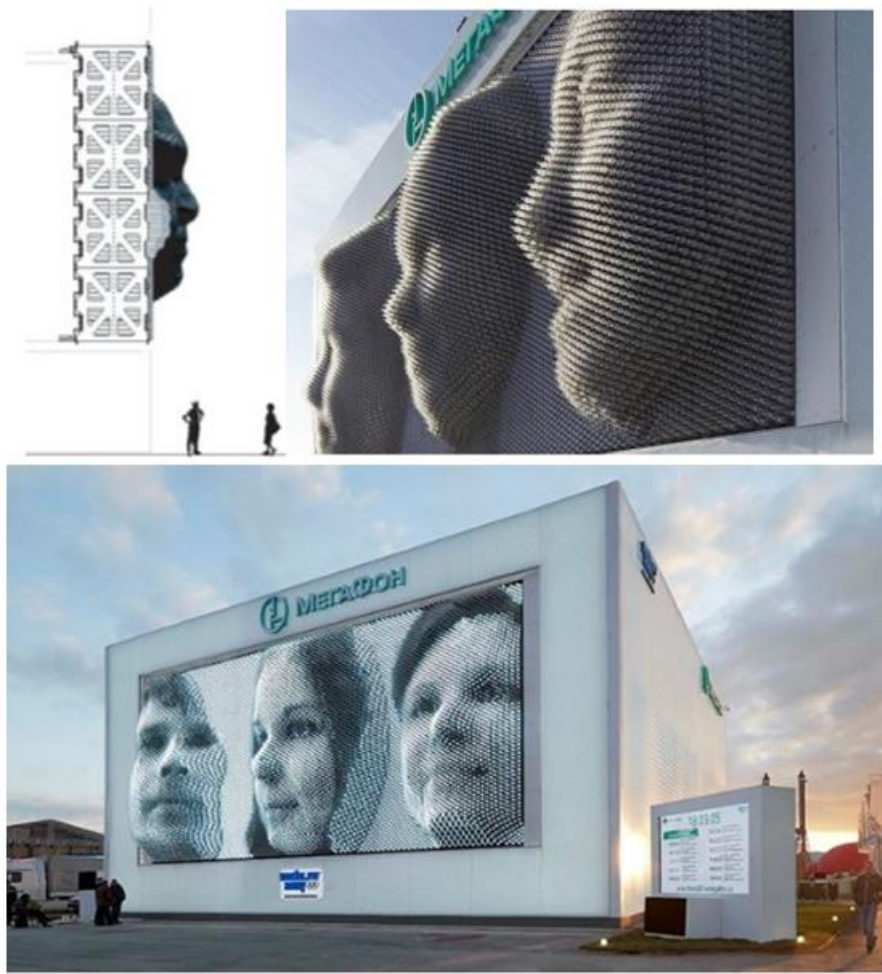


Figure 5 - MegaFaces media facade (Brykova and Sbytova, 2019).

3.4. Building Integrations

Designing formations should be generated considering the content, context, and time-related concepts of the building integrations regarding the media facades. The appropriate detailed solutions and data regarding visual perception are important for the practice. Building integrations should be assessed in the first stage of designing media facades (Schoch, 2006). Media facade-building integrations have three different approaches:

- These are the systems that are generated in a form to have their own carrier systems which are independent of the buildings. Within these systems, the focus is on visual perception regardless of the facade performance criteria.
- The systems established as the second layer on the facade cover the system working as curtain walls or double skin facades. Load transfer is ensured through the building carrier system.
- This system is used as the structure that is totally integrated into the building and forms the external envelope of the building. In addition to being structured as the whole facade

element, this system can be built by the parapets, opaque, or transparent walls. Load transfer is ensured through the building carrier system.

3.5. Effectiveness

The effectiveness of media facade designs shows great parallelism to the urban users. However, external factors such as the organization of the relationship with daylight, the occurrence of weather events such as fog, etc. during seasonal transitions, the relationship with the elements around, and the dominant seasonal conditions alter the effectiveness of media facades (Civic-Tovacic et al., 2011).

Media facades create an area of interaction in their contexts. Delivering the message in the area of interaction formed on media facades is an important criterion. Regarding the structuring of the interaction area, results may vary based on the effectiveness of media facades.

- Temporary media facade formations, special days and nights
- Permanent media facade formations at certain times of the day (those that are open only during night or daytime)
- Permanent media facade formations at all hours of the day (those that are open during night and daytime)

3.6. Illumination and Visual Comfort Data

Daylight factor is an important parameter for the creation of architectural spaces. The use of natural light in indoor areas should be considered the most fundamental requirement. Artificial illumination elements are used in places where natural lighting is not present or insufficient. However, such use increases energy consumption and building expenses. While creating the indoor comfort quality of media facades, light permeability should be focused on. In cases when daylight is required for indoor areas, transparent media facade formations should be considered. Based on the effectiveness of media facades, different media facades can be built in different terms as transparent, semi-transparent, and opaque.

The media facade of the Lagotronics building in Venlo (Netherlands), which forms a transparent surface during daytime, was designed in a manner to benefit from daylight at the optimum rate. At night, the media facade turns into a colourful surface and becomes opaque (Figure 6).



Figure 6 - Lagotronics media facade (URL-3).

Regarding the media facade designs, ensuring the balance between visual density and users' ability to obtain information (transinformation) is a significant parameter. A study by Lee and Sul mentions the impacts of visual intensity on media facades. Urban users may be disturbed by a certain level of visual intensity and have negative ideas about messages and communication in this regard. High visual intensity may create problems for building plans in terms of energy use and economy concerning sustainability. Accordingly, it becomes possible to establish a correlation between visual intensity and information transfer (Figure 7). Otherwise, failure in ensuring clear information transfer results in insufficient media facade performance (Lee and Sul, 2017).

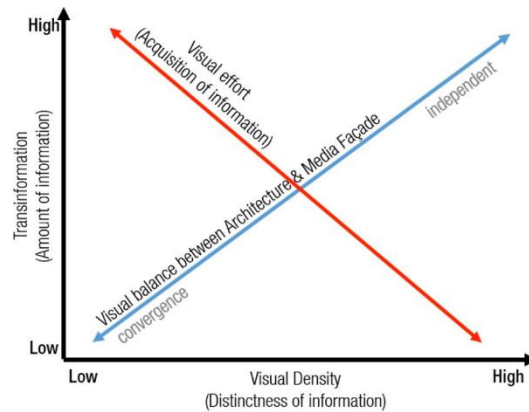


Figure 7 - Relation between visual density and transinformation (Lee and Sul, 2017).

Regarding the media facade illumination, neighbouring buildings, instruments, other illumination elements, water, and reflective surfaces are all important. Mutual illumination impact may be dazzling and cause the perception of impact. Transparent surfaces of other buildings on intense traffic axes may be dominant over the media facade illumination. In such cases, positioning regarding the visual illumination on media facades becomes an important design criterion. The perceivable environment of the media facade should be set, and factors that may harm the illumination system should be avoided. The data from the relevant literature indicate that the optimum distance to the media facade is expected to be set as 50 m - with the pixel rates of 750 x 19 (Lee and Sul, 2017) (Figure 8).



Figure 8 - The visual impact area of the media facades (Lee and Sul, 2017).

3.7. Physical Environment Control Components

Performing physical environment controls is an important criterion for media facade designs. Media facades constitute an artificial environment formation through their specific designing parameters. Accordingly, efforts should be made to ensure that the media facade does not affect the comfort conditions for users, and media facade components work appropriately in the building life cycles.

Media facades provide visual and auditory data by using electrical energy. Consequently, a certain amount of heat emerges while providing the data. Based on the effectiveness of the media facade, the amount of heat may be a problem for the energy conservation of the building. Moreover, reducing the impact of heat energy seen in hot climatic regions requires a great deal of effort. Excess heat causes inconvenient results for the comfort on an urban scale and the emergence of the urban heat island. High rates of heating cause problems that affect the performance of LED elements.

The presence of auditory formation on media facades can be regarded as a source of sound by the urban and building users around. Even if media facades are formed at appropriate sound pressure levels, users who may like to stay indifferent may be disturbed by the undesired music. While planning the media facade formation, urban users should be analysed, and sound propagation analyses should be performed for the building envelope. Assessing media facades formed on the buildings such as libraries, hospitals, working offices, sound recording studios, performance centres, and houses in terms of noise should be regarded as a critical criterion for auditory comfort. It is necessary to design and implement solutions that comply with the regulations and legal requirements.

A common use of electricity on media facades and the presence of electrical hardware on these facades is a risk for fire safety. Electrical hardware should be made using resistant materials and checked regularly. Avoiding the use of flammable materials on facade layers is among the most fundamental fire safety solutions. Forming the illumination elements on media facades by using polymer materials (flammable materials) is an issue for fire safety. Toxic gases and fumes emitted by facade materials when burned are the points to be considered. Use of these materials should be permitted following the regulation analyses (Yaman, 2020).

3.8. Sustainability

Two criteria come to the fore when media facade designs are reviewed about sustainability. One of them is to prefer sustainable materials, elements and systems used to form facades, while the other is to minimize the use of energy while using media facades. Because electricity use is at high levels on media facades, energy generation should be conducted through facades, or energy consumption should be minimized. As a passive designing principle, benefiting from daylight on media facades is regarded as an important design input. The use of the illumination with daylight in media facade designs as a homogeneous source of light in indoor areas as a result of certain procedures should be considered as a passive designing parameter. Forming dynamic elements, generation of double skin elements, presence of photovoltaic panel systems, and taking steps to improve the indoor comfort quality of climatic parameters reflect the value of media facades in terms of sustainability

(Abdou et al., 2017). In addition, in line with the principles of sustainability, the integration of technological advances into building life cycle phases has gained importance with the drive to overcome climate change and achieve the goals of reducing critical global energy consumption. The cost reduction in sensor detection and activation technologies and the widespread use of building automation systems make them usable and easily accessible for the built environment (Topak and Pekerçli, 2021). This situation facilitates the use of media facades for sustainability and adapting them to architectural projects with holistic design approaches.

4. METHODOLOGY OF MEDIA FACADES STUDY

The fact that media facades are new in the field of architectural designs and practices makes the process of designing facades more difficult. The main purposes of this study are:

- to determine the parameters that will impact the process of designing media facade procedures which are irreplaceable in the digital age and will play a role in practicing these procedures,
- to discover how design-related parameters are distributed in the practices of designing media facades in Turkey through the control group (other countries),
- and to assess the analysed data and make relevant predictions to ensure that the media facade practices of the future can be guided.

This study employed the case study method, a qualitative research method where a single case or event is deeply and longitudinally examined, data are systematically collected and what occurs in real-life context is investigated. A literature review was conducted for media facades and designing-related parameters that will enlighten the designing and practicing periods were examined. Then the study population was determined using the criterion sampling method, following the determined goal. Criterion sampling consists of people, objects or events that have the relevant qualities for the examined problems and will provide a wealth of information (Büyüköztürk et al., 2012). Accordingly, a mixed sampling group with different building types was formed to sufficiently represent the media facade practices. Chanel Building, Allianz Arena, Dexia Tower, GreenPix, Kunsthalle Wien, Illuma Shopping Centre, and Rockheim were selected among the global samples mentioned the most with the concept of media facade. Regarding the case in Turkey, the samples were selected from the ones practiced in line with the reliable information obtained by manufacturing companies. Images, locations, years of buildings, and building functions regarding the media facades from Turkey and the control group which was examined in this study are presented in Table 1.

Table 1 - Media facade samples of control group and Turkey.

Media Facades Samples (Control Group)	Building - City/Year - Building Function						
	Channel Building C1	Allianz Arena C2	Dexia Tower C3	GreenPix C4	Kunsthalle Wien C5	Illuma SC* C6	Rockheim C7
	Tokyo/2004	Munich/2005	Brussels/2006	Beijing/2007	Vienna/2009	Singapore/2009	Trondheim/2011
	Commercial Building	Sport Building	Office Building	Assembly Building	Assembly Building	Commercial Building	Assembly Building
Media Facades Samples (Turkey)	Building - City/Year - Building Function						
	Kanatlı SC* T1	Viaport Outlet T2	Piazza SC* T3	MarkAntalya SC* T4	Atlas Park SC* T5	Iyaşpark Hotel T6	Mahall Ankara T7
	Eskisehir/2007	Istanbul/2008	Samsun/2013	Antalya/2013	Istanbul/2015	Isparta/2015	Ankara/2016
	Commercial Building	Commercial Building	Commercial Building	Commercial Building	Commercial Building	Hotel Building	Housing and Office Building

*SC: Shopping Centre

Observational method was used to obtain detailed information about the media facade formations in this study. Being used as the first source of information for the criteria, this method is employed as a data collection method that is systematically prepared beforehand, sets its targets clearly, and observes a formation with relevant senses by using charts and/or scales (Kozak, 2001). Decisions on designing and using media facades were observed on 14 buildings, seven from Turkey and seven from the control group. Parameters regarding the design observed on the sampling were reviewed under the titles of the purpose of use, facade positioning, geometry, integration to buildings, effectiveness, illumination and visual comfort data, physical environment control components, and sustainability (Table 2).

5. EVALUATION OF MEDIA FACADES SAMPLES AND RESULTS

Researching and analyzing media facades through the sample groups from Turkey and the control group is important to reveal these countries' digitalization level, detailed know-how, and intellectual capital in this regard. The detailed designing parameters regarding the media facade formations, which are systematically prepared beforehand, whose purposes under specific titles are known, and which were examined through reliable literature are presented in Table 2.

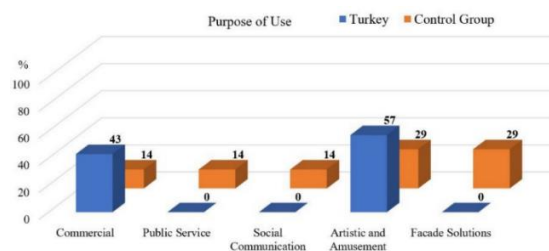


Figure 9 - Evaluation of purpose of use.

Table 2 - A comparative analysis of selected media facade samples.

		Media Facade Samples / Control Group							Media Facade Samples / Turkey						
Purpose of Use	Positioning of Facade	Geometry	Building Integrations	Effectiveness		Illumination and Visual Comfort Data		Physical Environment Control Components		Sustainability					
				Temporary	Permanent	Light Transmission	Visual Density	Overheating	Auditory Comfort		Fire Risk				
Commercial	Only on a facade surface	All facades	Independent	Temporary	Only Day	Transparent	Low	Yes	No	Use of Materials					
Public Service	A certain facade surface	Two-dimensional (2D)	Double Skin	Only Day	Only Night	Semi-transparent	High	No	Positive	Produce of Energy					
Social Communication	A hierarchical level	Three-dimensional (3D)	Integrated	Only Night	Day and Night	Opaque	Yes	Yes	Negative						
Artistic and Amusement	All facades	Independent	Double Skin	Day and Night	Transparent	Low	No	No	Yes						
Facade Solutions	Two-dimensional (2D)	Three-dimensional (3D)	Integrated	Transparent	Semi-transparent	Opaque	Yes	Yes	No						
Only on a facade surface	Three-dimensional (3D)	Independent	Double Skin	Semi-transparent	Day and Night	Low	No	No	Yes						
A certain facade surface	Independent	Double Skin	Integrated	Day and Night	Transparent	High	Yes	Yes	No						
A hierarchical level	Double Skin	Integrated	Temporary	Transparent	Semi-transparent	Opaque	Yes	Yes	No						
All facades	Integrated	Temporary	Only Day	Semi-transparent	Day and Night	Low	No	No	Yes						
Two-dimensional (2D)	Only Day	Only Night	Day and Night	Day and Night	Transparent	High	Yes	Yes	No						
Three-dimensional (3D)	Day and Night	Transparent	Semi-transparent	Semi-transparent	Opaque	Low	No	No	Yes						
Independent	Transparent	Semi-transparent	Opaque	Low	High	Yes	No	No	Yes						
Double Skin	Semi-transparent	Opaque	Low	High	Yes	No	No	Yes	No						
Integrated	Low	High	Yes	No	No	Yes	No	Yes	No						
Temporary	Yes	No	No	Yes	No	Yes	No	Yes	No						
Only Day	No	Positive	Negative	Yes	No	Use of Materials	Produce of Energy								
Only Night	Positive	Negative	Yes	No	Use of Materials	Produce of Energy									
Day and Night	Negative	Yes	No	Use of Materials	Produce of Energy										
Transparent	Yes	No	Use of Materials	Produce of Energy											
Semi-transparent	No	Positive	Negative	Yes	No	Use of Materials	Produce of Energy								
Opaque	Positive	Negative	Yes	No	Use of Materials	Produce of Energy									
Low	Negative	Yes	No	Use of Materials	Produce of Energy										
High	Yes	No	Use of Materials	Produce of Energy											
Yes	No	Positive	Negative	Yes	No	Use of Materials	Produce of Energy								
No	Positive	Negative	Yes	No	Use of Materials	Produce of Energy									
Overheating	Negative	Yes	No	Use of Materials	Produce of Energy										
Auditory Comfort	Yes	No	Use of Materials	Produce of Energy											
Fire Risk	No	Positive	Negative	Yes	No	Use of Materials	Produce of Energy								
Sustainability	Positive	Negative	Yes	No	Use of Materials	Produce of Energy									

Design-related parameters were reviewed in the form of the following articles by performing relative grading activities on the sampling group selected for the analysis:

Purpose of use: Results indicated that the media facade samples seen in Turkey were preferred for commercial, artistic and amusement-related purposes, and there was a balance distribution between the different intended uses seen in the samples from the control group. (Figure 9). Such a difference seen in the control group was found to have arisen from the difference in designing and practicing information at the intellectual capital level. Stewart defines intellectual capital as, “The intellectual material that can be included to the use to create value; in fact, it is information, intellectual property, and experience” (Stewart, 1997). The absence of different usage cases in Turkish samples indicates that media facade use does not occur within the context of intellectual capital. It is deemed necessary to review the media facade use in Turkey from a broad perspective rather than from the context of intense use solely in the fields of commercial, and artistic and amusement.

Facade positioning: The rate regarding the orientation to position the media facades used in Turkey solely on a surface was found to be high (72%), and the examples where all facades were positioned on a specific section at a specific height were found. In addition, there were differences regarding the positionings in the control group, and density was on a facade with an equal distribution (43%) with a direction covering all facades (Figure 10). What was found to be common as a result of this comparison was the common use of media facades preferred on the entrance facade and positioned on a single facade of the buildings. The important factor in the positioning media facades in the reviewed examples is that the purposes of the use of facades were appropriately organized with architects’ aesthetic concerns.

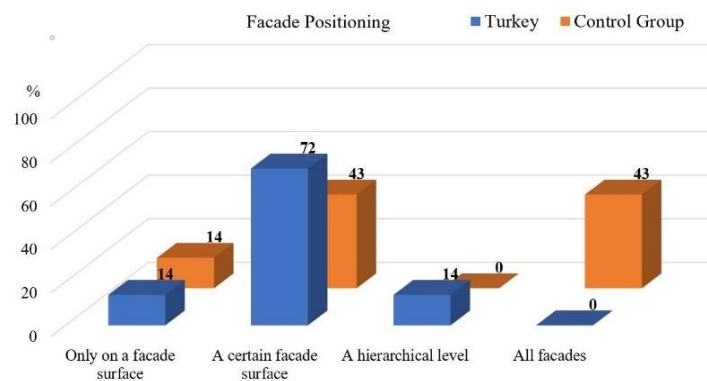


Figure 10 - Evaluation of facade positioning.

Geometry: All media facades from Turkey reviewed in this study were used as two-dimensional. However, regarding the examples from other countries, two and three-dimensional uses were more closely distributed, and two-dimensional facades were used more (Figure 11). Three-dimensional practices require information in terms of building information modelling systems. The creation of material and system designs should be enabled. There is a common belief that the use of three-dimensional examples will increase after the digital transformation in the architecture in Turkey is completed. The use of three-dimensional systems from two-dimensional systems greatly affects the principles of interior lighting/ventilation and media facade carrier. In this situation, the purpose of use and the dimensions of the building facade are effective. Additionally, media facades with an

inter-dimensional (2.5 D) system are also used today. (Tscherteu, 2008). Developing two-dimensional systems for Turkey and transforming them to the three-dimensional will be accompanied by the development of media facades.

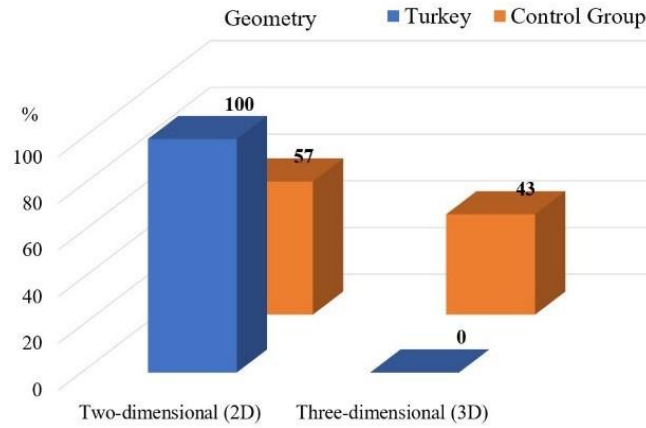


Figure 11 - Evaluation of geometry.

Building integration: Media facades used in Turkey were mainly used as the double skin (72%) and independent from the building (28%), and no integrated facade examples were found. Regarding the use in the control group, close rates were found in the facades designed to be double skin and integrated into their essences (Figure 12). Integration of media facades requires considering the relationship between the facade elements and buildings in the process of designing. Orientations regarding the building integration systems should be supported in generating the integrated design of media facade formations in Turkey.

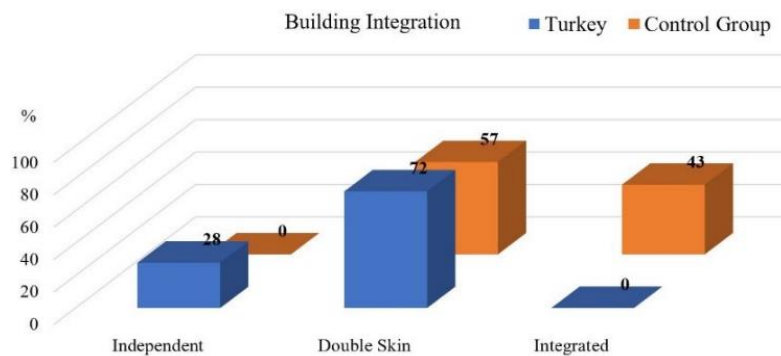


Figure 12 - Evaluation of building integration.

Effectiveness: Samples of media facade indicate night-day time and only night-time effectiveness (Figure 13). When the efficiency obtained from the media facades in terms of the transinformation in the lighting conditions is examined, it is noteworthy that the most appropriate period of time is used only night and day and night. This situation is observed in all samples and is supported within the scope of the literature review (Civic-Tovarcic et al., 2011).

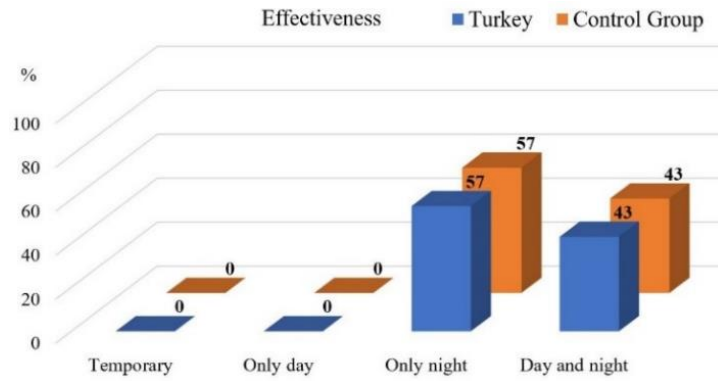


Figure 13 - Evaluation of effectiveness.

Illumination and visual comfort data: A review of the media facades used in Turkey indicated that visual intensity was almost distributed in a balanced form and media facades in other countries contained styles with higher visual density. High visual density increases the perception level and the users' attention. Concerning light transmission for illumination and visual comfort, only opaque examples were seen in the media facades in Turkey. Transparent, semi-transparent, and opaque forms displayed more proper distribution in the examples from the control group (Figure 14). The relationship between the media facades and building integration impacts the light transmission of media facades, and the formation of transparent media facades for integrated use is desired in terms of visual effects and illumination. Accordingly, the distribution in Turkey indicated that supporting the building integration systems was also effective in this parameter. With the developing lighting technologies (LCD-LED-OLED systems) and the colour syntheses (CMYK, RGB etc.) used, the light transmission and visual density on media facades are changing. This situation affects the visibility of media facades and affects the perception levels of city users (Gasparini, 2010). Turkey needs to use innovative materials and elaborate research on media facades.

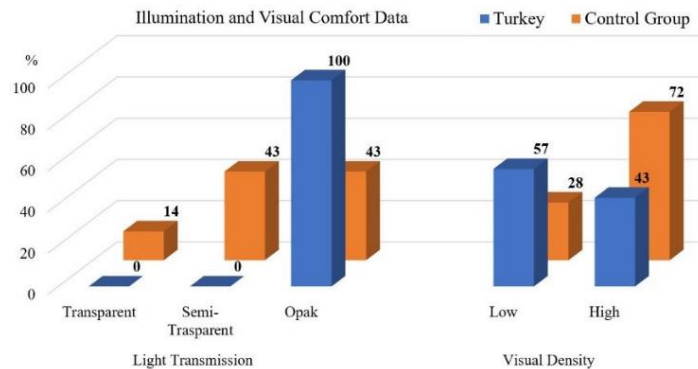


Figure 14 - Evaluation of illumination and visual comfort data.

Physical environment control components: Generation of the comfort conditions for facades in the lifecycles of buildings should be ensured with the most convenient analysis of facade details. A relevant review of the sample group indicated that the number of problems with extreme heating was limited, and these conditions were positive considering the outdoor noise level and indoor noise level of the integrated building (Figure 15). In the assessment of fire risks, materials'

flammability levels and the system’s quality of accelerating the spread of flames and fume in a potential fire were investigated. Factors such as the used facade materials, facade geometry, and air-flow were analysed and evaluated in the context of the risk (Yaman, 2020). Accordingly, reducing the risk of fire on media facades is a primary target, and it is important to review and assess all physical environment control components as a problem.

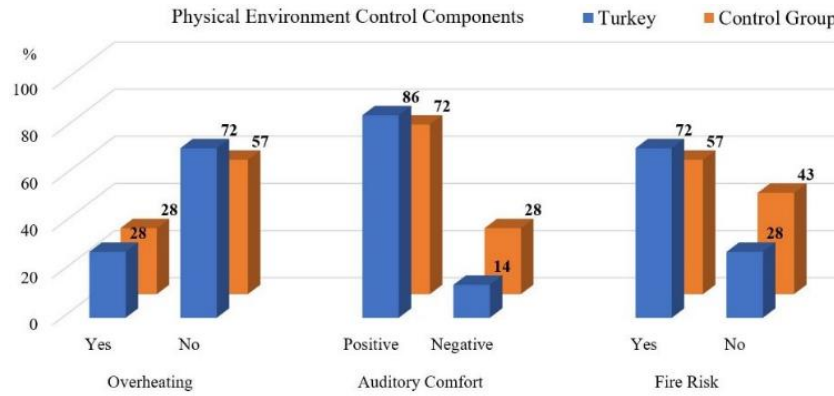


Figure 15 - Evaluation of physical environment control components.

Sustainability: The sustainability of media facade examples was examined under the topics of material selection and energy generation. Moreover, samples from the control group indicated that material use was common for ensuring sustainability, and the number of practices aiming to generate energy was quite limited, which supports the results achieved by other studies from the relevant literature (Abdou et al., 2017). However, regarding the examples in Turkey, approaches to sustainability were at a lower degree compared to other samples from the control group (Figure 16). Raising awareness of sustainable media facades in Turkey is important for the designs and practices.

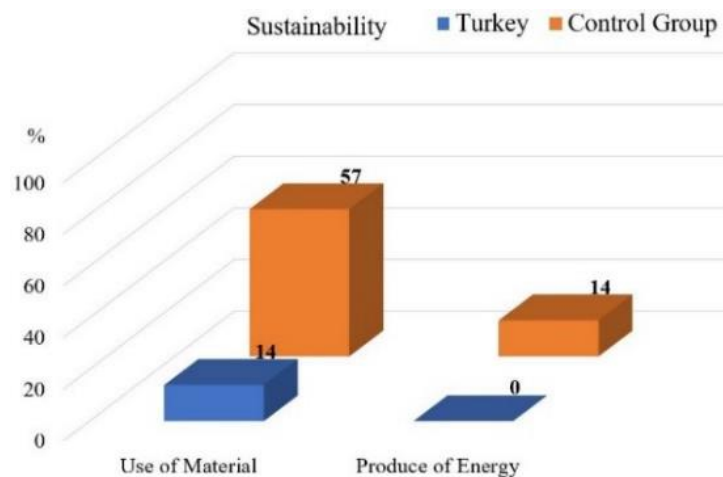


Figure 16 - Evaluation of sustainability.

As understood from the comparative analysis method performed in line with the parameters for designing media facades, MarkAntalya Shopping Centre and Iyaşpark Hotel display modern

attitudes in terms of media facades. The years of construction for the samples, which were deemed modern in the assessment, were found to be quite close to the present time. Moreover, this study creates intellectual capital and awareness to contribute to the development of media facades in Turkey and makes predictions on the transformation and development of media facades.

6. CONCLUSION

Building facades have been used as the instruments of communication throughout history, and with the developing technologies and computer systems, media facades have become one of the final points in terms of the intersection between the facades and instruments of communication. Media facades, which have advanced samples in developed countries, have constituted a great design input in modern architecture where a great digital transformation has occurred. The concepts of carrier, content, context, and time are important for the media facades that serve their intended use. The parameters of facade positioning, building integration, illumination, visual comfort data, physical environment control components, and sustainability, which are effective in the designs and practices of facades, should be decided at the stage of designing the building. The summary of the analysis results, the relevant data, and items are as follows:

- The commercial use and artistic and amusement-related content are present in the systems solely formed to capture attention, which is their purpose of use. As a result of the advancing technologies and studies on the concept of media facades, it is deemed necessary to improve media facades and generate intellectual capital in this regard.
- The most appropriate approach to positioning media facades and determining their geometry is to include media facades in the designing process. The integration between the buildings and media facades should be formed in the best way possible, and such integration should be assessed as a part of building integration systems.
- Care should be taken to ensure that the visual and auditory message is of appropriate quality and quantity. Suitable messages should be delivered to the necessary environmental areas and attention should be directed to such areas. Accordingly, architects, artists, engineers, communication experts, and sociologists should work together in generating the formation of media facades.
- It is very important for the building and urban users to establish the design parameters of the media facades under the physical structure of the building. Keeping the parameters regarding the indoor comfort conditions at the optimum values is particularly important for achieving efficient and regular results.
- Samples from the control group indicate that the systems integrated into the building have increased, innovation studies have been performed, and experimental samples have been found. Regarding the field of media facades, Turkey falls behind other global countries. According to the analysis of media facades in Turkey, systems that are subsequently added to buildings are dominant, and there are samples that are not present in the process of designing. The main reasons in this regard are that media facades are a fairly new field in Turkey, literature review and know-how about media facades are insufficient, and the formation of use and building integration systems does not have a planned form.

- Financial solutions should be generated as an additional rational design to the designing parameters of media facades. With the added value to be provided by media facades to buildings, cost analyses and long-term efficiency assessments should be performed.

The results of the comparative analysis conducted in this study showed that the parameters of effectiveness and physical environment control were similar in the samples from Turkey and the control group. However, assessments indicated that Turkey was at the beginning level in terms of other parameters compared to the control group. In the upcoming periods, it is expected to produce digitalization and technology-based solutions following the parameters of media facade designs following the developing technologies in the discipline of architecture in Turkey. Steps of designing and practicing media facades have been recently taken in Turkey. Formation of innovative designs, generation of designs integrated into buildings as systems, and occurrence of the next phases are among the possibilities. With the increase in the number of experts in the field, building integration systems and the generation of intellectual capital, and the rate of using media facades will increase in Turkey.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support has been received for conducting the research and/or for the preparation of the article.

Ethical Statement

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/E/F/G/H

AUTHOR 2: A/B/D/G/H/I

REFERENCES

- Abdou, A., Gawad, I. and El-Touny, Y. (2017). The environmental and economical impacts of using media facades in commercial buildings in Egypt. *Environmental Science and Sustainable Development*, 2(1), 1-15. <http://doi.org/10.21625/essd.v2i1.86>.
- Altunöz Yonuk, A. (2012). Mimarinin efendileri ve köleleri: Gargoyle heykeller, (Lords and slaves of architecture: Gargoyle sculpters). *Yedi*, 2012, 8, 27-37. (in Turkish).
- Aydoğan, E. (2009). From advertising architecture to media façade communication through digital display skin. (Master thesis), Middle East Technical University, Ankara. (in Turkish).
- Barahona, M.G. (2011). Trece fachadas mediáticas. Available at <https://mgbarahona.wordpress.com/2011/09/08/trece-fachadas-mediaticas/> (Accessed: January 15, 2022).
- Brykova, N.A., Sbytova, A.N. and Gorgorova, Y.V. (2019). Media objects in architecture and art-design: Materials and methods of creation. *IOP Conf. Series: Materials Science and Engineering*, 698(3), 1-6. <https://doi.org/10.1088/1757-899X/698/3/033026>.
- Büyüköztürk, Ş., Kılıç, E., Akgün, Ö.E., Karadeniz, Ş. and Demirel, F. (2012). Bilimsel Araştırma Yöntemleri, (Scientific Research Methods). Pegem Academia, Ankara, Turkey, 2012. (in Turkish).
- Civic-Tovarić, J., Sekularac, N. and Ivanović-Sekularac, J. (2011). Specific problems of media façade design. *FACTA UNIVERSITATIS, Series: Architecture and Civil Engineering*, 9(1), 199-203. <https://doi.org/10.2298/FUACE1101193C>.
- Dalsgaard, P. and Halskov, K. (2010). Designing urban media façades: Cases and challenges. *Proceedings: CHI '10: CHI Conference on Human Factors in Computing Systems*, Atlanta Georgia, USA, 2277-2286. <https://doi.org/10.1145/1753326.1753670>.
- Durukan, A. (2014). Paleolitik dönemden M.Ö. 1. bin yılın ortalarına kadar duvar resimleri, (Wall paintings from the Palaeolithic era to the mids of the first millenium B.C.). (Master thesis), Atatürk University, Erzurum. (in Turkish).
- Erkayhan, Ş. and Tekin, İ. (2016). Engaging communication and social interaction through interactive media facades. *Global Media Journal Turkey Edition*, 6(12), 474-495. (in Turkish).
- Fritz, S. (2009). Media façade. Available at <https://www.architonic.com/en/story/susanne-fritz-media-facade/7000408> (Accessed: January 15, 2022).
- Herr, C.M. (2012). Non-trivial interactive façades. *Proceedings: 17th International Conference on Computer Aided Architectural Design Research in Asia*, Hong Kong.
- Jang, S. and Kim, S. (2014). A framework for the participatory design of interactive media façade. *TOJSAT: The Online Journal of Science and Technology*, 4(1), 1-8.

- Khan, A. (2014). MegaFaces, Available at <http://www.asif-khan.com/project/sochi-winter-olympics-2014/> (Accessed: January 15, 2022).
- Kozak, N. (2001). Sosyal Bilimlerde Araştırma Yöntemleri, (Research Methods on Social Sciences). Anadolu University Notes, Eskişehir. (in Turkish).
- Lee, J.S. and Sul, S.H. (2017). Media façade and the design identity of buildings based on visual density. *Internal Journal of Asia Digital Art & Design*, 21(1), 49-55.
- Mignonneau, L. and Sommerer, C. (2008). *Media Facades as Architectural Interfaces*. The Art and Science of Interface and Interaction Design, Springer, 93-104. https://doi.org/10.1007/978-3-540-79870-5_6.
- Moere, A.V. and Wouters, N. (2012). The role of context media architecture. *Proceedings: First ACM International Symposium on Pervasive Displays (PerDis)*, University of Minho in Porto, Portugal. <https://doi.org/10.1145/2307798.2307810>.
- Moghaddam, E.V. and Ibrahim, R. (2016). People's evaluation towards media façade as new urban landmarks at night. *Archnet-IJAR: International Journal of Architectural Research*, 10(1), 257-273. <https://doi.org/10.26687/archnet-ijar.v10i1.871>.
- Okur, Y. and Karakoç, E. (2019). Interactive architecture: The case studies on designing media façades. *Proceedings: XXII Generative Art Conference - GA2019*, Rome Italy.
- Schoch, O. (2006). My building is my display. Proceedings: 24th eCAADe Conference, Greece. <https://doi.org/10.3929/ethz-a-005540232>.
- Stewart, T.A. (1997). *Intellectual Capital: The New Wealth of Organizations*. Doubleday, New York, NY.
- Stojšić, M. (2017). (New) Media facades: Architecture and/as a medium in urban context. *AM Journal of Art and Media Studies*, 12, 135-148. <http://dx.doi.org/10.25038/am.v0i12.173>.
- Tscherteu, G. (2008). Media façades festivals. Media Façades Exhibition, Berlin.
- Venturi, R., Brown, D.S. and Izenour, S. (1977). *Learning from Las Vegas, The Forgotten Symbolism of Architectural Form*. MIT Press, USA.
- Viollet-le-Duc, E.E. and Ricker, N.C. (1858). *Rationale Dictionary of French Architecture: Selections from the Dictionnaire Raisonné*. 1858, B. Bance, Paris.
- Wiethoff, A. and Gehring, S. (2012). Designing interaction with media façades: A case study. *Proceedings: Designing Interactive Systems Conference DIS 2012*, Newcastle UK. <https://doi.org/10.1145/2317956.2318004>.
- Yaman, M. (2020). Evaluation of Passive Fire Safety Precautions in Sustainable Architecture: Turkey's Regulation on Fire Protection Analysis. Y. Aksoy and E. Duyan (Eds.), *Contemporary*

Issues in Architecture, Ecology, Urban Environment, Experience, DAKAM Books-Özgür Öztürk DAKAM Yayınları, 90-112, Istanbul.

URL-1: <https://www.heraled.com/> (Accessed: January 15, 2022).

URL-2: <https://www.arch2o.com/iluma-woha/> (Accessed: January 15, 2022).

URL-3: <https://www.ledsmagazine.com/> (Accessed: January 15, 2022).

BIOGRAPHIES OF THE AUTHORS

Muammer YAMAN (Res. Asst.)

Yaman received his B.Arch. and M.Sc. in architecture from Gazi University, Faculty of Architecture in (2011-2018). He is pursuing PhD from the Department of Architecture, GU. He has studied fire safety in buildings, fire evacuation strategy, architectural acoustics, room acoustics and noise control. He is still working as a research assistant at Gazi University, Ankara. He has various national and international publications and referees on building physics. Yaman is the corresponding author and can be contacted at: muammeryaman@gazi.edu.tr

Zeynep Yeşim İLERİSOY (Assoc. Prof. Dr.)

Dr İlerisoy received her PhD Degree in building construction in 2014, from Gazi University with a thesis focused on form optimization of buildings in terms of the construction cost. She is a full-time Faculty Member and Associate Professor in Gazi University. She mainly teaches building construction and structural design both at undergraduate and graduate levels. She has participated in several international workshops and conferences. Dr İlerisoy's research interests lie within a wide spectrum of areas from architectural design to building construction. She has several published articles about building facade design, construction materials, behavior and design of structures and earthquake-resistant design. İlerisoy can be contacted at: zyharmankaya@gazi.edu.tr



The transformation of the urban experience and the memory by the images

Fatma KOLSAL¹, ORCID: 0000-0002-5569-2046
Feran Özge GÜVEN ULUSOY², ORCID: 0000-0003-0999-3304

Abstract

Architecture with its representative, visual and experiential aspects, continuously creates new meanings and connections in the continuity of the transformed time-space-body relationship through the history. A new field of knowledge has emerged, which has evolved over time from physical to virtual, and where experiences can be acquired and changed with images, shaped by the occurrence of images everywhere. The ubiquity of images opens a different layer of meaning, other than the periods and ideas that the spaces represent. Questions can be asked about whether images can be accepted as the interfaces between what architecture represents and the buildings themselves. These images open endless meanings, interpretations and communication channels in between the tension that occurs among the representing and the represented. They transform the urban experience that is shaped by tangible and intangible the whole factors through an immaterial upper space. In this study, the effects of images that have become self-referential and added to the existing meanings of buildings as a new layer of meaning, is discussed with the concept of memory, image and urban experience.

Highlights

- Representations and images are crucial components of making new meanings in architecture.
- Urban experience is shaped by place, identity, image and memory; it is restructured continuously.
- The components of the memory such as time, space and experience are in continuous transformation by both their own internal dynamics and by the relationship of each other.

Keywords

Images; Urban experience; Memory;
Memory-space

Article Information

Received:
20.01.2022
Received in Revised Form:
19.07.2022
Accepted:
12.09.2022
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Architecture Department, Eskişehir
Technical University, Eskişehir, Türkiye
fatmakolsal@eskisehir.edu.tr
2. Architecture Department, Eskişehir
Technical University, Eskişehir, Türkiye
fogulusoy@eskisehir.edu.tr



Kent deneyimi ve belleğin imgelerle dönüşümü

Fatma KOLSAL¹, ORCID: 0000-0002-5569-2046
Feran Özge GÜVEN ULUSOY², ORCID: 0000-0003-0999-3304

Öz

Mimarlığın temsile dayalı, görsel ve deneysel yönlerinin birlikteliği, dönüşen zaman-mekân-beden ilişkisinin sürekliliğinde durmadan yeni anlamlar ve bağlantılar üretir. Zaman içinde fiziksel olandan sanal olana doğru dönüşen zaman-mekân-beden algı ve ilişkisinin ortaya koyduğu, deneyimlerin imgelerle de edinilip değişebildiği, imgelerin her yerde oluşuyla biçimlenen, yeni bir bilgi alanı belirlemiştir. İmgeler, mekânların kendisinin ve temsil ettikleri dönemler ve fikirlerin dışında değişken nitelikte bir başka anlam katmanı açmaktadır. İmgelerin, mimarlığın temsil ettiği şeyler ile temsili sağlayan yapı-mekân arasındaki arayüzler olarak kabul edilip edilemeyeceğiyle ilgili sorular sorulabilir. Bu imgeler temsil edilen ile temsil eden geriliminde sonsuz anlamlar, yorumlar ve iletişim kanalları açmakta; somut ve somut olmayan tüm unsurların biçimlendirdiği kent deneyimini fiziksel olmayan bir üst mekânda dönüştürmektedir. Bu çalışmada, kendinden menkul hale gelen ve yapıların mevcut anlamlarına yeni bir anlam katmanı olarak eklenen imgelerin, kenti algılamadaki etkileri, kent deneyimini nasıl dönüştürdükleri, bellek, imge ve kent deneyimi üzerinden ele alınmıştır.

Öne Çıkanlar

- Temsil ve imge mimarlıkta yeni anlamlar yaratmada kritik unsurlardır.
- Kent deneyimi; yer, kimlik, imge ve bellek unsurlarıyla oluşarak sürekli yapılandırılır.
- Belleğin bileşenlerini oluşturan zaman, mekân ve deneyim hem kendi iç dinamikleri ile hem de birbirleriyle ilişkili olarak sürekli dönüşmektedir.

Anahtar Sözcükler

İmgeler; Kent deneyimi; Bellek;
Bellek-mekân

Makale Bilgileri

Alındı:
20.01.2022
Revizyon Kabul Tarihi:
19.07.2022
Kabul Edildi:
12.09.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Bölümü, Eskişehir Teknik Üniversitesi, Eskişehir, Türkiye
fatmakolsal@eskisehir.edu.tr
2. Mimarlık Bölümü, Eskişehir Teknik Üniversitesi, Eskişehir, Türkiye
fogulusoy@eskisehir.edu.tr

GİRİŞ (INTRODUCTION)

Görsel ve yazılı temsil araçlarının, temsil ettikleri nesneyi tam olarak ifade edemediğine dikkati çeken ressam René Magritte, “İmgelerin İhaneti” adlı tablosunda, resmettiği piponun altına “Bu bir pipo değildir” yazarak, bu tartışmayı, gösteren ve gösterilen arasında bir arayüz olarak tanımlanabilen resim sanatı aracılığıyla etkili bir biçimde ortaya koyar (Foucault, 2001). Biri resim diğeri ise dil olmak üzere bu iki soyutlama sistemini, kavramların yazılı ve görsel karşılıklarıyla çatıştırarak elde ettiği zeminde, şeylerin gerçekliği ve temsili arasındaki kopukluğa işaret eder (Şekil 1). Peki, bir başka temsil alanını tanımlayan mimarlıkta, gösteren ve gösterilen açısından bir arayüz var mıdır? Varsa bu arayüz mekânsal deneyimlerde nasıl karşımıza çıkar?



Şekil 1 - René Magritte, İmgelerin İhaneti, 1928-1929 (URL-1).

Mimarlığın temel üretimleri olan yapılar, Magritte'nin piposu gibi sadece bir nesne değildir. Yapılar, nesne olmanın ötesinde anlamlar taşır. Bir yandan da insanın temel kavrayışlarından biri olan bellek üretimini temin eden mekânsal örüntüyü ortaya koyarlar. Anlam katmanlarının çokluğu, mimarlığı iletişim sistemleri arasında en karmaşık olanlardan biri haline getirebilir. Yapılar bir temsil biçimi olarak bir döneme, bir yaşam biçimine, bir ideolojiye ve kimi durumda kişisel bir tercihe bağlı üretilebilirler. Bunun yanında, yapıların toplumsal ve bireysel yaşantılarda anıların ve belleğin kayıt altına alındığı harici tutanaklar olma halleri de mevcuttur. Bu nedenle, mimarlık aracılığıyla aktarılan anlamları çözme işi, katmanlar arası okumaları gerekli kılar. Aralarında analojik ilişkilerden daha fazla ilişkiler ve bağlantılar olan dil ve mimarlık, iletişim kurma unsurlarıyla düşünüldüğünde

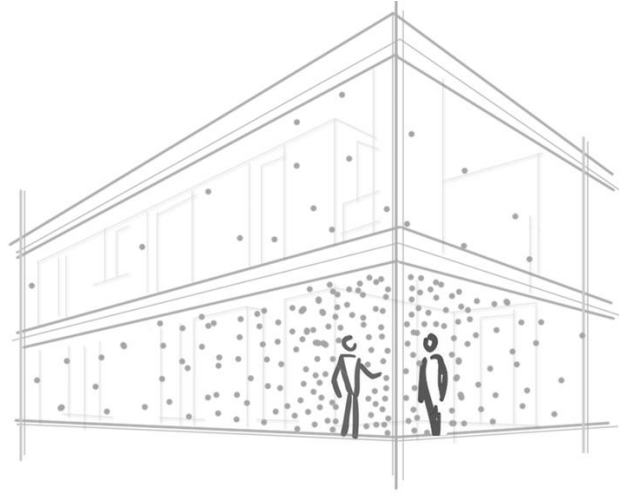
benzerlikler gösterse de, mimarlığın temsile dayalı, görsel ve deneysel yönlerinin bir arada oluşu, dönüşen zaman-mekân-beden ilişkisinin sürekliliğinde durmaksızın yeni anlamlar ve bağlantılar üretmeye devam eder. Bu durum, bir iletişim aracı olarak, bir kodlar sistemi olan dil ile farklı türden anlam üretimlerini olanaklı kılan mimarlık arasındaki en belirgin farklardan biridir. Ancak bir de dönüşen zaman-mekân-beden algısının ortaya koyduğu, deneyimlerin imgelerle de edinilip değişebildiği bir bilgi alanı daha vardır. İmgeler, mekânların kendisinin ve temsil ettikleri dönemler ve fikirlerin dışında ayrıca bir başka anlam katmanı daha oluşturmakta; “Bu bir mekân değildir” kademesinde bir tartışma açmaktadır. “Burada imgesi olan şey mekân mıdır?”, “Bu sözcük dizisi mekân mıdır?” ikili sorusuna üçüncü bir katman daha ekleyerek, “İmgenin referans aldığı yapı mekân mıdır?” sorusu getirilebilir. Tam da bu noktada, imgelerin, mimarlığın temsil ettiği şeyler ile temsili sağlayan yapı-mekân arasındaki arayüzler olarak kabul edilip edilemeyeceği ile ilgili sorular belirebilir. Bu imgeler, temsil edilen ile temsil eden arakesitinde sonsuz anlamlar, yorumlar ve iletişim kanalları açmakta; somut ve somut olmayan tüm unsurların biçimlendirdiği kent deneyimini dönüştürmektedir.

Diğer yandan, kent tekil olarak yapılarla kurulan ilişkilerin farklı bağlantılar ve deneyimlerle örgütlendiği devingen bir düzlemdir. Kent, insan eylemlerinin çeşitlenerek etkileşime girdiği bir mekânlar bütünüdür.

İmgeler; çoğu zaman referans aldığı durumu dışlayarak, anlamı yeniden üretmektedir. René Magritte'nin, “İmgelerin İhaneti” tablosuyla öne sürdüğü “gördüğümüz, söylediğimiz şeyin içine yerleşmiş değildir” sorgusuna eklenen, “deneyimlediğimiz gördüğümüze yerleşmiş değildir” önerisi “mekânsal imge” olarak adlandırılan illüstrasyonla tartışılabilir (Şekil 2). Burada kullanılan imge, bir yapının üç boyutlu temsili olmasına ayrı bir boyut açarak, yeni bir anlam düzlemini teşkil eder. Temsil ve gerçeklik arasındaki böyle bir ilişki belleğin temeli olan hatırlama eyleminde de söz konusudur. Bellek, yaşanan deneyim ve hatırlanan anıların “gerçeklik” açısından paralellik göstermediği noktaları da ortaya çıkarmaktadır. Stadler'in romanındaki baş karakter Maxwell Kosegarten birkaç yıl önce görmüş olduğu manzarayı resmederken, deneyimi ile ortaya çıkan temsil arasındaki farklılığı keşfedip, hangisinin gerçek olduğunu sorguladığı düşüncelerini şu şekilde aktarır:

“...eğer anımın asıl deneyimin tam bir kopyası olması gerekiyorsa, eğer durum buysa, o zaman resmim büyük ölçüde kusurluydu. Bulanık bir anımın kötü bir resmiydi. Ama ben belleğin asla donuk bir doğası olmadığını ve olması gerekmediğini düşünmeyi tercih ettim. Resmim, basitçe asıl olayla ortaya çıkmış olan değişken anımın başarılı bir ifadesiydi... Resmim, anladım ki bu anıyı öylesine doğru biçimde tasvir etmekteydi ki asıl modelle karşılaştırıldığında kaçınılmaz olarak yanlış görünecekti” (Stadler, 1991, 144).

Mekânsal deneyim de tıpkı bahsi geçen resim gibi bazı kodlarla hafızaya kaydedilen imgeler bütününe kapsamaktadır. Bu imgeler de salt statik kayıtlar olmanın ötesinde, dinamik ve sürekli yapılandırılan bir özelliktedir.



bu bir mekan değildir!

Şekil 2 - Mekânsal İmge.

Dolayısıyla tıpkı Magritte'nin piposu ve mimarlıkta olduğu gibi bellekte de deneyimlenen ve hatırlanan arasında doğrusal benzerlik ilişkisi yoktur. Deneyimler, bizde uyandırdığı sezgi, anlam ve duygularla başka bir deyişle imgelerle muhafaza edilmektedir. Yani bellek, statik olarak deneyimleri ve bilgileri kaydeden mekanik bir araç değildir. Zaman değişkenine bağlı olarak dönüşen, barındırdığı imgeleri de beraberinde dönüştüren, aynı zamanda da yapılandırılan dinamik bir unsurdur.

Bu çalışmada, mimarlığın, dil gibi, gerçekliğin temsilinde aracı olma, iletişim kurma ve bellek üretimini temin eden bir araca dönüşmesi nitelikleri ortaya konmaktadır. Tarihsel olarak değişen zaman-mekân-beden ilişkileriyle birlikte yeni anlamlar üretme niteliğine de değinilmektedir. Bu bağlamda, dönüşen zaman-mekân-beden ilişkileriyle 'imge üretimi', 'mimarlığın imgeler aracılığıyla temsili' ve 'imgeler aracılığıyla mekânsal deneyim ve bellek' konularına ilişkin bir tartışma amaçlanmaktadır. Tartışmada kent deneyimi ve imgelere dair Lynch (1960), Erzen (2015), Arheim (1969) gibi kaynaklara başvurulduğu gibi, hafıza, bellek ve mekân üretimine dair Halbwachs (2017), Nora (2006), Arendt (1996), Bauman (2017), Bergson (2007), Connerton (2009), Urry (1999), Toffler (2006) gibi kaynaklarından da faydalanılmıştır. Adı geçen çalışmalarda zamanın ve hızlı mekânsal dönüşümlerin kimlik ve bellek üzerindeki etkileri tartışılmakta, imgesel olarak algıladığımız ve kayıt altına aldığımız deneyimlerin dönüşümlerine dair içerikler yer almaktadır. Özellikle belleğin oluşumuna dair mekânsal ilişkilerin tartışıldığı bu önceki çalışmalar, bu araştırmanın da bellek-mekân, kimlik-mekân, deneyim-mekân ilişkilendirmesinin de çıkış noktası olmuştur. Çalışmada bu aşamadan sonra mekân üretimi çerçevesinde imgelerin bellek, kimlik ve deneyime nasıl etki ettiğine dair bir soruşturmaya gidilmiştir. Literatürden gelen bilgilerle kavramsal çerçeve tartışmalı bir şekilde aktarılmıştır. Elde edilen çıkarımlar tablolar ve kent ölçeğinden çeşitli örneklerle karşılaştırmalı bir biçimde aktarılmıştır.

MEKÂNSAL BİR ETKİLEŞİM OLARAK BELLEK VE KİMLİK (MEMORY AND IDENTITY AS A SPATIAL INTERACTION)

Kent; tekil olarak yapılarla kurulan ilişkilerin farklı bağlantılar ve deneyimlerle örgütlendiği devingen bir düzlemdir. Kent, insan eylemlerinin çeşitlenerek etkileşime girdiği bir mekânlar bütünüdür. Toplumsal, kültürel, ekonomik ve sosyal anlamda var olan koşulların yansımalarını kent okumalarıyla elde edebilir veya neden-sonuç ilişkilerini kentsel-mekânsal bilgilerden edinebiliriz. Bu bakımdan kent, sadece yapıyla çevre ile örülmüş bir oluşum değil, içindeki yaşamla var olan ve gelişen sürekli bir bellek alanıdır. Dolayısıyla kent, insanlara ait anıların ve geçmişin kayıt altına alındığı fiziki unsur olarak değerlendirilmekte ve ayrıca kültürel simgeler deposu olarak da işlev görmektedir (Urry, 1999, s. 46). Kent bu özelliğini öncelikle fiziki mevcudiyetinden alır. Kent mekânının coğrafi, topoğrafik ve toplumsal bir kimliği vardır. Bu doğrultuda, yeri tanımlı hale getiren bu üç kimlik arasındaki ilişkilerdir (Erzen, 2015, s. 160). Erzen'in tanımında olduğu gibi, Lynch de kimlik, yapı ve anlamı ön plana çıkarır (Lynch, 2010). Kentsel ortamda bir mekânın görsel olarak algılanması, onun yapısı, kimliği ve anlamıyla bütünleşmiştir. İki tanımda da somut unsurlara ek olarak kentin maddesel olmayan özelliklerinin vurgulandığı görülebilir. Kişisel veya topluma mal olan anlamlar, deneyimler, göstergeler, anılar ve bellek mekânla bütünleşen, mekândan kökenini alan ve zamanlar arası aktarımları olan bileşenlerdir.

Her şeyin hızla değiştiği sanayi sonrası toplumda, bu hızlılığa sebep olan ekonomik ilişkiler, kenti tanımlayan kavramları, zamansal unsurun etkisine izin vermeden dönüştürmeye başlamıştır. Burada Toffler (2006)'ın evinden ekmek almaya giden bir çocuğun bir süre sonra eve dönüşlerinde, yapıyla çevrenin hızlı değişimi nedeniyle sorun yaşadığı hikâyesi hatırlanabilir. Aynı hız, sadece yapıyla çevreye değil, gündelik alışkanlıklara ve tüketime de etki etmektedir. Kullan-at kültürünün yaygınlaşması ve her şeyin çok sarsıcı bir şekilde hızlı değişmesi, işleyen yapıları bile devre dışı bırakabilmektedir. Uzunca bir zaman dilimi içinde yalnız tek nesne ile ilişki kurarken, daha kısa zaman süreleri içinde birçok nesneyle ilişki kurmamız hafızamızı ve belleğin kayıt altına alma prensiplerini de değiştirmektedir (Toffler, 2006, s. 71). Çevrenin ani dönüşümü, tükettiğimiz şeylerdeki hızlı değişim, insanın adapte olmadaki gönüllülüğü ve becerisine rağmen anakronik bir durum ortaya koymaktadır. Bu oluşum kendi dinamiklerini üretir hale gelmiştir. Sonuç olarak belleğin kurulmasında önemli olan fiziki referansların süratli yapım ve yıkım faaliyetleri kent alanındaki deneyimleri de dönüştürmüş, kentle kişi arasında kurulan aidiyet duygusu zedelenmiştir. (Kolsal vd., 2018). Aynı zamanda, mekân ve zaman kavrayışının değişmesi, belleği de dönüşüme uğratmıştır.

Tarihsel süreç boyunca, birçok disiplin tarafından farklı anlamlarına vurgular yapılan bellek kavramının en önemli özelliği mekânsal olarak kodlanmasıdır. Locke'un içe dönük bellek kavrayışında hatırlayabilme, kendilik ve bilinç gibi insanın varoluşsal özellikleriyle özdeşleşmektedir (Ricoeur, 2017, s. 123). Yani insan hatırlayabiliyorsa benliği vardır, kendi olmaktadır. Bu kavrayışın yerini, Platon ve Aristoteles'in balmumuna mühürlenmiş 'imgeler' anlayışına ve 'topos'la ilişkili bir yaklaşıma bıraktığı görülmektedir (Draaisma, 2018, ss. 48-49). Yani bellek, tıpkı balmumuna kazınan imler ve işaretler gibi, yer veya mekândaki işaretler ile şekillenen bir duruma dönüşmüştür. Yerin gücünün hatırlama aracı olarak kullanıldığı hafıza sanatının başlangıcı da belleğin 'topos' kavrayışına dönüşmesiyle ortaya çıkmıştır. Mekânın ezberleme veya hatırlatma tekniği olarak

kullanıldığı bu anlayışta, mekânda belirlenen düzende yerleştirilmiş nesnelere işaretlenmesi yoluyla, bu nesnelere ile imgesel bir yürüyüşe çıkmak, ‘hatırlamak’ demektir (Yelsalı Parmaksız, 2019, s. 14). Yates’in aynı isimli eserinde ele aldığı “bellek sanatı” olarak adlandırılan bu antik uygulama için Cicero “bellek sanatını eğitmek isteyen kimi kişiler, kimi yerler belirlemeli ve hatırlamak istedikleri şeylerin görüntülerini zihinlerinde canlandırarak, onları belirledikleri yerlerde depolamalıdır. Böylece bu yerlerin düzeni, hatırlanmak istenen şeylerin de düzenini muhafaza edecektir” diyerek bu yöntemin mekânsal boyutunu tarif etmiştir (Connerton, 2014, s. 14). Dolayısıyla mekân hem hatırlamanın teminatı olmakta hem de algılanan ve hatırlanan olarak bellekte yer almaktadır. Arendt (1996)’e göre anımsamak, düşüncenin en önemli şekillerinden biridir ve önceden kurulmuş bir referans sistemi olmadan işlevsizleşir. Ona göre insan zihni nadiren bir şeyle ilişkilenebilir başka bir şeyi akılda tutabilir. Yine burada mekânın, insanın veya çoğullukların ilişkileri hafızayı oluşturan en önemli bileşenler olarak ön plana çıkmaktadır. Halbwachs’ın ‘tanıklıklar’ olarak adlandırdığı bu somut unsurlar, hatırlama sayesinde daha önce bulunduğumuz bir yere döndüğümüzde, parçaları unutulmuş olan bir tabloyu yeniden şekillendirmemizi sağlamaktadır (Halbwachs, 2017, s. 9). Sinema yönetmeni Alexander Kluge da “hafıza denilen şey bir mekanizmadır ve bu mekanizma çapraz ilişkiler kurarak algılanabilir” söylemiyle bu durumu destekler. Böylesi bir algıda, her türlü gerçek ve imge hafızada iç içe geçerek yeni gerçeklik biçimleri oluşturur (Forrest, 2011). Çevresel psikoloji alanında çalışanlar da hatırlamanın, kişisel geçmişin kavramsal şemaları, anısal ve otobiyografik bellek, çapraz- kodlanmış anılar ağı ile geçmişe ait unsurları birbiriyle ilişkilendiren bir süreç olduğunu vurgularlar (Williams ve Conway, 2015, ss. 45-48). Bir kente dair hafızada kalanlar hatırlanırken, içindeki tüm unsurlar, anlamlar, ilişkiler, imgeler, ölçekler arası boyutlarla çaprazlanarak hatırlanmaktadır. Bir sokağı, duyumsadığınız koku, baktığınız harita, çektiğiniz bir fotoğrafın konumu veya sokağın kentteki anısal yapılara olan konumu, sokakta dinlediğiniz müziğin ait olduğu ülke ile beraber hatırlamanız gibi.

Yer ile kurduğumuz ilişkinin bellekteki yansımaları kimlikle ilgili bilgileri de ortaya koyar. Bu durumda hatırlamak kadar unutmamanın da önemli olduğundan bahsedilebilir. Hatta hatırlamanın koşullarından biri unutmaktır (Quiroga, 2013, ss. 29). Unutma ihtimalinin varlığı, mekânsal temsil ile hatırlatmayı zorunlu kılar. Özellikle modern dönemde kronikleşen toplumsal hatta küresel amnezi, kasıtlı hatırlatmayı, hatırlama da unutmayı getirir. Çünkü hatırlatılmak istenenlerin dışındaki onlarca unsur, hatırlatılanın gerisinde kalarak unutulur. Nora, “bugün hala hafızamızla yaşıyor olsaydık, mekânları ona adama ihtiyacı duymazdık” diyerek unutmamanın mekânsal temsille zorunlu hatırlatmayı mecbur kıldığını vurgulamaktadır (Nora, 2006, s. 18). Bu nedenle modern dünyada, hatırlamanın ve unutmamanın hızı, mimarlığın bir iletişim sistemi olarak geliştirdiği, zaman-mekân-beden birlikteliği üzerinden ürettiği mekanizmalarını da zayıflatabilmektedir.

Bellek gibi içeriğini doğrudan mekân referanslı alan bir diğer önemli unsur da kimliktir. Bağlamsal unsurlarla gelişen ve tanımlarını bağlamdan alan bir yer anlayışı, kimliği anlamayı da sağlayan verileri sunar. Bu anlayışa göre yer ile kimlik arasında birbirini destekleyen bir bağlantıdan bahsedilebilir. Coğrafi bilgiyle temellenen yer tanımı, kimliğin de belirleyicisi konumuna gelir (Kılıçkırın, 2014). Bauman’ın anekdotlarında aktardığı, ait olduğu coğrafyadan ayrılmasıyla yaşadığı kimlik çatışmasının kendini ‘yersiz-yurtsuz’ hissetmesiyle sonuçlanması, yer-kimlik bağıntısının sıkı ilişkisini kanıtlar niteliktedir (Bauman, 2017). Hatta kimlik ve yerin birbiriyle olan sıkı ilişkisi Marc Auge’nın tektipleşen tüketim alanlarını kimliksiz yapılar olarak görerek ‘yer-olmayanlar’ (non-

places) diye adlandırdığı kavrayışında okunabilir. Bu alanlar, geleneksel kent mekânından farklılaşarak, akışkan zeminli, kısa ömürlü, ‘gelip-geçici yer’ler olurlar.

Bu doğrultuda kimlik ve bellek birbirlerine bağımlı olarak ilişkilenen ayrılmaz unsurlardır. Bellek, mekânsal olarak kökenlenen, zamansal olarak da geçmiş, şimdi ve gelecek arasında ilişki kuran bir ağıdır. Mekân, zamanı algılamada, zaman da mekânı deneyimlemede birer ölçü olarak devreye girer. Dahası; mekân, anıyı olası kılacak biçimde zamanı dönüştürür. Anılar maddi olarak fiziki mekânda yerleşirken, anının zamansallığı mekânsal temellere oturur (Yates, 1966; Halbwachs, 2017; Nora, 2006; Connerton, 2009; Urry, 1999). Kimlik de referanslarını doğrudan mekândan alan, sadece fiziki olarak yerin varlığıyla değil insanın mekânla kurduğu ilişkiler ağıyla beraber şekillenen ve dönüşen bir kavramdır.

Çağın hızlı yapım ve yıkım faaliyetleri nedeniyle kent düzleminin sürekli dönüşmesi belleği de doğrudan etkilemektedir. Öyle ki bu dönüşüm, mekân-zaman ve bellek ilişkisini de dönüştürmüştür. Zamanın süreksizleşmesi, belleğe ait bileşenler olan mekân ve zaman kavrayışını da değiştirmiştir. Zaman, modernitenin mekânında yok olarak, ölçüm aletlerine kaydedilerek işlevsizleşmiştir (Lefebvre, 2014, s. 120). Hartley’in (2002) vurguladığı gibi, “geçmiş yabancı bir ülke” olacak kadar uzaklaşmış, dolayısıyla imge ve bellek de birbirinden kopmuştur. Modernite ve onun geçmişe bakmayan kavrayışı, hatırlama ve unutmama kültüründe de değişiklikler meydana getirmiştir. Hatta toplumsal bellek tartışmalarının 20. yüzyılda yaşanan olaylarla birlikte yüzyılın ikinci yarısında ivmelenmesi, hatırlamanın fazla müdahale doğuran sonuçlarını ortaya çıkarmıştır. Connerton’ın aşırı hatırlama (hipermnezi) olarak adlandırdığı bu durum, yeni çağda kent mekânını yeniden örgütlemeye başlamıştır (Connerton, 2009, s. 140). Geçmişle ilişkisini koparan modernite sonrasında yükselen postmodern toplum; geçmişin yüceltildiği ve unutmama öteleyen aşırı müdahalelerle hatırlamanın abartıldığı ortamı sunmaktadır. Aşırı hatırlama kültürü, tarihsel süreç içerisindeki kırılma noktalarıyla beraber belleğin toplumsal olarak kurgulanmasına da imkan sağlamıştır. Toplumlar kendi meşruiyetlerini arttırma, geleceklerini ve kimliklerini inşa etme aracı olarak belleği kullanmışlardır. Bu nedenle de hatırlamayı garantileyecek fiziksel temsilleri üretmişlerdir. Aşırı hatırlama veya unutmama çabası ve kent mekânında bu yönde inşa edilen temsiller, bulunduğu bağlama ait olmayan yapıların da kentte yer almasına neden olmuştur. Geçmişten çağrılan veya yeniden üretilen fragmanlar ve imgeler, kentsel mekânda geçmişten gelen yabancı nesnelere yer almaktadır. Bu nedenle aşırı hatırlama, unutmama korkusuyla yapılan, geçmişte kentsel mekânda hiçbir zaman var olmamış mekânsal temsilleri meşru kılmaktadır.

Kentlerin bu kadar hızlı dönüşüm geçirdiği, mekânın kendini sürekli yenilediği, belleğin bulanıklaştığı, kimliğin belirsizleştiği bir zaman düzleminde insan-mekân ilişkisinin ara yüzünde bulunan imgeler de kent deneyimi ve bellek ile çift yönlü ilişki kurmaktadır. Mekândan ve mekanlardaki anılardan doğan kent kimliği ve belleği kavramları imgesel referanslara tutunmaya başlamaktadır. İmgeler, gerçekliklerin yerini alarak, insanın kentle münasebetinde yeni bir algı ve deneyim türü ortaya koymaktadır. Anılar zamana bağlı değil, imgelere bağlı gelişmektedir. Sonuç olarak, imgelerin bellek oluşumuna ve deneyime etkisinin sorgulanması önemli hale gelmiştir. Bu bağlamda, kavramları yeniden ele almak, imgenin bellekle, belleğin deneyimle ve imgenin deneyimle karşılıklı etkileşimlerinin incelenmesi yeni kavramların keşfedilmesine olanak sağlayabilir.

İMGESEL BİR ETKİLEŞİM OLARAK DENEYİM VE BELLEK (EXPERIENCE AND MEMORY AS AN IMAGE INTERACTION)

Benjamin (2001, s. 41) geçmişin gerçek imgesi uçucudur diyerek hatırladığımız şeylere dair bir tespitte bulunur. Ona göre geçmiş, ancak bir daha görünmemek üzere kendini gösterdiği an, birden parlayıp aydınlanıveren bir resim olarak yakalanabilir. Geçmiş imgesi, onda kendini amaçlanmış olarak bulmayan bugünle birlikte yitip gitme tehdidi taşır; bu imge bir daha geri getirilemez. Huyssen'e göre ise (1999, s. 13) belleği oluşturan da geçmiş ve şimdinin, temsil ile gerçek olanın arasındaki çok ince yarıktır. Hatta belleği canlı kılan, mekanik bir depolama ya da arşiv aygıtından farklılaştıran da bu yarıktır. Sürekli olarak temsil ile gerçek arasındaki zamansal gidip-gelmeler, zamanı parçalara bölerek temsilleri çoğaltır. Her hatırlamada değişen temsil, gerçeğin kendisine ait imgeyi bulanıklaştırmaktadır. Dolayısıyla bellek, daima 'şimdiki zamanın filtrelediği bir geçmiş görüntüsüdür' (Traverso, 2019, s. 21). Bu durum tersten ele alınırsa, imgelerle elde edilmiş bir hafızanın da imgelerle hatırlanacağı öngörülebilir. "Benliğimin derinliklerinde böyle çırpınan şey, bu tada bağlı olan, onun peşinden bana gelmeye çalışan bir görüntü, görsel bir hatıra olmalı" diyen Proust'un küçük kurabiyenin tadının izini sürdüğü zihinsel yolculukta, tadın yaratmış olduğu hissin mekânsal ve zamansal bağlamını tanımlamaya çalışırken hatırladıkları an'ın kendisi değil temsildir (Proust, 2022). Tıpkı kurabiyede olduğu gibi, hatırlama araçları zihinde temsiller yoluyla geri çağırılır. İmge ile belleğin ilişkisi de bu noktada başlar. Kent deneyiminin imgeleri, hatırlatma araçları olarak kentin belleğini inşa eder.

İmgesel olanda, bir fotoğraf karesi, bir resim veya bir ekran gibi izlenen bir durum vardır. Bu izlenen ile izlenilen konum durmadan birbirine eklemlenir. Burada kentteki yapılar bir göz gibi, bir kamera gibi davranır ve zihinde mekânsal deneyim bir devingenlik oluşturur. Bu nedenle insanların ve yapıların birlikte elde ettikleri etkileşim sürecinde geçirilen zaman, deneyimle kavradıkları bir alanı tanımlar.

Mekânların bellek oluşumundaki etkisi düşünüldüğünde mimarlığın zamanı dondurabilen bir biçim olduğu söylenebilir. Burada Bergson'un (2007) "Madde ve Bellek" eserinde vurguladığı 'süre teorisi'ni hatırlamak gereklidir: Belleğe ait olan olgular bir yandan zamana ait olan kavrayışlardır. Yani algı, anı, imge gibi kavramlar bir süreç içerisinde oluşurlar. Sonsuz imgelerin oluşu gibi zaman da milyonlarca an'ın görüntüsüdür. Nasıl ki, imgeler zamanı dondurarak mekânı temsil ediyorsa, an denilen, konuşurken bile geçip giden, zamansal kesit de zamanı görünür kılandır. Bergson'un söylediği gibi katıksız şimdiki zaman yoktur, çünkü geçip gitmiştir. Dolayısıyla imgeler, an'ın ve mekânın donmuş görüntüsüdür (Bergson, 2007, ss. 100-114). Zamanın donması, hiçbir zaman tekrar edemeyecek olan imgelerle yakalanabilmektedir. İmgelerin tekrarı fotoğraflarla elde edilmektedir. Fotoğraf çekmek hem bir deneyim türü hem de sosyal medya kullanımına bağlı gelişen bir paylaşım türü halini almıştır. Bu nedenle fotoğraf çekme eylemi mekânı deneyimlemenin gündelik pratiklerinden biri olarak görülebilir. Bir zamanlar, turistlere ait bir davranış gibi görülen bu eylem, insanların yerle olan ilişkisi zayıfladığı ve deneyimlenen mekânların bağlamsal bilgileri dönüşüm geçirdiği için, mekâna dair edinilen tanışıklık ilişkisinin imkanlarını da azaltarak, insanlara kendi kentlerinde turist olma olanağı vermektedir.

Tüm bu tartışma içerisinde, kentte yaşayanların kentsel mekânlarla geliştirdiği iletişimi ve deneyimini ve aslında kent sakini olup turist bakışını içeren süreçlerini tanımlamak için Urry

(1999)'nin tüketilmek üzere tasarlanan yapıntı mekânlardaki turist eylemlerini belirttiği “post-turist” kavramını incelemek faydalı olabilir. Turist eylemleriyle birlikte, yerlerin yeniden yapılandırılma süreçleri içerisinde anlaşılmasıyla zamanı ve mekânı değerlendirebilmek yeri anlamının öncelikli basamağı olarak önemli bir yer tutar. Tüketilmek üzere gelişen mekânsal üretimlerde ortaya çıkan turist bakışını oluşturan şey onun karşısında yer alan ve turist-dışı deneyim biçimlerini içeren davranış örüntüleriyle anlamlı hale gelir.

Burada Harvey (1989)'in modernizmin kenti işlevlere ayıran tavrına karşı gelişen postmodernizmin kentteki dokuları nasıl parçaladığına ve parçalı olmayanları da nasıl kesintili olarak ele aldığına dair tespitlerinden faydalanılabilir. Ona göre postmodernizm kent mekânını oluşturan dokuları palimpsestler olarak algılar ve zamansal olarak bunları birbirine yapıştırmak ve üst üste getirerek bir kolaj elde eder. Bu nedenle postmodernizmin, mekânları parçalı olarak üretme mantığıyla kurulan kentlerde gündelik deneyimlerdeki eklektik durum, kasıtlı olarak üretilmiş olan parçalanmanın bir sonucudur. Bu tanımlamalara dayalı gelişen kent mekânında, zaman-mekân-beden ilişkisi, tanıdık olmayan parçalarla elde edilen ancak katmanlarında aşına olunan parçaların yer aldığı bir türden kişiselleşmiş, ama bütüncül olmayan kimlikler yaratmıştır. Turizm ise iletişim ve ulaşım teknolojilerinin ilerlemesine bağlı olarak kentin parçalı okunma halini desteklemeye başlayan bir demokratikleşmeye erişmiştir. Bu demokratikleşmede gerekçe olarak, herkesin her an turist olabilme imkânını sunan mekânsal düzenler, toplumsal pratikler ve değişim hızı gösterilebilir. Ortak bir kültür halini alan ve aktüel yaşamın yeniden yorumlanarak başka bir formatta kişinin isteğine göre üretildiği mecralar, kent de dahil tüm deneyim anlarının fotoğraf karelerinde paylaşımını teşvik etmektedir. Turizm de fotoğraf çekme vasıtasıyla gelişen imge üretiminin gücünden faydalanır. Turizm genel çerçevede “camera obscura” gibi zaten zihinde bir imgesiyle ziyaret edilen fiziksel ve üretilmiş çevrelerin yeniden fotoğraflanarak görsel tüketimi üzerine kuruludur. Gezilen yerlerin kaydının gelişen teknolojiyle birlikte daha rahat tutulması, fotoğraflanması ve belgelenmesi, görsel tüketime namzet olan yerlerin ziyaret edilme oranlarını arttırmıştır. Urry (2009)'nin ortaya koyduğu bir başka önemli tespit ise modern zamanların kent yaşantısında ortaya çıkan bir kavram olarak flanörün, yani kent aylaklarının fotoğrafla arasındaki bağın turist olma durumunu geliştirmesidir. Fotoğraf çekmek eylemi, görülmeyi ve kaydedilmeyi ve aynı zamanda başkalarını görerek, onları kaydetmeyi içerdiğinden, imgelerin her yerdeliğine katkı sağlar.

Bu bakış açısına göre fotoğrafı çeken nesne, tanımlanan kare içerisinde çekenin mülkü haline alır. Fotoğraf bir şekilde gerçekliği kopyalama aracı gibi gözükse de elde edilen görüntüler gerçekliğin bütününe ilişkin değil, onun görülmek istenen parçalarına ilişkindir. Bir şeyi fotoğraflamak, o şeyin “orada” olduğuna dair delil oluşturmaktadır. Aslında fotoğraflar aktif olarak izleme ve gösterme pratiklerinin doğal bir sonucudur. Fotoğrafi çeken özne, kadraya girecek nesneyi seçer, tanımlar ve onu kendi kişisel tercihleri doğrultusunda inşa eder. Bu anlamda her fotoğrafın kendi anlatısı vardır. Bu anlatı geziyi biçimlendirir. Bir gezide veya herhangi bir paylaşımı planlanan deneyimde aranan şey bu süreçlere uyan ve yapılandırmayı bekleyen görüntüleri yakalamak üzerinedir. Turist geziden önce, gezdiği yerle ilgili edinmiş olduğu imgelerin izini sürer ve görüntüleri orada olmanın kanıtları olacak şekilde kendi bakışıyla elde etmeye çalışır (Urry, 2009).

Kentlinin de turist gibi davrandığı bu düzende, durmaksızın imgeler üretilir. Bu sayede imgeler her yerde olurlar. İmgelerin her yerdeliği onların gücünü ve dönüştürücülüğünü artırır. İmgelerin enformasyon olarak, yorumlama nesnelere, empati ve yaratıcılık odakları olarak ve dünyaya açılan

pencereler olarak analizlerinin mümkün olduğunca çok bakış açısıyla yapılması gerektiğini savunan Burnett (2007) metaforların gücünün ve insanların etraflarındaki imgelerle geliştirdikleri ilişkilerin öneminin altını çizmektedir. Özellikle imgelerin her yerde oluşu ve bu durumun kendine referanslı bir anlam üretmeye başlaması, görsel bir dile dayanan mimarlık açısından önemli bir tartışma ortaya koyar. Kentler, kent deneyimi ve kenti algılama biçimleri bu imgelerle şekillenmeye başlayarak kente dair bireysel ve toplumsal ölçekte yeni anlamlar üretmeye de başlar. İmgeler bu noktada farklı deneyimleri olanaklı kılan şekillendirici ara yüzler olarak kent ile kurulan ilişkiyi düzenleyen yeni bir dil ve yeni bir anlam katmanı oluştururlar.

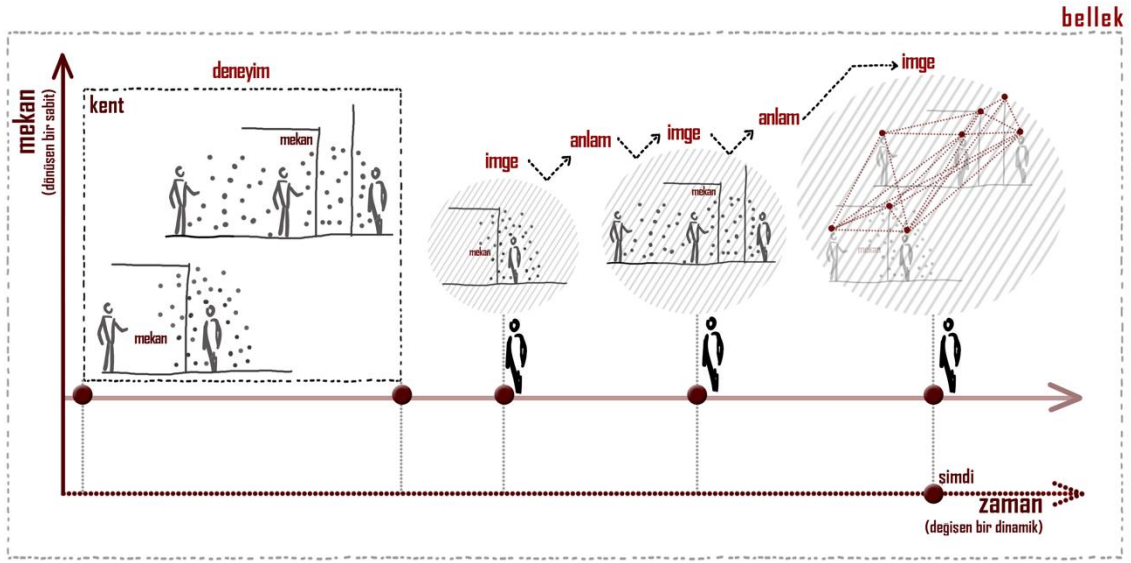
Her yeni imge yeni bir anlam üretir. Gerçekliğin ürettiği anlam ve ilettiği mesajlar da bu imgelerle dönüşür. Mekânsal deneyimde elde edilen duyuşsal veriler, imgeler üzerinden nakledilir, taşınır ve yayılır. Bir imge bir kokuyu veya mekâna ait bir dokuyu çağrıştırabilir. Ancak bu aynı mekâna ait pek çok imge için izleyicisine bağılı olarak farklı bir oranda olur.

Burada Arheim'in görsel düşünme üzerine ortaya koyduğu düşünceler, imgelerin etkisini anlamak için hatırlanabilir. Arheim (1969)'e göre düşünce, zihinde görsel olarak oluşur. Sözcükler de düşüncedeki imgelerin anlatımı için devreye sokulan araçlardır. Ona göre, düşünmenin koşulu dil (sözcükler) değildir; fakat dilin düşünmeye olumlu etkisi vardır.

Zihnimizde deneyim ve algılarımızla oluşmuş, bilgi öbekleri, imge yığınları ve biriktirilmiş veriler arasında ilişkinin doğması ve ilişkilerin anlamlı bir bütün olarak ortaya konması, yapım faaliyeti içeren bir sistemdir. Bu sistem içerisinde sesleri, anlamları ve kelimeleri, görsel nesnelere dönüştüren bir bağlantı söz konusudur (Cross, 1982). Zihindeki tüm medyalar algıya dayalıdır ve bilgi imgeler halinde kodlanır. Tüm bu kodlar, imgeler, birikimler karmaşık bir zihinsel örüntünün birbirini besleyen parçaları olarak nitelenebilir. Bu durumda imgeler algılarımızın temellendiği ana unsurlar olarak bellekte yerlerini alırlar.

Dilin zihindeki görsel kökenine dair bu bilgiler, görsel verilerin baskın oluşu mimarlığın iletişim boyutunu bir kez daha kanıtlarken, kentsel imgelerin kentli tarafından ve paylaşım ortamlarında sürekli üretimine dayalı gelişen imgelerin her yerdeliğinin de yeni bir dil ve iletişim geliştirdiğini ortaya koyar.

Dil, söylem ve izlemenin bir sentezi olan imgeler çeşitli medya biçimlerini bir araya getirerek, yalıtılmış bir ifade olmanın ötesinde, sadece nesne veya bir gösterge olarak değerlendirilemeyecek potansiyelde üretimlerdir. Bu potansiyelin içeriğinde imgeler, insanların kendilerini görme biçimlerini dönüştüren, artık kendilerini bireyler olarak değil, melez personalar olarak tanımlamalarına yol açan ve kimliğin artık tek bir yeri, nesneyi ya da kişiyi mesken tutmadığı teknolojik bir zekayı temsil etmektedir (Burnett, 2007, s. 34).



Şekil 3 - Zaman ve mekân bağlamında üretilen imge, anlam ve bellek.

Bu nedenle imgeler sadece birer görüntü olmanın ötesinde etkilere sahiptir. Gündelik yaşantıdaki etkileri yanında, kent deneyimini dönüştürdükleri, parçalı ve üretilmiş imgeler aracılığıyla yeni bir kent tahayyülü geliştirmeye muktedir oldukları için, kentin değişken fiziki karakterinin de bu imge işgaline izin veren bir yapıda olduğu söylenebilir. Mekânsal ve zamansal bilgiyle gelişen anı ve bellek, her ne kadar bir imgeye tutunarak zihinden çağrılrsa da mekânın sabit olmaması ve değişkenliği, çağrılan imgeyi sürekli bir bozulmaya uğratar. Fotoğrafla veya izleme üzerinden eski imgeye eklenen yenileri ilk imgenin yok olmasını hızlandırır. Bu durum mekânın gerçekliğinin, imgeleri tarafından ele geçirilmesine neden olur. İmgeler o mekân için yeni bir gerçeklik üretirler. Kentleri bu yeni pratikler ve algı üzerinden okumaya ve kentlerle bu şekilde iletişim kurmaya başlarız (Şekil 3).

Bu doğrultuda, çalışmanın kavramsal bölümünde aktarılan kent mekânının dönüşümü ile değişen kent deneyimi, bellek ve kimlik; aynı zamanda imgelerin bu değişimlere olan etkisi bir sonraki bölümde somutlaştırılarak özetlenmiş ve örneklerle ele alınmıştır.

KENTTEKİ İMGELER, DENEYİMLER VE BELLEĞİN DÖNÜŞÜMÜNE DAİR (ON THE TRANSFORMATION OF IMAGES, EXPERIENCES AND MEMORY IN THE CITY)

Kent deneyiminin temel bileşenlerini insan ve mekân oluşturmaktadır. Kentteki mekânın farklı müdahalelerle geçirdiği değişimler, kent ile farklı zamansallıkta temasları olan insanların deneyimlerinin ayrışmasına neden olmaktadır. Dolayısıyla imgeler ve bellek de değişmektedir. Bütüncül ele alındığında ise mekânın fiziksel özellikleri, insanla olan ilişkisi, insanların elde ettiği anlam ve imgeler ile bellek değiştiğinde kimliğe ait ilk bileşenler tamamen kaybolmaktadır. Çalışmanın bu bölümünde farklı müdahale biçimleri üzerinden ele alınan örnekler ile kavramsal tartışma somutlaştırılmaya çalışılmıştır.

Kent imgelerine bağı olarak farklılaşan bellek türlerinden bahsedilebilir. Lefebvre, gündelik hayatın tekrarların bir araya gelmesine dayalı bir mekân olup olmadığı yönündeki sorgulaması sonucunda, “dünyaya dair deneyim, bütünlüklü ve sürekli bir deneyimdir” çıkarımına varmıştır (Lefebvre 1998’den aktaran, Yelsalı Parmaksız, 2019). Bu çıkarımdaki gibi bir yapıyı sürekli deneyimleyen kent sakini eski ve yeni imgeler durmadan bir araya gelerek tanıklık sürecinde gelişen sürekli bir imgeye dönüşürler. Bireysel algılarla değişiklik gösteren bu imge eşsizdir. Yapının kendisi ve fotoğraflarına ait imgelerinin bir araya gelmesi ile imgeler arası aktarımlarla seçici bir imge elde edilir. Sonuç itibarıyla ortaya çıkan son imge ise, eski imge, yeni imge, sürekli imge ve bu seçici imgenin karışımından oluşur. Yapıyı nadiren deneyimleyen kent sakini tanıklık düzeyinde sürekli bir imge olmasa da mekâna dair eski, yeni ve imgeler arası aktarımlarla gelişmiş seçici imgeler bulunabilir. Turist deneyiminde ise mekânla ilişkili eski veya yeni imge bulunmayacağı düşünülebilir. Burada, deneyimden kaynaklanan ilk imgenin, seçici imge ile karışımından son imge gelişir. Deneyimin sıklığı ve imgelerdeki farklılıklar sonucunda, zamansal ve uzamsal olanın oranlarının değiştiği bir son imge karışımı oluşur (Tablo 1).

Çalışmanın bu bölümünde, önceki bölümlerde yer alan tartışmaları örnekleyen farklı kent mekânları, farklılaşan müdahale biçimlerine göre seçilmiştir. Bu bağlamda ilk örnek, Christo ve Jean Claude’un özellikle kentle ve insanlarla ilişkisi uzun süreli olan, bellekte yer edinmiş ve kent belleğinin oluşumunda etkisi olan yapıları dönüşüme uğrattığı müdahaleyi ele almaktadır. Burada, mekânla kurulan ilişki ve kent deneyimi tamamen dönüşüme uğramış ve yeni bir imge yaratılmıştır. İkinci örnek ise mevcut bir yapının geçirdiği değişimin sonuçları üzerinden ele alınmıştır. Tarihi kentsel bir çevrede yer alan ve kenti farklı sıklıklarla deneyimleyen insanların değişen imgeler ürettikleri yapı, zaman ötesi bir bağlama dönüştürüldüğünde, mevcut deneyim ve imgelere eklenen yeni bilgiler ile hem bellek değişmekte hem de yeni bir bellek inşası söz konusu olabilmektedir. Kenti az sıklıkla deneyimleyen veya ziyaretçi olarak kente gelenlerin talep ettikleriyle sürekli kendini yenileyen mekân, özgünlüğünü ilk imgesini ve kimliğini yitirmeye başlamaktadır. Özellikle tarihi kentsel çevrelerde karşılaşılan bu durum, yapılara yeni kütleler eklenmesi, bazı bölümlerin çıkarılması, mimari elemanların tamamen değiştirilmesi gibi müdahalelerle gerçekleştirilmektedir. Bir diğer örnek, kent belleğinde önemli bir yeri olan Eskişehir Atatürk Stadyumu’nun yıkılarak kentte yarattığı fiziksel boşluğun tartışılması olmuştur. Kent mekânındaki fiziksel varlığı ve somut olmayan bileşenleri ile oluşturulan imge, yarattığı hafıza ve bunların mekânsal kodları yeni üretilen imge ile yok olmuş ve yerini farklı bir kent deneyimine bırakmıştır. Yıkım; bellek ve kimliğin en çarpıcı değişime uğradığı müdahale biçimi olarak ortaya çıkmaktadır. Belleğin mekân ve fiziksel tanıklıklarla şekillenen özelliklerini doğrulayan bu durum, nesnenin kendisi ortadan kalktığında hafızanın da kısa sürede yok oluşuna örnektir. Son örnek ise, fiziksel olarak daha önce alanda hiç var olmamış nesnelerin orada yer almaları ile değişen bir kent parçasını ele almaktadır. Yapım olarak düşünülebilecek bu müdahale alanının bütününe dair var olan deneyim ve hafızayı tamamen değiştirmeye yöneliktir. Burada da olmayan bir durumun ‘kurgusal’ bir bakışla ele alındığı yaklaşım ön plandadır.

Tablo 1 - Kentsel bir mekân için deneyim, imgeler ve bellek arasındaki ilişki.

		dönüşüm	değişim	yıkım	yapım	imgeler	son imge
		koruma	ekleme-çıkarma	eskime	olmayan üretim	yapının kendisi - fotoğrafları	
		paketlenme/boyama	algılama/ hemen algılama	tanıklık-süreç	yabancılaşma	ortaklık kurma/soyutlama/ imgelerarası aktarım	eski imge yeni imge süreklilik seçici imge
		varlık-başkalaşma-farkındalık	algılama/ hemen algılama	eski imge + yeni imge	yeni imge	seçici imge	
zihinsel etki	mekân sürekliliği deneyimleyen kent sakını	algılama/ hemen algılama	algılama/ hemen algılama	algılama/ hemen algılama	yabancılaşma	ortaklık kurma/soyutlama/ imgelerarası aktarım	eski imge yeni imge seçici imge
imgesel etki		eski imge + yeni imge	eski imge + yeni imge	eski imge	yeni imge	seçici imge	
zihinsel etki	mekân sürekliliği deneyimleyen kent sakını	algılama/ hemen algılama	algılama/ hemen algılama	algılama/ hemen algılama	etkisiz	ortaklık kurma/soyutlama/ imgelerarası aktarım	ilk imge seçici imge
imgesel etki		eski imge	eski imge	eski imge	etkisiz	seçici imge	
zihinsel etki	mekân ilk kez deneyimleyen kent sakını/turist	algılama/ hemen algılama	algılama/ hemen algılama	algılama/ hemen algılama	etkisiz	ortaklık kurma/soyutlama/ imgelerarası aktarım	
imgesel etki		ilk imge	ilk imge	imge yok	ilk imge	seçici imge	

Mimarlığın, hem yapı hem de kent ölçeğindeki iletişim şeklindeki sürekli dönüşüm, bireylerin deneyimlerini ve buna bağlı olarak bellek oluşumlarını değiştirmektedir. Kent alanındaki sanatsal çalışmalar bu durumun fark edilmesinde veya görünür hale gelmesinde etkili araçlara dönüşebilir. Burada Christo ve Jeanne Claude'nin kamusal alandaki bilindik yapıları kumaşlarla paketleyerek onları olduğundan farklı bir algıya taşımaları örnek olarak gösterilebilir. Sanatçıların bunu yaparken açık bir neden-sonuç ilişkisini planlayıp planlamadıkları tartışılır olsa da bu türden çalışmaların kent mekânındaki algıyı yeniden ürettiği, kent deneyimini dönüştürdüğü ve sorgulattığı çıkarımı yapılabilir. Belleğin ve deneyimin oluşmasının olağan akışına anlık veya belirli bir süre zarfındaki müdahaleler, kenti ve yapıyı sürekli veya bir süreliğine deneyimleyenler açısından oldukça çeşitli bir deneyim ve algı zemini ortaya koyar. Tek bir yapının imgesel versiyonlarının mevcut halinden başka bir durum ortaya koyabilmesi, anlık bir kayboluşla, gerek toplumsal/kolektif ölçekte, gerekse bireysel ölçekte, yer duygusunun altını çizerek yeniden bir hatırlama sağlayabilir. Bu tartışmayı somutlaştırmak için, Christo ve Jeanne Claude'nin 1985 yılında Paris'te paketlediği Pont Neuf ve paketlenmesi 1995 yılında tamamlanan Berlin Reichstag binası iyi örnekler olarak sunulabilir. (Şekil 4).



Şekil 4 - Paris, 1985, Christo ve Jeanne Claude tarafından paketlenen Pont Neuf
(sol: URL-2, sağ: URL-3)



Şekil 5 - Berlin, Christo ve Jeanne Claude tarafından paketlenen Reichstag Binası
(sol: URL-4, sağ: URL-5).

Bu iki örnekte görüldüğü gibi, özellikle kentle ve insanlarla ilişkisi uzun süreli olan, bellekte yer edinmiş ve kent belleğinin oluşumunda etkisi olan yapılarda herhangi bir değişim ve dönüşüm meydana geldiğinde, yerle kurulan ilişki ve dolayısıyla kent deneyimi dönüşmektedir. Özellikle her gün kullanılan bir köprü veya önünden geçilen bir yapının, soyutlanarak ve tüm detaylarından kopararak kütsel bir varlığa indirgenmesi gibi bir uygulama ile, gündelik algılar, yer bilgisi ve deneyim farklılaşmaktadır. Alışılmış imgenin dışında bir imge üretimi gelişmekte, algı değişmekte ve bir farkındalık elde edilmektedir. Aslında unutmada olmadan hatırlama olamayacağı için, mevcut durum unutturularak hatırlama sağlanmaktadır denilebilir. Burada sanatın ve sanatsal olanın kasıtlı ve bilinçli tercihlerinden söz edilebilir. Bu gibi kasıtlı uygulamaların yanında, kontrol dışında gelişen, zamanın getirdiği bazı algı kaymaları, bellek gelişimi ve yeni deneyimlerden de bahsedilebilir. Bu da kentlerdeki hızlı dönüşüm sonucu olabileceği gibi, kentteki mekân üretiminin, “tüketmek” kavramıyla ortaya konulmasından ileri gelebilir. Turistik hale gelmiş mekânlar bu duruma iyi bir örnek sunabilir (Şekil 6).



Şekil 6 - Eskişehir, Odunpazarı, Sarı Konak, öncesi (2010) (sol) ve sonrası (2014) (sağ)
(Yazarın Kişisel Arşivi).

Tarihi-turistik kent mekânlarında fiziksel ve sosyal sürdürülebilirliğin sağlanması büyük önem taşımaktadır. Dolayısıyla mekâna bağlı olarak kodlanan ve somut olmayan unsurları da içeren belleğin sürdürülmesi sağlanmak istenir. Ancak çoğunlukla sadece yapıların korunması ve varlıklarını devam ettirmesi öncelikli kaygı gibi görünür. Sürekliliği sağlamak için ise ilk aşamada yapının imgesinin elde edilmesine dikkat edilir. Resim 6 ve 7’deki Sarı Konak örneği incelenirse, yapının sarı ve cumbalı oluşu bellekte yer alan temel nitelikler olarak sıralanabilir. Ahşap bir strüktürün varlığı görsel algıda ikincil bir özelliktir. Bu nedenle, yapının imgesinin elde edilmesine, görünmeyen özelliklerinin devam ettirilmesinden daha önem verilir. Kent belleğinde önemi olan yapıların korunması için, onların en iyi ve yeni versiyonlarının dondurulmuş hali olarak bakılan bir sürdürme anlayışında, yapıların zamanla eskimiş haline ve bu eskimeyle birlikte zamanın getirdiği özelliklerinin birdenbire yok olmasına göz yumulur. Sarı Konak örneğindeki gibi, sarı olan herhangi bir yeni konak, eskisinin yerini alır. Bugün birçok geleneksel tarihi kent mekânında, yapı fiziksel

çevre sadece ‘turist gözünden’ bakılarak, beklentiye göre dönüşmektedir (Urry, 2009). Bu, inşa süreci dikkate alınmaz ise ani bir değişim olarak kabul edilebilir. Hatta, Pont Neuf örneğindeki gibi, yapının paketlenmesine benzer bir etki de elde edilebilir. Kent sakinleri açısından bakıldığında, Sarı Konaktaki bu uygulamaya, Christo’ların kasıtlı elde ettikleri durumun bilinçsiz ve kalıcı bir yansıması denilebilir. Turist deneyiminde ise durum farklıdır. Odunpazarı’nın Eskişehir’in turist ziyareti alan bir bölgesi olmasına bağlı olarak, Sarı Konak gibi alanda yer alan çeşitli yapıları, kent dışından gelen pek çok kişi deneyimlemektedir. Turist algısında, bu deneyimin kendisinin, imgesinin ve belleğinin kentte yaşayanlara göre farklı olacağı belirtilebilir. Yapıların ve bölgenin sürecine tanıklık etmeyenler açısından o yapılar, renkleriyle veya cumbalarıyla, sokaklar içindeki konumlarıyla tanınırlar. Bellekteki mevcut bir duruma veya zaman içindeki değişimlere yeni bir bilgi eklenmediği söylenebilir. Ne var ki, Odunpazarı evlerinin turistik bir alan olması, alana ait çoğaltılmış, yayılmış ve kalıplaşmış imgelerinin varlığına neden olur. Daha önceki bölümlerde bahsedildiği üzere fotoğraf, imgelerin üretiminin ve çoğaltılmasının bir aracı olmaktadır. Burada tarihi kentte yapılacak her müdahale, turistin kent deneyimini kasıtlı olarak yönlendirecek, tanımlayacak süreçleri içermektedir. Başka bir deyişle, turistin deneyimi, çekilecek olan fotoğraf ve tüketime sunulacak imgenin arzu edilen yönde olması üzerine kurgulanmaktadır. Sokak sağıklaştırma çalışmaları ile Odunpazarı’ndaki sokak silüetlerinin imgeleri bu yönde dönüşüm geçirmiştir. Bir de bu müdahalelere, zaman içinde turist talebiyle ve beklentisiyle eklenen aslında o ‘yer’de hiçbir zaman var olmayan unsurlar da eklenince yayılması arzu edilen imge tamamlanmış olmaktadır. İşte bu imgelerin, turist deneyimi açısından birer referans ve başlangıç noktası oluşturması muhtemeldir. Bu nedenle yapıların kendilerinin veya zaman içindeki hallerinin geliştirdiği deneyim ve belleğe eklenen yeni bilgileri olabileceği gibi, yapıları ilk defa görenler için imgelerin etkisinde bir bellek başlangıcının varlığına işaret edilebilir.

Bu noktada, hem imgelerin çokluğu ve hızlı paylaşımına bağlı olarak hem de yapı çevrenin hızlı değişiminden dolayı, mekanların turistik olmasından ve deneyimleyenlerin turist olmasından bağımsız bir şekilde, imgelere dayalı bir bellekten ve referans noktasından bahsedilebilir.

Bazı durumlarda da mekânın yok oluşu ve yerine bambaşka bir şey konması da deneyimin oluşmasında ve belleğin etkilenmesinde önemli rol oynar. Zamansal ve uzamsal olanın birbirinden kopuşuna örnek olan durumlarda gerek kolektif bellekte gerekse kenti deneyimleyen bireylerde, mekânın varlığı ve yokluğu geriliminde karma bir bellek ortaya çıkar (Yelsalı Parmaksız, 2019). Buna, Eskişehir’de yıkılarak yerine Millet Bahçesi yapılan Atatürk Stadyumu örnek olarak gösterilebilir (Şekil 7). Atatürk Stadyumu, baskın bir fiziksel varlık olma özelliği; kentli tarafından uzun yıllar yoğun kullanılan bir alan olması ve kent merkezindeki konumuna bağlı olarak da toplumsal hafıza açısından bir simge olması özelliği ile somut ve somut olmayan bağlamda önemli bir örnektir. Yapının 1950’lerden itibaren kent mekanındaki ve kentlinin deneyimindeki varlığı, yok olmasının ardından bellek düzleminde daha belirginleşmiştir. Bu özelliği nedeniyle kent alanındaki bu boşlukla ilgili yarışmalar düzenlenmiş, fikirler üretilmiş ve somut olarak korunamayan stadyumun yerine ne getirilebileceği ile ilgili tartışmalar yapılmıştır. Kentlinin fikirlerine ağırlık verilmiştir. Ancak tüm bu tartışmalar teorik düzeyde iyi niyetli bir girişim olarak kalmış, “millet bahçesi” uygulamalarından biri de Eskişehir’de hayata geçirilmiştir. Kentlinin yaşama kültüründe çok belirgin bir öge olan stadyum imgesi, bellekteki kayıtlar ve bunların mekânsal kodları bugün deneyimlenen millet bahçesinin ürettiği imge ile karışarak belirsizleşmektedir (Şekil 8).



Şekil 7 - Yıkılmadan önce Eskişehir Atatürk Stadı (URL-6).



Şekil 8 - Yıkım sonrası stadyum alanı (sol:URL-7), Millet Bahçesi olduktan sonraki görünüm (sağ:URL-8).

Mekânın bellek ile kurduğu doğrudan ilişkiye karşın modernite, mekân-zaman ve bellek ilişkisini dönüştürmüştür. Zamanın süreksizleşmesi, belleğe ait bileşenler olan mekân ve zaman kavrayışını değiştirmiştir. Zaman, modernitenin mekânında yok olarak, ölçüm aletlerine kaydedilerek işlevsizleşmiş, dolayısıyla imge ve bellek de birbirinden kopmuştur. Öte yandan, aşırı hatırlamanın (*hipermnezî*) yarattığı hatırlama sonrası (*post-mnemonic*) kültür (Connerton, 2009, s. 140), unutma çağını tanımlarken kent mekânını da yeniden organize etmektedir. Toplumsal bağlamda unutmamaya yönelik yapılan müdahaleler, hatırlamanın abartılı dünyasını da sunmaktadır. Geçmişten çağrılan veya yeniden üretilen fragmanlar ve imgeler, kentsel mekânda geçmişten gelen yabancı nesnelere yer almaktadır. Bu nedenle aşırı hatırlama, unutma korkusuyla yapılan, geçmişte kentsel mekânda hiçbir zaman var olmamış mekânsal temsilleri meşru kılmaktadır. Ankara Hacı Bayram bölgesi'nde yapılan müdahaleler, bu duruma örnek gösterilebilir. Bölgenin kentsel mekânında daha önce hiç yer almamış yapıların inşası ile oluşturulan yeni imge, hem alanda mevcut

çok önemli yapıların alana verdiği kimlik ve karakteri değiştirmekte, hem de burada kentli ve ziyaretçiler için yeni gündelik yaşantılar kurgulanmaktadır.

Hacı Bayram Bölgesi'nde geçmişten çağrılarak fragmanlar halinde kentte yer bulan parçalar, gerçeklikten uzaklaşan temsiller dünyasını kurmaktadır. Traverso'nun 'geçmişin şeyleşmesi' olarak adlandırdığı, şimdiki zamanın gerekliliklerine ve taleplerine göre yapılan ayıklama ve yorumlamaları içeren bu durum, belleğin pazarlanarak turizm endüstrisinin bir tüketim nesnesi haline dönüşmesine neden olmakta, 'bellek turizmi'ni oluşturmaktadır. Turistin ve kentlinin talep ettiği bu durum yeni imgeler tanımlarken kimliği de kurgulamaktadır.

Hem kentlinin gündelik hayat deneyimi hem de turistin ziyaret deneyiminin bir parçası olan fotoğraf ise mekân ve zaman temsiliinin bir aracı olarak görülebilir. Seçme, yorumlama ve sunma süreçleriyle beraber daha önce de bahsedildiği gibi gerçeğin bir parçasının temsiliini oluşturmaktadır. Bütüne dair fikir vermekten çok gösterilenin anlık durumunu yansıtmaktadır. Turist deneyiminde mekânsal bir kesitin anlık görüntüsüdür. Bu nedenle en iyi ve en yeni donmuş görüntüyü temsil etmesi sürekli talep edilmektedir. Hacı Bayram Bölgesi'ndeki durum da yeniden üretilen kimliğin ve imgenin temsiliinin aracı olarak görülebilir (Şekil 9).



Şekil 9 - Ankara Hacı Bayram Bölgesi ve Yakın Çevresi (sol: Yazarın Kişisel Arşivi, 2012; sağ: URL-9).

TARTIŞMA VE SONUÇ (DISCUSSION AND CONCLUSION)

Belleğin temel bileşenlerini zaman- mekân ve insana ait deneyim oluşturmaktadır. Mekânın sabit bir bileşen olarak ele alındığı bir düzlemde değişken bir dinamik olan zaman ilerledikçe geçmiş deneyimlerle üretilen imge ve anlam sürekli yeni deneyim ve hatırlama süreçleriyle yapılandırılmaktadır (Şekil 3). Oysa zaten kent mekânı sabit bir unsur olmaktan öte, sürekli devingen bir mekanizmadır. Dolayısıyla imge ve bellek, mekânın değişimi, zamanın ilerlemesi ve bireyin deneyimlerine bağlı olarak sürekli değişmektedir. Bu noktada kentsel mekânda yapılan müdahaleler imgeleri sürekli başkalaştıran baskın güçtür. Yıkım, değişim, dönüşüm, yapım olarak en temel haliyle ele alınan her müdahale ürettiği imgelerle hem yeni deneyimleri hem de belleği farklılaştırmaktadır. Manipule edilmeye oldukça açık olan kentsel ve toplumsal mekân, imge üretimi ile hatırlamanın, unutmanın ve yeni bellek üretiminin sahnesi olabilmektedir.

Burada Christo ve Jean Claude'nin örneklerinde, özellikle kentle ve insanlarla kurduğu güçlü mekânsal bağları olan, bellekte yer edinmiş, aynı zamanda da kent belleğinin oluşumunda etkisi olan yapılarda herhangi bir değişim ve dönüşüm meydana geldiğinde, yerle kurulan ilişkinin değiştiği ve dolayısıyla kent deneyiminin dönüştüğü çıkarımı yapılabilir. Bu durumda fiziksel varlık mevcut bağlamından soyutlanmakta, kendi gerçekliğinden uzaklaşarak kütsel bir varlığa indirgenmektedir. Yapının yer ve insan ile kurduğu ilişkiden doğan anlam, imge ve bellek farklılaşmaktadır. Dolayısıyla kent deneyimi kentli için dönüşmekte, yeni ziyaretçiler için de özünden farklı bir imge ve anlam tanımlamaktadır. Eskişehir Odunpazarı'ndaki Sarı Konak örneğinde ise müdahale biçimi farklılaşmaktadır. Ancak yer, kimlik ve bellek bağlamında benzer sonuçlar ve çıkarımlar elde edilmektedir. Tek başına kent belleğini ve kimliğini doğrudan oluşturmayan ama kendisiyle benzer diğer parçalar ve kent dokusu ile kimliği tanımlayan bir örnek olarak Sarı Konak'ın geçirdiği dönüşüm, daha çok zamanın getirdiği özellikleri, eskiliği, patinayı yok etmekte ve fiziki unsuru sürekli zamansız kılan bir müdahaleyi içermektedir. Yapılan müdahale farklı deneyimleri beraberinde getirmekte, değişen deneyim ise mekânı sürekli dönüştürmeyi talep etmektedir. Christo ve Jean Claude'ın müdahalelerinde yapı hem zaman hem mekânsal bağlamda soyutlanırken Sarı Konak örneğinde geçmiş-şimdi-gelecek bağlamında zaman özelinde soyutlama daha baskındır. Dolayısıyla yaşanan kent deneyimi de herhangi bir zamana aittir. Hacı Bayram Bölgesi örneği ise, ölçek açısından tekil bir varlıktan ziyade kent parçasına etki eden, bölgeye tanıdık olmayan parçalarla bütüncül olmayan bir kimlik yaratan müdahaleleri içermektedir. Kentin geçmişine ait olan ve şimdide yeniden üretilen fragmanlar ve imgeler, kentsel mekânda geçmişten gelen yer-siz yabancı nesnelere olarak yer bulmuşlardır. Hacı Bayram Bölgesi'nin kentsel mekânında daha önce hiçbir zaman diliminde yer almamış fragmanlar bugün bölgenin büyük bir bölümünde inşa edilerek bölgeye asıl kimliğini veren çok katmanlı yapıya, yeni ve ilişkisiz bir katman olarak eklenmiştir. Augustus Tapınağı, Hacı Bayram Cami gibi bölgenin karakterini, toplumsal belleğini oluşturan yapılar, yeni bir gündelik hayat kurgusu ile dönüşmektedir. Dolayısıyla kent deneyimi de bu yönde kurgulanmaktadır. Eskişehir Atatürk Stadyumu örneği ise mekân ve zaman bağlamında bir kopuşu tariflemektedir. Fiziki varlığın tamamen yok olması ve ona benzemeyen yeni bir kurgunun inşası, deneyimin oluşmasında ve belleğin etkilenmesinde önemli rol oynar. Zamansal ve uzamsal olanın kopuşu, hem geçmişe hem de şimdide ait aynı mekânda kodlanan yeni bir bellek yaratmaktadır. Fiziksel varlığın yok oluşu, onunla bağ kuran kentlinin bellekte varlığı sürekli canlı kılma kaygısıyla sonuçlanır. Bununla beraber o mekâna ait yeni imgenin yarattığı bellek ile beraber karma bir bellek oluşur. Kent deneyimi de bu doğrultuda farklı paralelliklerde gerçekleşerek dönüşür.

Kenti deneyimleyen kent sakinleri, yapıları çevredeki hızlı veya ilişkisiz değişimlere bağlı olarak, hatırladığı ama dayanağını bulamadığı ve bu nedenle unuttuğu; her an yeni bir ilişki kurduğu fiziksel çevreye bağlı gelişen yabancılaşma sonucunda, turistik mekanlara gezi amacıyla gelerek fotoğraflar çeken post-turistin tanımlarına benzer eylemler içindedir. Tanışık olduğu kentte bağlantılar kurduğu parçalar- metinler, tanışık olmadıklarıyla harmanlanarak parçalı ancak kişiye ait taze bir anlatı ortaya koyar. Bu da kent deneyiminin özünü oluşturmaya başlar. Her paylaşılacak yeni durum, tercih edilir bir hale gelir ve böylece gerek kişi kendinin gerekse kentin kimliğini yeniden yapılandırır.

Kent deneyimini oluşturan unsurlar, kentin mekanını kuran yeni öğeler ve gündelik yaşama dâhil olan yeni refleksler ve alışkanlıklar bakımından dönüşüme uğrayarak parçalı bir hal almış olsa da bir kentte yaşamak, hafızanın edindirdiklerine yenilerinin eklendiği bir metni okumaya benzetilebilir.

Yer özelinde geliştirilen ilişkiler nedeniyle, bu metin sürekli bir şekilde oluşmaya devam eder. Bu yeni metinde, kentte yaşayanların turist deneyiminden farklılaşmayı sağlayan eski metinlerden parçalar mevcuttur. Yere, kimliğe ve geçmiş referanslara bağlı aktarılan eski metinler, parçalı da olsa eklemlendiği yeni durum için bir süreklilik yaratır. Bu bağlantılar kaçınılmaz olarak bireysel de olsa, müşterek de olsa, kolektif de olsa, bellekte, deneyimlenen mekânlar ile kodlanır. Yani yere ait bellek mekânsal olan bilgiyle depolanır. Kimi durumda istemsiz olarak gelişen ve maruz kalınan, kimi durumda ise bir keşif arzusuyla şekillenen kent deneyimlerinde, bellek her zaman işlemekte ve kayıtlar oluşturmaktadır. Bu nedenle kenti algılama şeklimiz imgelerin hâkimiyetinde bir arayüz üzerinden değişse de kentle kurduğumuz ilişkinin sonucunda bağlantıların bellekte birbirine katılmaları akışkan ve devingen bir oluşumdur. Bu da yeni, parçalı ve durmaksızın değişken de olsa, yer ve kimlik tanımlamalarını yapabileceğimiz verileri sağlayan, maruz kaldığı bilgi biçimlerine göre evrimleşmiş yeni bir bellek tanımını yapmaya yönlendirmektedir.

Conflict of Interest Statement | Çıkar Çatışması Beyanı

Araştırmanın yürütülmesi ve/veya makalenin hazırlanması hususunda herhangi bir çıkar çatışması bulunmamaktadır.

There is no conflict of interest for conducting the research and/ or for the preparation of the article.

Financial Statement | Finansman Beyanı

Bu araştırmanın yürütülmesi ve/veya makalenin hazırlanması için herhangi bir mali destek alınmamıştır.

No financial support has been received for conducting the research and/ or for the preparation of the article.

Ethical Statement | Etik Beyanı

Araştırma etik standartlara uygun olarak yapılmıştır.

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works | Fikir ve Sanat Eserleri Hakkında Telif Hakkı Beyanı

Makalede kullanılan fikir ve sanat eserleri (şekil, fotoğraf, grafik vb.) için telif hakları düzenlemelerine uyulmuştur.

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement | Yazar Katkı Beyanı

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/G/H/I

AUTHOR 2: C/G/H/I

REFERENCES

- Arendt, H. (1996). *Geçmişle Gelecek Arasında*, çev. B.S. Şener ve O.E. Kara, İletişim Yayınları, İstanbul.
- Arnheim, R. (1969). *Visual thinking*, University of California Press, Berkeley, Los Angeles, London.
- Auge, M. (1995). *Introduction to Anthropology of Supermodernity*. Verso Press, London.
- Bauman, Z. (2017). *Kimlik*, çev. M. Hazır, Heretik Yayınları, Ankara.
- Bergson, H. L. (2007). *Madde ve Bellek*, çev. I. Ergüden, Dost Kitabevi, Ankara.
- Benjamin, W. (2001). *Son Bakışta Aşk: Walter Benjamin'den Seçme Yazılar*, Ed. N. Gürbilek, Metis Yayınları, İstanbul; 39-50.
- Burnett, R. (2007). *İmgeler Nasıl Düşünür?*, çev. G. Pusar, Metis Yayınları, İstanbul.
- Connerton P. (2009). *Modernite Nasıl Unutturur*, çev. K.Kelebekoğlu, Sel Yayıncılık, İstanbul.
- Connerton P. (2014). *Toplumlar Nasıl Anımsar*, çev. A.Şenel, Ayrıntı Yayınları, İstanbul.
- Cross, N. (1982). *Designerly Ways of Knowing*, *Design studies*, 3(4) 221-227.
- Draaisma, D. (2018). *Bellek Metaforları: Zihinle İlgili Fikirlerin Tarihi*, çev. G.Koca, Metis Yayınları, İstanbul.
- Erzen, J. N. (2015). *Üç Habitus: Yeryüzü, Kent, Yapı*, Yapı Kredi Yayınları.
- Forrest, T. (2011). *Alexander Kluge: Raw Materials for the Imagination*, Amsterdam University Press, Amsterdam.
- Foucault, M. (2001). *Bu Bir Pipo Değildir*, çev. S. Hilav, Yapı Kredi Yayınları, İstanbul.
- Halbwachs, M. (2017). *Kolektif hafıza*, çev. B.Bariş, Heretik Yayınları, Ankara.
- Hartley, L.P. (2002). *The Go-Between*, New York Review Book, New York.
- Harvey, D. (1989). *The Condition of Postmodernity (Vol. 14)* Blackwell Publishers, Oxford.
- Huyssen, A. (1999). *Alacakaranlık Anıları: Bellek Yitimi Kültüründe Zamanı Belirlemek*, çev. K.Atakay, Metis Yayınları, İstanbul
- Kılıçkiran, D. (2014). *Kimlik ve Yer/Anahtar ve Kilit*. Dosya, 33 (1), 1-7.
- Kolsal F., Şensoy, G., Yeşiltepe, A. D. (2018). *Parçalı Kent Deneyimleri, ISUEP2018 Uluslararası Kentleşme ve Çevre Sorunları Sempozyumu: Değişim/Dönüşüm/Özgünlük Proceedings Book (28-30 Haziran 2018)*, der. Eskişehir Teknik Üniversitesi, Eskişehir, Cilt: 4; 135-142.
- Lefebvre, H. (2014). *Mekânın Üretimi*, çev. I. Ergüden, Sel Yayıncılık, İstanbul.
- Lynch, K. (2010). *Kent İmgesi*, çev. İ.Başaran, İş Bankası Kültür Yayınları, İstanbul.
- Nora, P. (2006). *Hafıza Mekanları*, çev. M.E.Özcan, Dost Kitabevi, Ankara.

- Quiroga, R. Q. (2013). Borges ve Bellek: İnsan Beyniyle Karşılaşmalar, çev. F. B. Aydar, Boğaziçi Üniversitesi Yayınevi, İstanbul.
- Proust, M. (2022). Kayıp Zamanın İzinde, Swann'ların Tarafı, çev. R. Hakmen, Yapı Kredi Yayınları, İstanbul.
- Ricoeur, P. (2017). Hafıza, Tarih, Unutuş, çev: M. E. Özcan, Metis Yayınları, İstanbul.
- Stadler, M. (1991). Landscape: Memory, Plume Printing, the USA.
- Toffler, A. (2006). Gelecek Korkusu: Şok, çev. S. Selami, Koridor Yayıncılık, İstanbul.
- Traverso, E. (2019). Geçmiş kullanma kılavuzu: Tarih, politika, bellek, çev. I. Ergüden, İletişim Yayınları, İstanbul.
- Urry, J. (1999). Mekânları Tüketmek, çev. R. G. Ögdül, Ayrıntı Yayınları, İstanbul.
- Urry, J. (2009). Turist bakışı, çev. İ. Yıldız, E. Tataroğlu, Bilgesu Yayıncılık, Ankara.
- Williams, H. L., A. Conway, M. (2015). Otobiyografik Anı Ağları, Zihinde ve Kültürde Bellek, ed. P. Boyer, J. V. Wertsch, çev. Y.A. Dalar, Türkiye İş Bankası Kültür Yayınları, İstanbul.
- Yates, F. (1966). The art of memory. Routledge, USA.
- Yelsalı Parmaksız, P.M. (2019). Belleğin Mekânından Mekânın Belleğine: Kavramsal Bir Tartışma, *İlef*, (6)1, 7-26.
- URL-1 : Wikipedia:
https://tr.wikipedia.org/wiki/Ren%C3%A9_Magritte#/media/Dosya:MagrittePipo.jpg, son erişim: 19.01.2022
- URL-2: Thrillophilia: <https://www.thrillophilia.com/attractions/pont-neuf-paris>, son erişim: 13.05.2022
- URL-3: <https://www.ilgiornaledellarte.com/articoli/l-arc-de-triomphe-firmato-christo-nel-2021/133394.html>, son erişim: 17.05.2022.
- URL-4: Bundestag: <https://www.bundestag.de/besuche/architektur/reichstag>, son erişim: 13.05.2022.
- URL-5: Another: <https://www.anothermag.com/art-photography/8835/christo-and-jeanne-claudes-most-extraordinary-land-art>, son erişim: 13.05.2022.
- URL-6: Change.org, <https://www.change.org/p/t-c-genclik-ve-spor-bakanligi-eskisehir-stadının-yerine-kent-meydanı-yapılsın-toki-rant-projesine-hayır>, son erişim: 16.05.2022.
- URL-7: TimeTurk: <https://www.timeturk.com/resim/detay/119/1196006.jpg>, son erişim: 16.05.2022.
- URL-8: Trt Haber: <https://trthaberstatic.cdn.wp.trt.com.tr/resimler/1524000/millet-bahcesi-yapimi-aa-1524577.jpg>, son erişim: 16.05.2022.
- URL-9: Shutterstock: <https://www.shutterstock.com/tr/image-photo/ankara-turkey-september-2021-haci-bayram-2053630805>, son erişim: 16.05.2022.

BIOGRAPHIES OF THE AUTHORS (YAZARLARIN BİYOGRAFİLERİ)

Fatma KOLSAL (Dr. Öğr. Üyesi)

Fatma Kolsal mimarlık diplomasını, 2006 yılında Ortadoğu Teknik Üniversitesi Mimarlık Bölümü'nden almıştır. Bu süreçte, 2004-2005 yılları arasında Bari Politeknik Üniversitesinde 1 yıl süreyle Erasmus değişim öğrencisi olarak bulunmuştur. 2006-2014 yılları arasında özel ve kamu sektörü olmak üzere çeşitli ölçeklerde projelerde görev almıştır. Mimarlığın tasarım ve uygulama süreçlerini deneyimlediği bu 8 yıl içerisinde İstanbul'da konut projeleri, Eskişehir'de ise kamu projeleri olmak üzere çok sayıda projenin müellifliğini yapmıştır. 2014 yılından bu yana akademisyen olarak kariyerine devam eden Kolsal, 2015 yılında yüksek lisansını, 2020 yılında ise doktorasını tamamlayarak, Eskişehir Teknik Üniversitesi Mimarlık Bölümü'nde çalışmalarını sürdürmektedir. İlgi alanları arasında tasarım süreci, yaratıcılık, tasarım düşüncesi, mimari tasarım stüdyoları, sanat, endüstri mirası ve metinlerarasılık yer almaktadır.

Feran Özge GÜVEN ULUSOY (Araş. Gör. Dr.)

2011 yılında Anadolu Üniversitesi Mimarlık lisans programından mezun olan yazar, 2014 yılında "Re-integrating the Fragmented Context: Preservation and Presentation of Side" başlıklı tezi ile ODTÜ Restorasyon programından yüksek lisans derecesini almıştır. 2021 yılında, Eskişehir Teknik Üniversitesi Mimarlık doktora programından "Bellek-Mekân ilişkisi bağlamında Anı Mekânlarının Değerlendirilmesi ve Korunması: Muğla Menteşe Tarihi Kentsel Doku" isimli çalışma ile mezun olmuştur. 2010-2014 yılları arasında kültürel mirasın korunması konusunda kazı çalışmaları, ofis çalışmalarına katılarak uygulama alanında çalışmıştır. 2014 yılından bu yana ise Eskişehir Teknik Üniversitesi'nde araştırmalarını sürdürmekte olan yazar, kent-mekân-bellek, kültürel mirasın korunması, kentsel koruma gibi alanlarla ilgilenmektedir.



Quarantine structures: Examples of klazomen quarantine station

Aylin GAZİ GEZGİN¹, ORCID: 0000-0003-4008-6251

Abstract

Quarantine is defined as providing isolation in a defined period of time for suspicious people or goods in order to prevent spread of infectious diseases. Buildings, where the quarantine durations are spent, are called “Lazzaretto” in Europe and “tahaffuzhane” in Ottoman Empire. Although quarantine processes were implemented in many parts of the world, especially in Europe, until the 20th century starting from the 14th century, characteristics of the architectural structures in which this function was fulfilled were rarely discussed in academic studies. In light of this, the main aim of this study is to reveal genuine architectural structuring of Klazomen Tahaffuzhane that is mostly survived to date. For this purpose, quarantine structuring built from the 14th to the 20th centuries were handled firstly in terms of “site selection”, “layout scheme” and “interior design”, and then elements that form architectural structures for quarantine function were defined. Data acquired during the inspection in quarantine island housing Klazomen Tahaffuzhane were compared with archive and literature investigations, the results obtained were interpreted through the general features of the architectural structures intended for the quarantine function. Original structure of the Klazomen tahaffuzhane in the 19th century was then defined in terms of “site selection”, “layout scheme” and “indoor design”.

Highlights

- The development process of quarantine station was examined.
- Ottoman quarantine organization examined.
- Original architectural structuring of the Urla Klazomen quarantine station will be defined.

Keywords

Quarantine; Quarantine station; Lazzaretto; Healthcare structures; Cultural heritage; Klazomen; Urla quarantine station

Article Information

Received:

29.01.2022

Received in Revised Form:

19.12.2022

Accepted:

04.01.2023

Available Online:

30.01.2023

Article Category

Research Article

Contact

1. Ministry of Culture and Tourism,
İzmir, Türkiye

aylin.gazi@ktb.gov.tr

Karantina yapılanmaları: Klazomen tahaffuzhanesi örneği

Aylin GAZİ GEZGİN¹, ORCID: 0000-0003-4008-6251

Öz

Bulaşıcı hastalıkların yayılımını önlemek amacı ile şüpheli görülenlerin ve eşyaların belirli bir süre bekletilmesine “karantina” denilmektedir. Karantina süreçlerinin geçirildiği yapılar Avrupa’da “Lazzaretto” Osmanlı Devleti’nde ise “tahaffuzhane” olarak isimlendirilmektedir. İlk olarak 14. yüzyılda uygulanmaya başlayan karantina süreçleri, 20. yüzyıla kadar Avrupa başta olmak üzere dünyanın birçok noktasında uygulanmasına rağmen, bu işlevin yerine getirildiği mimari yapılanmalar çok az çalışmada ele alınmıştır. Bu yazının amacı, büyük bir kısmı ayakta kalmış Klazomen Tahaffuzhanesi’nin özgün mimari yapılanmasını ortaya çıkarmaktır. Bu amaçla, öncelikle 14. yüzyıldan 19. yüzyıla kadar inşa edilmiş karantina yapılanmaları “yer seçimi”, “yerleşim şeması” ve “iç mekân kurgusu” üzerinden ele alınarak karantina işlevine ait yapılanmaların genel mimari özellikleri tanımlanmıştır. Klazomen Tahaffuzhanesi’nin yer aldığı Karantina Ada’sında yapılan incelemelerde elde edilen veriler öncelikle arşiv ve literatür incelemeleri karşılaştırılmış, elde edilen sonuçlar karantina işlevine yönelik mimari yapılanmaların genel özellikleri üzerinden yorumlanarak Klazomen Tahaffuzhanesi’nin 19. yüzyıldaki özgün yapılanması “yer seçimi”, “yerleşim şeması” ve “iç mekân kurgusu” üzerinden tanımlanmıştır.

Öne Çıkanlar

- Karantina yapılarının gelişim süreci incelendi.
- Osmanlı Karantina Teşkilatı incelendi.
- Klazomen Tahaffuzhanesi’nin özgün mimari yapılanması ortaya çıkarıldı.

Anahtar Sözcükler

Karantina; Tahaffuzhane; Lazzaretto; Sağlık yapıları; Kültürel miras; Klazomen; Urla Tahaffuzhanesi

Makale Bilgileri

Alındı:
29.01.2022
Revizyon Kabul Tarihi:
19.12.2022
Kabul Edildi:
04.01.2023
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Kültür ve Turizm Bakanlığı,
İzmir, Türkiye
aylin.gazi@ktb.gov.tr

GİRİŞ (INTRODUCTION)

Bulaşıcı hastalıkların yayılmasını önlemek amacı ile hasta insanları izole etmek antik dönemden beri kullanılan bir yöntemdir (Sehdev, 2002). İzolasyon yöntemlerinden biri de karantinedir. Karantina sözcüğü kırk günlük periyot anlamına gelen İtalyanca “*quarantena*” kelimesinden gelmekte olup, bulaşıcı ve salgın hastalıkları engellemek amacı ile şüpheli durumdaki personelin, eşyaların ve hayvanların bekletilmesi anlamına gelmektedir (Stuard, 1992), (Tognotti, 2013). Karantina uygulamaları ilk kez veba salgınının yayılmasını önlemek amacı ile 1377 de Dubrovnik’te otuz gün süre ile uygulanmaya başlanmış (Gensini vd., 2004), bu işlevi gerçekleştirmeye yönelik “lazaretto” olarak isimlendirilen ilk karantina yapısı “Lazaratto Vecchio” ise 1423 de Venedik’te kurulmuştur (Devaux, 2013). 15. yüzyılın ikinci yarısından itibaren başta liman kentlerinde olmak üzere Avrupa’nın birçok kentinde uygulanmaya başlayan karantina uygulamalarının yürütülebilmesi için yeni mekânlara ihtiyaç duyulmuş, bu kapsamda birçok mimari yapılanma oluşturulmuştur (Ini, 2016).

Belirli bir süre insanları gözetim altına almak, tedavi etmek, eşyaları ve yolcuları dezenfekte etmek, temizlemek gibi farklı işlevleri bir arada bulunduran karantina yapıları, sağlık mimarisinin yanı sıra bu sürecin tamamlanabilmesi için birçok güvenlik unsuru barındıran farklı bir işlev şemasına sahiptir. Bu işlevin mimari yansımaları incelendiğinde 14. yüzyıldan 20. yüzyıla kadar birçok ortak özellikleri bulunmakla birlikte, yapıldığı dönemin mimari bakış açısına, karantina süresince hangi alt işlevlerin ön plana çıkarıldığına ve dönemin teknolojik gelişmelerle olan ilişkisine göre farklı özellikleri de barındırdıkları görülmektedir.

Osmanlı’da ilk ciddi karantina 1831 yılında İstanbul’u etkisine alan kolera salgını sırasında Karadeniz’den gelen gemilere uygulanmış (Yıldırım, 2006), aynı yıl içerisinde kurulan karantina teşkilatı ile birlikte karantina uygulamalarının kurumsallaşmasına yönelik ilk önemli adımlar atılmaya başlanmıştır (Aydın, 2004). İlerleyen yıllarda Osmanlı topraklarının farklı noktalarında karantina teşkilatları kurulmuş, bunlardan en önemlilerinden biri ise 1838 yılında kurulan İzmir Karantina Teşkilatı olmuştur (Böke, 2009).

Karantina meclislerinin kurulmasından sonra başta İstanbul Boğazı olmak üzere, birçok limanı kapsayan önlemler alınmaya başlanmıştır. Bu önlemlerin en önemlilerinden biri hastalığın yayılmasını önlemek amacı ile oluşturulan karantina süreçleridir. Karantina süreçlerinin geçirilmesi için oluşturulan alanlar “karantinahane” veya “tahaffuzhane” olarak tanımlanmıştır. Arapça sakınmak

ve korunmak anlamı taşıyan tahaffuz kelimesinden gelen tahaffuzhanelerde kente giriş ve çıkış yapacakların bir süre gözetim altına alınması, tıbbi muayene yapılması, dezenfekte işlemlerinin yapılması gibi uygulamalar yer almaktadır (Altan, 2019). İstanbul Boğazi'nin iki yakasında kurulan tahaffuzhanelerin yanı sıra İzmir, Urla, Adana, Sinop, Hicaz, Antalya, Karaman, Çanakkale gibi Osmanlı liman kentlerinde de tahaffuzhaneler kurulmuştur.

Bu tahaffuzhanelerin en önemlilerinden biri Klazomen (Urla) Tahaffuzhanesidir. Kent merkezine yakın bir konumda bulunan İzmir Karantina Teşkilatına ait ilk karantina yapısının yangın sonucu yok olmasının ardından tahaffuzhane Urla'da yer alan Karantina Adası'nda kurulmuştur. Klazomen Tahaffuzhanesi ile ilgili literatür incelendiğinde genellikle tahaffuzhanenin kuruluşu ve işleyişi üzerine çalışmalar yapıldığı görülmüştür. Böke'nin 2009 yılına ait çalışmasında dönemin seyyahları, gazeteleri ve Osmanlı arşiv belgeleri incelenerek İzmir Karantina teşkilatının kuruluşu ve bu teşkilat içerisinde Urla Klazomen Tahaffuzhanesi'nin işleyişi ele alınmıştır. Tunçbilek'in çalışmasında ise tahaffuzhanenin işleyişi mimari organizasyon üzerinden ele alınmış, mimari yapılanma ile birlikte yolcuların sürekli bir gözetim altına alındığı, dış dünyadan izole edilmektense “temiz”, “şüpheli” gibi sınıflandırmalar yapılarak mimari yapılanmanın ve işleyiş şemasının bu doğrultuda organize edildiği vurgulanmıştır (Tunçbilek, 2020). Yılmaz'a ait çalışmada karantina teşkilatının kurulma sürecinde Osmanlı'nın modernleşme sürecinin etkileri ele alınırken işleyiş şemasının arkasındaki düşünce ve beden-mekân ilişkisi arasındaki ilişki farklı örnekler üzerinden karşılaştırılarak ortaya konulmuştur (Yılmaz, 2020). Klazomen tahaffuzhanesinin kuruluşu ve işleyişi ile ilgili Adak'ın ele aldığı çalışmada ise tahaffuzhane işleyişinin yanı sıra Klazomen Tahaffuzhanesi'nin Doğu Akdeniz'deki karantina ağı olan ilişkisi ele alınmıştır, ayrıca bu çalışmada mimari yapılanmaya ilişkin Osmanlı arşivlerinden elde edilen proje örneklerine yer verilerek literatüre katkı sağlanmıştır (Adak, 2021). Yukarıda belirtildiği gibi literatürdeki çalışmalarda genellikle karantina süreci ve tahaffuzhane işleyişi üzerine odaklanılmış, mimari yapılanmaya yönelik incelemeler ise genellikle dezenfekte ve temizlik işlemlerinin yapıldığı tephirhane yapısı ile sınırlı kalmıştır. Mimari yapılanmayı ele alan Cebe'ye ait çalışmada (Cebe, 2021) ise yapıların mekânsal kurguları tahaffuzhane işlevinden sonraki döneme ait veriler kullanılarak oluşturulmuş, yapıların özgün mekânsal kurguları ortaya konulmamıştır.

Bu yazının amacı kültürel mirasımızın önemli yapılarından biri olan Klazomen Tahaffuzhanesi'nin özgün mimari yapılanmasını bir bütün olarak ortaya çıkarmaktır. Yazı, Klazomen Tahaffuzhanesi'nin 19. yüzyılda adaya nasıl yerleştiği, hangi işleve ait yapılardan oluştuğu, bu yapıların birbiri ile olan ilişkileri ve yapıların mimari özelliklerinin nasıl olduğunu araştırmaktadır. Yapılanmaya yönelik doğru tanımlamalar yapılabilmesi için öncelikle toplum ve sağlık tarihini etkileyen “karantina süreçleri” ve mimarlık literatüründe çok fazla ele alınmayan karantina yapılanmaları “yer seçimi”, “yerleşim şeması” ve “iç mekân kurgusu” üzerinden ele alınarak karantina işlevine yönelik yapılanmaları tanımlayan mimari unsurlar ortaya çıkarılmıştır. Klazomen Tahaffuzhanesi'nin 19. yüzyıla ait özgün yapılanması bu üç temel unsur üzerinden tanımlanmıştır. Bu süreçte ilk aşamada karantina adasında bulunan mevcut yapı stoğu incelenerek tahaffuzhaneye ait izler tespit edilmiştir. Bu izlerin tahaffuzhaneye ait izler olup olmadığının irdelenebilmesi için ikinci aşamada veriler arşiv ve literatür belgeleri ile karşılaştırılmış, elde edilen sonuçlar karantina işlevine yönelik yapılanmaları tanımlayan mimari unsurlar üzerinden yorumlanarak Klazomen Tahaffuzhanesi'nin özgün mimari yapılanması ortaya çıkarılmıştır.

KARANTİNA SÜREÇLERİNİN İLK MİMARİ YANSIMALARI: “LAZZARETTO” (THE FIRST ARCHITECTURAL REFLECTIONS OF THE QUARANTINE PROCESS: “LAZZARETTO”)

Karantina Süreçlerinin Gelişimi (Development of Quarantine Processes)

Veba salgını, gemi yolcuğu yapan tüccarlar, denizciler ve farklı ülkelerden taşınan mallar ile birlikte birçok ülkeye yayılmaya başlamış, 14. yüzyılda özellikle ticaretin yoğun olduğu Akdeniz ülkelerinden başlayarak tüm Avrupa’da etkisini göstermiştir. Veba salgınının ilk görüldüğü dönemde, bilinen tedavi yöntemlerinin yetersiz kalması sebebi ile salgından korunmanın en iyi yolunun yayılımı durdurmak olduğuna karar verilmiştir (McNeil, 1998). Bu amaçla özellikle deniz yolu ile dışarıdan gelen riskli görülen grupların, belirli bir süre izole edilen alanda karantinaya alınmasına karar verilmiş bu amaçla karantina yapılanmaları oluşturulmuştur.

Süresi değişmekle birlikte genel olarak kırk gün boyunca uygulanan karantina sürecinde, yolcuları, mürettebatı ve getirilen malları karantina yapılanmaları içerisinde birbirinden ayırarak izolasyon sağlamak, dezenfekte etmek ve iyileştirmek müdahalelerinin yerine getirilmesi hedeflenmiştir (Tognotti, 2013). Bu üç temel müdahale şekli, karantina işlevinin gerçekleştirdiği döneme, dönemin teknolojik ve sağlık alanındaki gelişmişliğine göre farklılık ve çeşitlilik göstermekte bu nedenle mimari yapılanmanın değişmesine neden olmaktadır. Karantina yapılanmaları; basit barınaklar, Osmanlı-Rus sınırında yer alan Galatz sınırında olduğu gibi açık alanlar, İtalya ve Fransa limanlarında görüldüğü gibi korunaklı ve büyük yapılar ya da limana yanaşan bir geminin içindeki kabin alanları gibi dönemin ve iklimin şartlarına göre çeşitlilik göstermektedir (Chase-Levenson, 2020).

Karantina konsepti ilk olarak 1377’de bugünkü Dubrovnik kentinin Ragusa limanında oluşturulmuş, 1423 yılında ise ilk karantina yapısı “Lazaretto Vecchio” Venedik’te kurulmuştur (Sehdev, 2002), (Devaux, 2013). Venedik’te yürütülmeye başlayan karantina süreci birkaç yüzyıl boyunca devam ederek karantina süreçlerinin temel taşlarını oluşturan ve özellikle Akdeniz kentlerinde uygulanan Venedik sistemini oluşturmuştur. Venedik sistemi katı bir hiyerarşi ve bürokrasi içeren, salgını yok etmek ya da önlemeye yönelik tedbirler almak yerine hastalıktan kaçınmayı hedefleyen bir sistemdir. 15. yüzyılın ikinci yarısında başlayan ve 19. yüzyıla kadar varlığını baskın olarak devam ettiren bu sistemde karantina yapılanmaları genel olarak “yerleşik-karasal” karantina yapılanmaları ve “liman” karantina yapılanmaları olarak karşımıza çıkmaktadır. Yerleşik- karasal karantina yapılanmaları, yerel salgınlarda şüpheli görülenleri karantina altına almak için kullanılırken, liman karantina yapılanmaları ise özellikle doğudan gelecek salgın tehdidine karşı bir sınır oluşturmak amacı ile kullanılmıştır. 15. yüzyılda İtalya kentlerinde kurulan ilk karantina yapılanmalarından olan Mantua (1450), Ferrara (1464), Florence (1463), Siena (1478), Milan (1488) yerel-karasal karantina yapılanmaları iken, 1467 yılında kurulan Genoa liman karantina yapılanmalarına örnektir (Howard, 1789).

Liman karantina yapılanmalarında bulaşıcı hastalıklarla ilgilenen çalışanların yanı sıra, gümrük memurları yer almaktadır, böylelikle salgınla birlikte ticaret ve güvenliğin de kontrol altına alınması hedeflenmiştir (Chase- Levenson, 2020). İtalya kentlerinde kullanılan birçok karantina yapılanmaları birbiri ile ilişki halindedir ve karantina yapılanmaları için seçtikleri konum ile bir savunma hattı

oluşturmuşlardır (Cliff, Raynar, Stevens, 2009). 16. yüzyıldan itibaren karantina süreçlerinde “sağlık raporu sistemi” kullanılmaya başlanmıştır. Bu rapor yolcuların en son geldikleri liman göz önünde bulundurularak “temiz”, “şüpheli”, ve “enfekte” olarak üç farklı kategoride değerlendirmekte, sağlık raporuna göre karantinada kalma süreleri belirlenmektedir (Gensini vd., 2004). 16. yüzyıldan sonra uygulanmaya başlayan sağlık raporu uygulaması karantina süreçlerindeki yoğunluğu değiştirmiş, bu değişim mimari yapılanmada etkisini göstermiştir. Diğer taraftan ise, farklı ülke ve limanlarda birbirinden farklı uygulamaların olması özellikle ticaretle uğraşanlar için belirsizliklerin oluşmasına neden olmuştur. Bu sorunların çözümü ve karantina süreçlerine ilişkin uluslararası bir standart getirilmesi için 19. yüzyılın başlarında uluslararası konferanslar yapılmaya başlanmıştır (Maglen, 2003). Karantina süreçlerinde yapılmak istenilen uluslararası standartların yanı sıra 19. yüzyılda bulaşıcı hastalıklarla ilgili bilimsel çalışmaların da sayısı artmıştır.

Bilimde yaşanan gelişmeler ile birlikte 19. yüzyılda salgın hastalıklara mikroorganizmaların sebep olduğu ve hava, yiyecek, giysi gibi ürünlerle bulaştığı anlaşılmış, bu gelişme karantina süreçlerinin en önemli dönüm noktasını oluşturmuştur. Bu tespit sonrasında havanın temizlenmesi için pülverizatörler, içme suları için filtreler, giysiler ve ev eşyaları için etüv makinaları tasarlanmıştır. Etüv makinaları sabit ve seyyar olarak iki farklı çeşit olarak kullanılmıştır (Yıldırım, 2003). Etüv makinalarının 1870’den itibaren tephirhane adı verilen mekanlarda özellikle Avrupa’da yaygın olarak kullanılmaya başlanması ile birlikte karantina yapılanmalarında değişimler oluşmaya başlamıştır. Diğer taraftan da seyyar etüv makinaları belirli bir mekâna ihtiyaç duymadan kasaba, köy, kışla ve diğer kamusal yerlerde kullanılmaya başlanmıştır. Bu süreçle birlikte özellikle Avrupa’da dezenfektasyon uygulamaları artmış ve karantina süreçleri azalmaya başlamıştır.

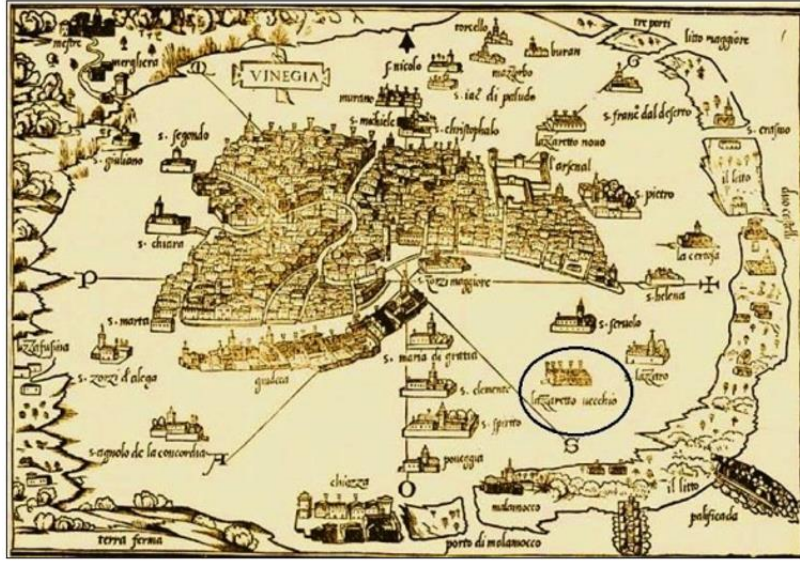
Mimari Yapılanmalar: “Lazzaretto” (Architectural Structuring: “Lazzaretto”)

Karantina sürecinde genel olarak izolasyonun sağlanmasının temel hedef olduğu, bu süreçte barınma, depolama, tedavi, bakım ve dezenfektasyon işlevlerinin olduğu ve bu işlevlerin gerçekleştirilmesi için güvenliğin ön planda tutulduğu görülmektedir. Bu nedenle karantina yapılanmaları hem hastane hem de askeri ya da cezaevi mimari özelliklerini bir arada bulunduran ender yapı kompleksleri olarak tanımlamak mümkündür. Karantina yapılanmalarının mimari özellikleri incelendiğinde; temel bir tasarım yaklaşımının olmadığı, yapıldığı dönemin mimari üslubundan etkilendiği görülmekle birlikte işlevi tanımlayan ortak mimari özelliklerin olduğu görülmektedir. Mimari yapılanma tanımlanırken üç temel unsur; “yer seçimi”, “yerleşim şeması”, “yapıların iç mekân kurgusu” öne çıkmaktadır. Bu nedenle, bu bölümde karantina yapılanmalarının mimari özellikleri tanımlanırken, yapılanmaların “yer seçimi”, “yerleşim şeması” ve “yapıların iç mekân kurgusu” olarak üç başlık altında ele alınmıştır.

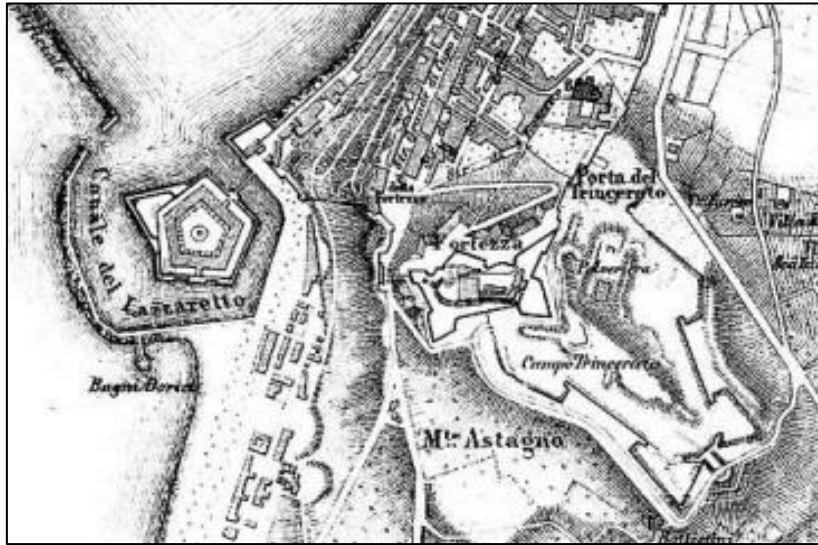
Yer Seçimi (Site Selection)

14. yüzyıldan 20. yüzyılın sonlarına kadar karantina yapılanmalarının yer seçimi yapılırken hem kent merkezlerinden uzak hem de kente kolay ulaşım sağlanabilen alanlar seçilmiştir. Yer seçimindeki diğer önemli etken ise seçilen alanın ticaret ve hac yolları üzerinde olmasıdır. Böylelikle özellikle Akdeniz’de inşa edilen karantina yapılanmaları ile bulaşıcı hastalıkların ülkeye girişinin engellenmesinin yanı sıra ticaret ağının güvenliği de kontrol altına alınmıştır (Chase-Levenson, 2020).

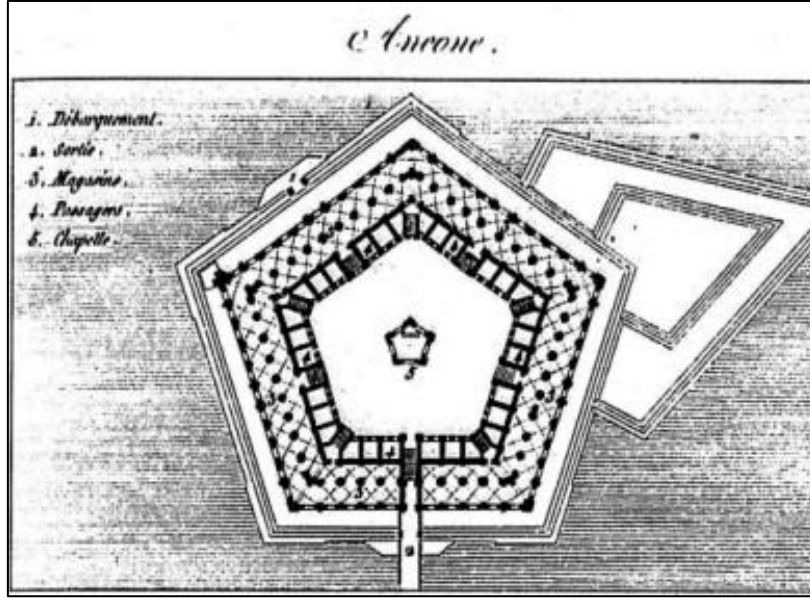
Özellikle liman karantina yapılanmalarında deniz ya da nehir gibi doğal ayırıcı unsurlar ile ayrılmış adalar ve lagünler tercih edilerek, karantina altında tutulanlar ile şehirde yaşayanlar arasındaki ilişkinin kesilmesi aynı zamanda gemi yolu ile gelenleri hızlıca kontrol altına alınması hedeflenmiştir (Ini, 2016). Yerleşim yeri olarak adanın tercih edildiği örneklerden biri ilk karantina teşkilatının kurulduğu Dubrovnik kentinin Mrkan adasıdır (Tomic-Blazine ve Blazine, 2015). Karantina yapılarının önemli ilk örneklerinden biri olan Vecchio ve Nuova Lazarettoları (İşler, 2019) ile Corfu, Malta Lazarettoları da adaya inşa edilen karantina yapılanmaları örneklerindedir (Şekil 1). İtalya'da 1733 yılında Luigi Vanctelli tarafından tasarlanan "Lazaretto Ancona" yapısı beşgen form oluşturularak karantina işlevi için üretilmiş yapay bir adada yer almaktadır (Şekil 2, 3) (Bashford, 2016). Lazaretto San Leopoldo ise doğal lagünlerin yer aldığı deniz kenarına konumlanan örneklerden biridir (Şekil 4).



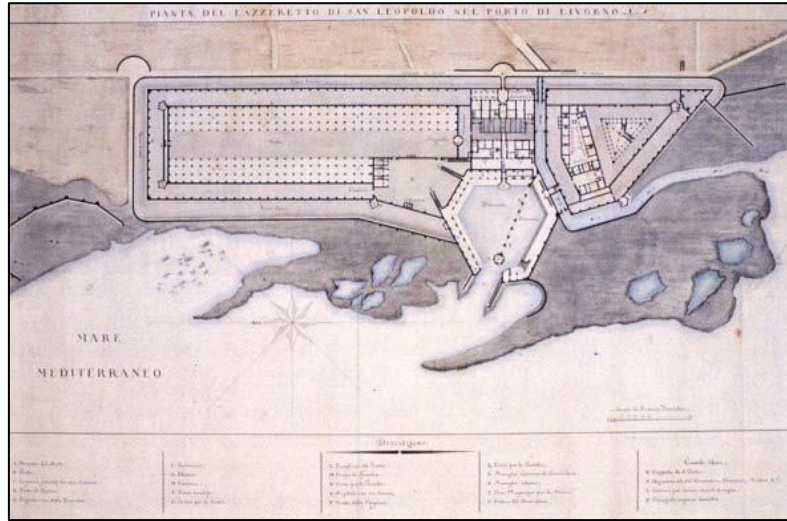
Şekil 1 - Venedik Lazaretto haritası, Benedetto Bordone, 1534 (Anoyatis-Pelé, 2016).



Şekil 2 - Lazaretto Ancona konumu (Anoyatis-Pelé, 2016).



Şekil 3 - Lazaretto Ancona planı (Tolos, 2006).

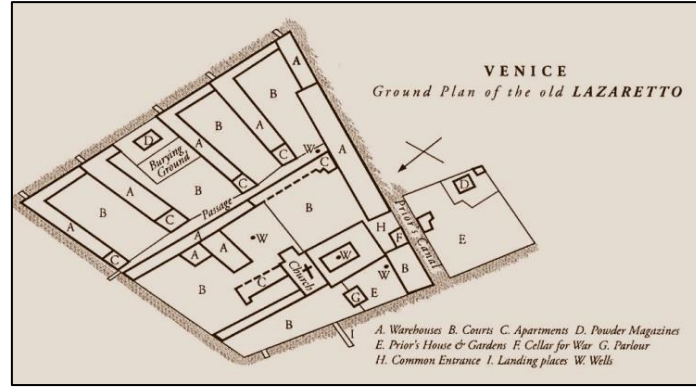


Şekil 4 - Lazaretto San Leopoldo planı (Tolos, 2006).

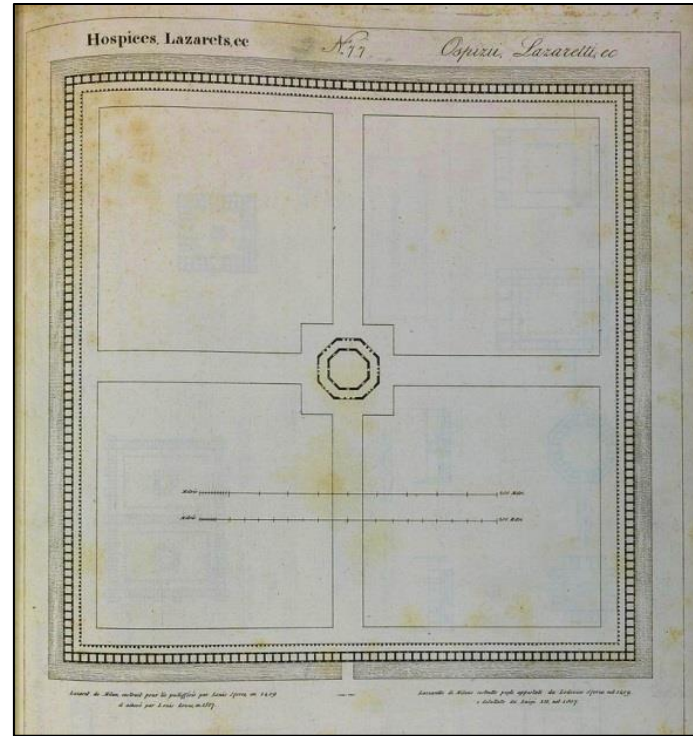
Yerleşim Şeması (Settlement Layout)

Karantina yapılanmalarını tanımlayan en önemli alanlar; izolasyon süresi boyunca gözetim altında tutulanların ve çalışanların kalacağı barınaklar ve eşyaların tutulduğu depo yapılarıdır. Bu alanlar karantina mimarisinin alan olarak en geniş bölümünü kapsar ve alandaki konumlanmaları ile karantina yapılanmalarının biçimsel yansımaları oluşturur. Karantina yapılanmalarının ilk örneklerine bakıldığında eşyalar ve mallar için ayrılan depo mekanları genellikle yapılanmanın dış çeperinde, çok az örnekte ise yapılanmanın farklı noktalarında bağımsız birimler olarak görülür. Lazaretto yapılarının ilk örneklerinden olan Lazzaretto Nuova ve Vecchio yapılanmalarının dış çeperlerinde depo ve barınma mekanları yer alırken, bu birimlerin aralarında geniş iç bahçeler bulunmaktadır. Depo mekanlarının yoğunluğu barınma yapılarına göre daha fazladır. Çalışanlar için

ayrılan alanlar bu yapılardan daha uzak bir noktaya konumlandırılmıştır (Ini, 2016) (Şekil 5). Daha sonraki dönemlerde depo ve barınma birimleri kare ya da dikdörtgen şeklinde ve birçoğu arkad oluşturacak şekilde sıralandığı, ortalarında ise bir iç bahçenin bırakıldığı yapılanmalara dönüşmüştür (Slatter, 1984). Bu örneklerin bazıları ortada şapelin konumlandırıldığı merkezi bir plan şeması olarak karşımıza çıkmaktadır. Bu plan şemasına ait örnek olarak Lazaretto Milano gösterilebilir (Şekil 6).



Şekil 5 - Lazzaretto Vecchio (Cliff, Smallman-Raynor, Stevens, 2009).

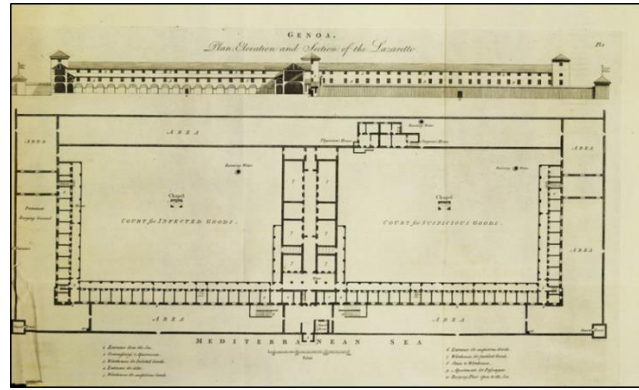


Şekil 6 - Lazzaretto Milano (Durand, J. N. L. (1833).

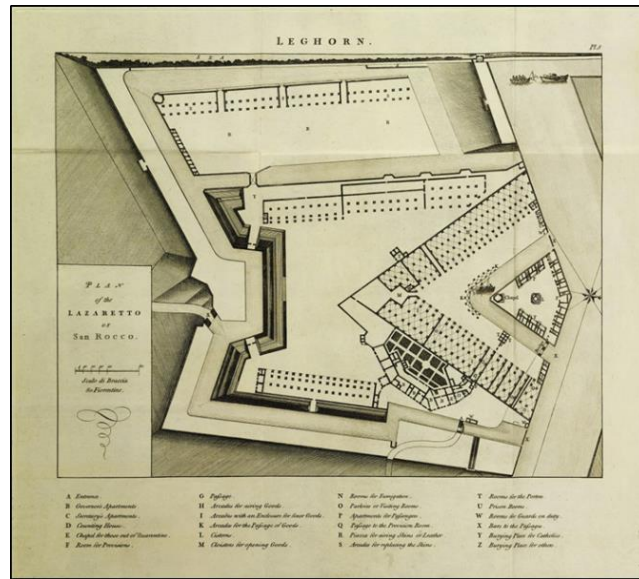
16. ve 17. yüzyıl karantina yapılanmaları; yerleşik-karasal karantina yapılanmaları ve liman karantina yapılanmaları olarak ayrılmaktadır. Lazzaretto Genoa nehir kenarına inşa edilmiş ve ilk kullanıldığı dönemde hastaların iyileştirilmesi için kullanılan yerleşik-karasal karantina yapılanmasına örnek iken, daha sonraki dönemde liman karantina yapısı olarak kullanılmıştır. Dikdörtgen plan şeması

“enfekte” ve “şüpheli” olarak tanımlanan karantina kullanıcılarını ve bu kullanıcıların eşyalarını ayrı ayrı konumlandırılacak şekilde ikiye bölmüştür (Şekil 7). Bu iki bölümün birbiri ile temasını önleyecek şekilde plan şeması oluşturulmuştur. Yapı iki katlı olup zemin katı barınma amaçlı birinci katı ise depo amaçlı kullanılmıştır (Howard, 1789).

Liman karantina yapılarında ise karantina yapısının yer aldığı limanın ticaret hacmine göre depo yapılarının sayısı ve boyutları farklılaşarak plan şemasında daha baskın hale gelmektedir. Bu ilişkiyi tanımlayacak en önemli örneklerden biri dönemin en yoğun ticaret limanlarından biri olan Livorno limanındaki karantina yapıları olarak gösterilebilir. Livorno karantina yapıları San Rocco, San Leopoldo, San Jacapo olmak üzere üç lazaretto yapısından oluşmaktadır. En önemli özelliklerinden biri farklı ihtiyaçlara ve eşyanın niteliğine göre farklılaşabilen çok sayıda tasarlanmış depo yapılarına sahip olmasıdır (Bonastra Tolos,2006). Şekil 8’de Lazzaretto San Rocco’ya ait deniz fenerinin çevresinde konumlanmış farklı işlevlere ait depo yapıları görülmektedir. Livorno Lazzaretto yapılarından görüleceği gibi ticaretin artması ile birlikte karantina yapıları sadece bulaşıcı hastalıkları kontrol altına almayı hedefleyen sağlık yapılarından çıkarak sınır ve ticaret güvenliğini de hedefleyen gümrük yapılarına dönüşmüştür.

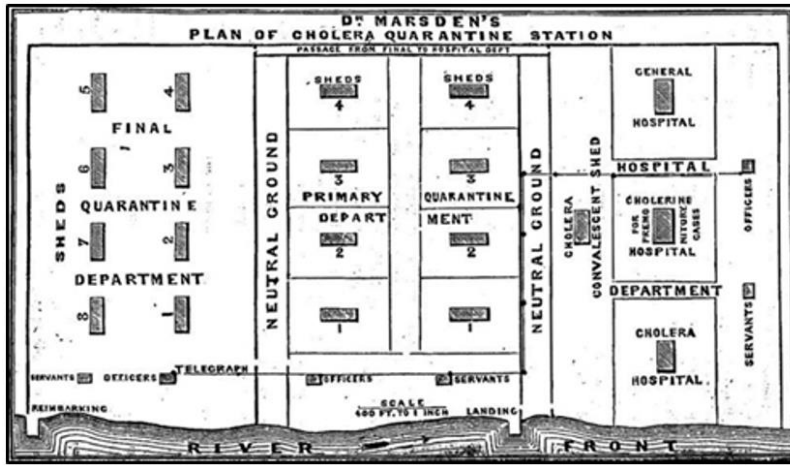


Şekil 7 - Lazzaretto Geona (Howard, 1789).

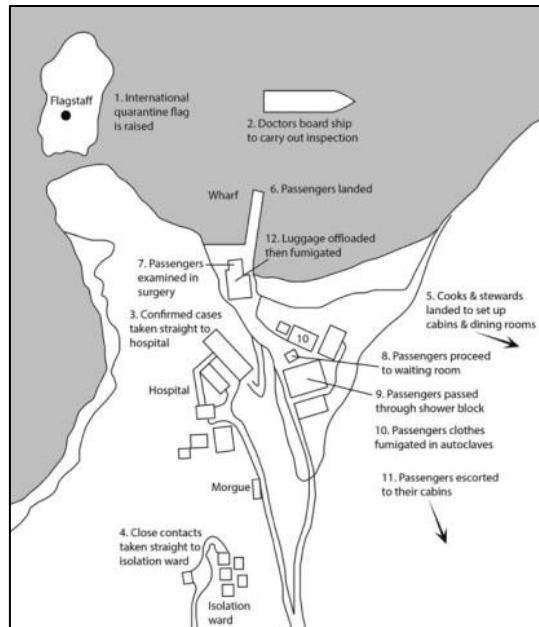


Şekil 8 - Lazzaretto San Rocco, Livorno (Howard, 1789).

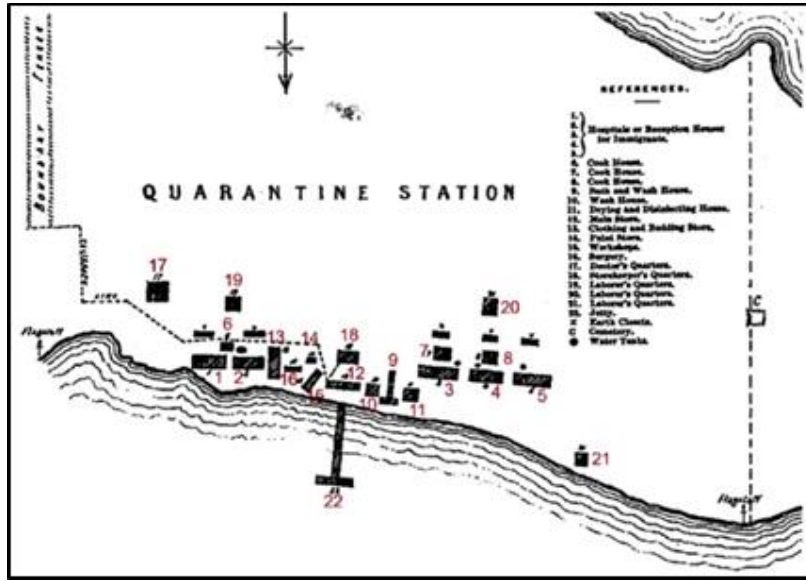
19. yüzyılda kolera salgınının görülmeye başlaması, ticaretin ve kıtalararası insan hareketliliğinin artması, teknolojik, bilimsel gelişmeler karantina yapılanmalarının yerleşim şemasında değişimler oluşmasına neden olmuştur. 19. yüzyıl öncesi karantina yapılanmalarında gördüğümüz sınırları tanımlı kütle yerleşiminin yerine serbest düzende belirli bir alana yayılmış yapılar görülmeye başlanmıştır. Bu yaklaşımdaki biçimsel çözüm önerisi olarak Dr. Marsden'in koleraya yönelik karantina yapılanmaları için önerdiği plan şeması örnek gösterilebilir (Şekil 9). Bu plan şeması temel anlamda alanı üçe bölmektedir; birinci bölümde enfekte olmuş kişiler, ikinci bölümde enfekte olmayan ancak temaslı kabul edilenler, üçüncü bölüm ise sağlıklı veya daha önce diğer karantina yapılarında belirlenen sürede karantinada kalanlar olarak ayrılmakta olup her bir bölümün diğer bölümler ile ilişki halinde olması belirgin şekilde engellenmektedir (Bonastra, 2010). Birbirinden ayrı yapılarla bir kompleks oluşturan yapılanma örnekleri "Nepan" karantina yapılanması ve "North Head" karantina yapılanması olarak gösterilebilir (Şekil 10, 11).



Şekil 9 - Kolera için karantina planı, William Marsden, 1866 (Bonastra, 2010).



Şekil 10 - North Head karantina yapılanması, Avustralya (Longhursts, 2018).



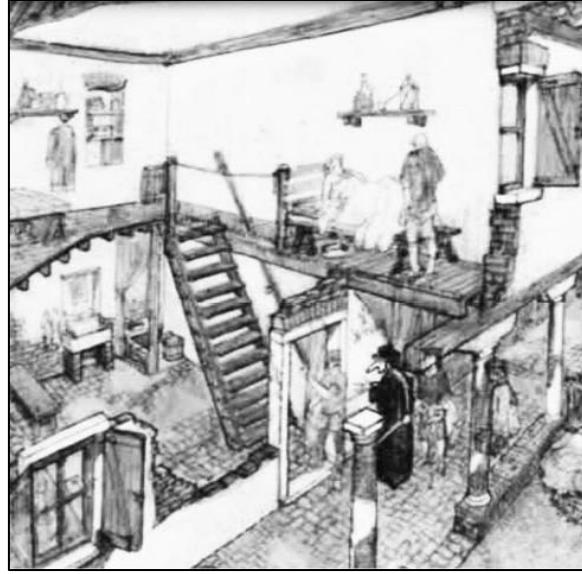
Şekil 11 - Lazzaretto Nepean (Nepean Historical Society, 2020; <https://nepeanhistoricalsociety.asn.au/>).

Karantina yapılanmalarının yerleşim şemasını oluşturan diğer önemli unsurlar ise güvenlik, pişirme alanları, dini yapılar ve mezarlık alanları olarak gösterilebilir. İlk karantina yapılanmalarında güvenliğin sağlanması için kalın sınır duvarları ve gözetleme kuleleri kullanılırken, 19. yüzyılda güvenlik amaçlı yapılanmalar azalmıştır. 15. yüzyılda yemek ihtiyacını karşılamak için ayrılan bahçe alanları 19. yüzyıl lazzaretto yapılanmalarında genellikle görülmemektedir. 16. ve 17. yüzyılda merkezi plan şemasının orta noktasında şapel gibi dini yapılar yer alıyor iken 19. yüzyıl lazzaretto yapılanmalarında dini yapıların önemini kaybettiği görülmektedir (Chase-Levenson, 2020; Ini, 2016; Howard, 1789). Diğer önemli unsur ise hastane yapıları olarak gösterilebilir. İlk lazzaretto örnekleri sadece izolasyonu hedeflerken özellikle deniz ticaretinin artması sonucu Lazzaretoların önem kazanması ile birlikte hastaları tedavi etmek içinde hastane yapılarının inşa edildiği görülmektedir. Bu alanların yerleşim şemalarındaki konumları incelendiğinde ilk örneklerde genellikle depo ve barınma alanlarına uzak ve sınıra yakın alanlarda konumlandığı görülmektedir. 19. yüzyılda görülen serbest yerleşim sisteminde ise hastane birimleri yine karantina kullanıcılarından uzak alanlarda konumlanmakta, Dr. Marsden'nin önerdiği plan şemasında olduğu gibi bazı yapılanmalarda hastane yapılarının “genel hastane” ve “kolera hastanesi” olarak ayrıldığı görülmektedir.

Yapıların İç Mekân Kurgusu (Interior Layout of Buildings)

Lazzaretto yapılanmasını oluşturan yapıların iç mekân kurgusuna yönelik literatürde çok fazla çalışma yer almamaktadır. Lazzaretto Nuova birbirinden bağımsız ve avlu üzerinden girişleri sağlanan birimlerden oluşmakta, her birimin içinde şömine ve büyük pencereler bulunmaktadır (Şekil 12) (Jiang, 2018). Lazaretto yapılanmalarının ilk örneklerinde iç mekân kurgusuna önem verilmesine rağmen 18. yüzyıldan itibaren seyyahların tanımlamaları ile barınma ihtiyacına ilişkin ayrılan önemin azaldığını görülmektedir. 18. yüzyıl gezginlerinden olan John Howard'ın farklı karantina yapılanmalarından elde ettiği gözlemleri anlattığı seyahatnamesi incelendiğinde, lazzaretto yapılarının en baskın öğeleri olan barınma birimlerinin genellikle küçük tek hacimli alanlar olduğu, bu hacimlerin bir çoğunda hastalığın bulaşmasını önlemek amacı ile herhangi bir eşya bulunmadığı,

birimlerin avlu ile bağlantılarının olduğu ancak kullanıcıların birbirleri ile temasının azaltılmasının hedeflendiği, bazı mekanlarda camsız, sadece korkulukları olan pencere açıklıklarının bulunduğu, Lazzaretto Geneo'da olduğu gibi bazı karantina yapılarının koridorlarında kapıların bulunduğu ve farklı yerlerden gelen kullanıcıların birbirinden ayrılması için bu kapıların kapatılarak yolcuların farklı bölümlerde kalmasının sağlandığı anlaşılmaktadır (Howard, 1789). 19. yüzyılın başlarında ise Rousseau'nun Lazaretto Genoa'daki tespitleri doğrultusunda, odalardaki pencerelerin önünde parmaklıkların olduğu, odalarda çok az eşya olduğu, yatma birimlerinin olmadığı ve odaların çoğunun kirli olduğu anlaşılmaktadır (Şekil 13) (Kehoe, 2020: [<https://www.piratesurgeon.com/>]).

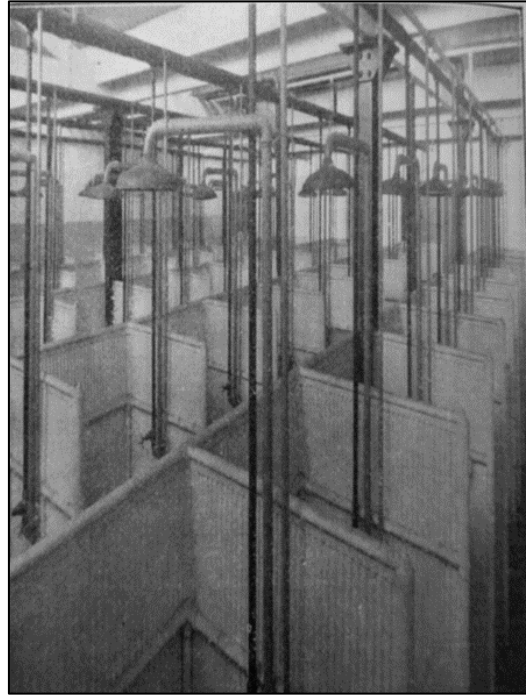


Şekil 12 - Lazzaretto Nuovada barınma odası (Jiang, 2018).

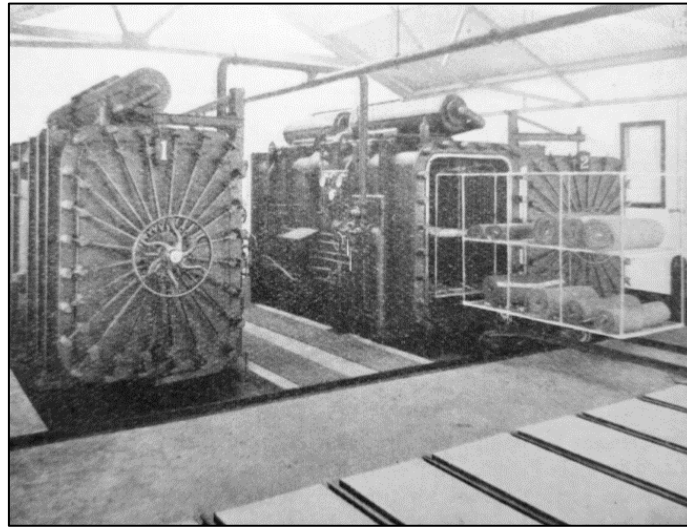


Şekil 13 - Rousseau Tasvirleri doğrultusunda Henri Baron tarafından çizilen barınma odası (Kehoe, 2020: [<https://www.piratesurgeon.com/>]).

Farklı yüzyıllarda görülen karantina yapılanmalarının iç mekân kurgusundaki farklılıklardan biri de dezenfektasyon süreçlerine ilişkin farklı dönemlerde geliştirilen farklı yaklaşımların olmasıdır. Veba salgınının ilk dönemlerinde dezenfektasyonun fumigasyon yöntemi ile aromatik maddelerin yakılması ile sağlandığına inanılmaktadır (Risse, 1999). Bu nedenle, ilk dönem Lazaretto yapılarının iç mekân kurgularında dezenfektasyona ilişkin bir yansıma görülmemektedir. 19. yüzyılda ise özellikle etüv makinalarının bulunması ile birlikte dezenfektasyon alanları yaratılmış karantina yapılanmalarındaki bazı yapıların iç mekanları etüv makinaların işleyişine göre kurgulanmıştır. Bunlara ek olarak geniş banyo ve temizlik alanlarının ayrılmaya başlandığı görülmüştür (Şekil 14, 15) (Longhurst, 2018).



Şekil 14 - North Head karantina yapısı banyo yapıları, 1909 (Longhurst, 2018).



Şekil 15 - North Head karantina yapısı etüv makinaları, 1909 (Longhurst, 2018).

OSMANLI KARANTİNA TEŞKİLATI (OTTOMAN QUARANTINE ORGANIZATION)

Kolera ilk kez 1817’de Hindistan’ın Bengal şehrinde görülmüş, 19. yüzyılda vebadan daha fazla etkili olarak dünyanın büyük bir kısmında önemli tahribatlara ve kayıplara neden olmuştur. 19. yüzyılda tıp biliminin gelişmesiyle birlikte ülkeler kendi sağlık teşkilatlarını oluşturmaya başlamışlar, diğer bir taraftan da milletlerarası organizasyonlar kurarak uluslararası ölçekte bir koruma oluşturmuşlardır (Sarıyıldız, 1989; Çavdar ve Karıcı 2014). Osmanlı’da ilk ciddi karantina 1831 yılında İstanbul’u etkisine alan kolera salgını sırasında Karadeniz’den gelen gemilere uygulanmıştır (Yıldırım, 2006). 1835 yılında ise Akdeniz’den gelen gemilerin kontrol altına alınabilmesi amacı ile Çanakkale’ye geçici tahaffuzhane yapılmıştır (Sarıyıldız, 1989).

Osmanlı Devleti’nin karantina uygulamalarına yönelik en önemli adımlarından biri 1838 yılında kurulan ve “sıhhiye meclisi” olarak da isimlendirilen karantina teşkilatıdır. Karantina Teşkilatının ana hedefi doğudan batıya salgın hastalıkların yayılmasını önlemek olup, batı ülkelerinin etkisi ile kurulmuş olsa da dolaylı olarak yerel sağlık sistemini etkilemiştir (Aydın, 2004). Karantina önlemlerine ilişkin ikinci önemli adım ise, 1866 yılında İstanbul’da düzenlenen sağlık konferansıdır. Bu konferansla birlikte karantinada uygulanacak yöntemler uluslararası bir standartta bağlanmıştır (Ayar, 2007).

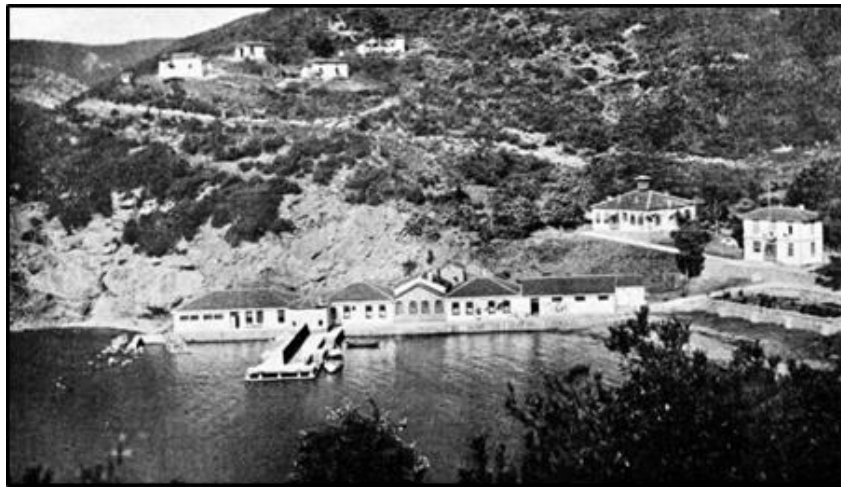
Karantina meclisi ile birlikte öncelikle İstanbul Limanı olmak üzere, Osmanlı sınırları içerisinde birçok limanı kapsayan önlemler alınmıştır. Genel karantina önlemlerine bakıldığında, gemilerin limana girdiğinde öncelikle yolcuların hastalık belirtisi olup olmadığına bakıldığı, hastalık belirtisi bulunmuyor ise gemilerin içerisinde on gün boyunca karantinada kalmaları gerektiği, hastalık belirtisi görülen gemilerde ise yolcu, mürettebat ve eşyaların tahaffuzhanelere alınarak hasta olanlar ve hasta olmayanlar olmak üzere farklı alanlara yerleştirildiği, gemiden inen eşyaların ve gemilerin ise temizlendiği görülmektedir (Yıldırım, 2016). Karantina meclisinin aldığı bu kararların mimari yansımaları olmuş ve karantina sürecinin geçirileceği mekanlara “tahaffuzhanelere” ihtiyaç duyulmaya başlanmıştır.

15. yüzyılda karantinaya ilişkin alınan kararların hızlı bir şekilde uygulamaya geçmesi için, yeni yapı yapmak yerine mevcut yapıların lazzaretto işlevi ile kullanılması tercih edilmiştir. İlk lazzaretto örneklerinde mevcut manastır yapılarının işlevi lazzarettoya dönüştürülürken, Osmanlı devletinde ise Kuleli Kışlası’nın işlevi yapıya eklenen eklentiler ile birlikte tahaffuzhane olarak değiştirilmiştir. Bu yeni işlev ile birlikte yapıda üç koğuşlu hastane binası, tütsü odası, eczane birimleri oluşturulmuştur (Sarıyıldız, 1989). Ayrıca, Galata’daki eski gümrük binası Kavak Tahaffuzhanesi olarak kullanılmıştır (Yıldırım, 2016).

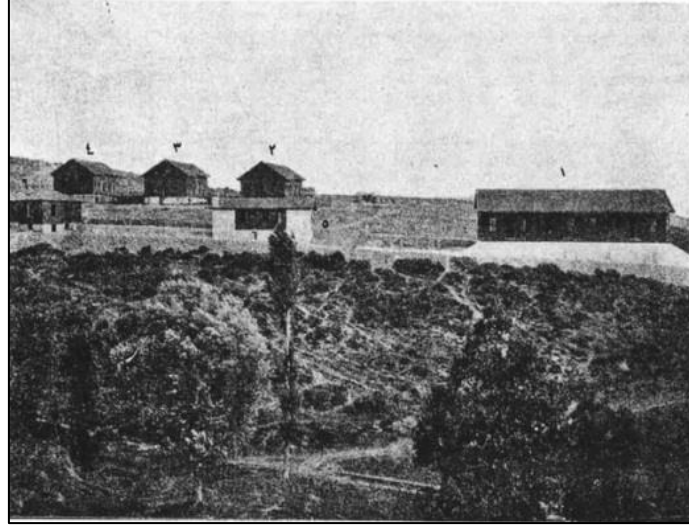
İstanbul Boğazı’nın iki yakasına, Büyükliman, Anadolu Kavağı, Manastırağzı, Umuryeri, Servi Burnu, Rumeli kavağı, Büyükdere gibi alanlara tahaffuzhaneler ve karantina alanları yapılmıştır. Tuzla Tahaffuzhanesi hariç boğazın iki yakasına yerleşen bu tahaffuzhaneler bugün ayakta değildirler (Yıldırım, 2016). Bunların yanı sıra, İzmir, Urla-Klazomen, Adana, Sinop, Hicaz, Kamaran, Antalya, Çanakkale gibi Osmanlı liman kentlerinde karantina teşkilatları ve tahaffuzhaneler yapılmıştır (Ak, 2011; Böke, 2009; Sarıyıldız, 1989; Arslan ve Polat, 2017; Demirkol, 2018).

Osmanlı dönemindeki karantina süreçlerine ilişkin bahsedilmesi gereken diğer önemli husus ise bulaşıcı hastalıklara karşı geliştirilen teknolojik gelişmelerin tahaffuzhanelere olan yansımalarıdır. Pülverizatör ve etüv makinalarının kullanılmaya başlaması ile birlikte Avrupa’da “dezenfeksiyon istasyonu” adı verilen mekanlar yaygın olarak kullanılmaya başlamış bununla birlikte uzun karantina süreçleri azaltılmıştır. Ancak aynı dönem içerisinde Osmanlı döneminde karantina uygulamaları devam etmiştir. Osmanlı bu gelişmeleri geriden takip etse de buğu evi anlamına gelen tephirhaneler oluşturulmaya başlanmış, 1893’te Gedikpaşa Tephirhanesi, 1894’de Tophane ve Üsküdar Tephirhaneleri açılmıştır. Etüv makinalarının kullanımı Osmanlı tahaffuzhanelerinde ilk kez 1891 yılında Geneste ve Herscher Fabrikasından getirilen iki adet etüv makinası ile birlikte başlamıştır. Bu etüv makinalarından biri İzmir Klazomen diğeri ise İstanbul Kavak Tahaffuzhanelerine yerleştirilmiştir. 1892 yılında ise Tersane-i Amire Fabrikalarında Geneste ve Herscher ürünleri model alınarak pülverizatör ve etüv makinaları üretilmeye başlanmış ve birçok tahaffuzhane yapısında kullanılmıştır (Yıldırım, 2003).

Lazzaretto yapılarında görülen yerel-karasal karantina yapılanmaları ve liman karantina yapılanmaları gibi ayırım Osmanlı tahaffuzhanelerinde de görülmektedir. Liman karantina yapılanmalarında olduğu gibi Kavak tahaffuzhanesi (Şekil 16) dışarıdan gelen gemiler için kullanılan bir tahaffuzhane iken ve Serviburnu tahaffuzhanesi (Şekil 17) ise yerel-karasal karantina yapılanmalarında olduğu gibi sadece şehirde bulaşıcı hastalık çıktığında kullanılan tahaffuzhanelere örnektir (Yıldırım, 2016). Osmanlı karantina yapılarının genel mimari özelliklerine bakıldığında çok nitelikli olmayan malzemeler kullanılarak inşa edildiği, işlevin gerektirdiği müdahalelerin, işlevi asgari düzeyde karşılayacak şekilde genelde tek katlı birbirinden ayrık olarak konumlandırılan yapı kütlelerinden oluştuğu görülmektedir. Bütçenin sağlandığı durumlarda tahaffuzhanelerde iyileştirme yapılmıştır. Yoğun nüfuslu karantina süreçlerinin geçirildiği Tuzla Tahaffuzhanesi örneğine bakıldığında; tahaffuzhanede ilk dönemlerinde on gün karantina sürecinin geçirileceği yeterli mekanlar ve su bulunmadığı, daha sonraki dönemde ise fiziksel şartların iyileştirilerek kadın ve erkek hastanesi olarak iki ayrı hastane inşa edildiği görülmektedir (Atar, 2016). Diğer bir taraftan, bazı tahaffuzhanelerin denizden Bahriye Nezareti, karadan ise Tophane-i Amire Müşirliği (Yıldırım, 2016) tarafından kontrol altında tutulmaları nedeni ile güvenlik için mekânsal ve mimari gerekliliklerinin azalmasına da neden olduğu söylenebilir.



Şekil 16 - Kavak Tahaffuzhanesi ve Hastanesi (Yıldırım, 2016).



Şekil 17 - Serviburnu Tahaffuzhanesi ve memur barakaları (Yıldırım, 2016)..

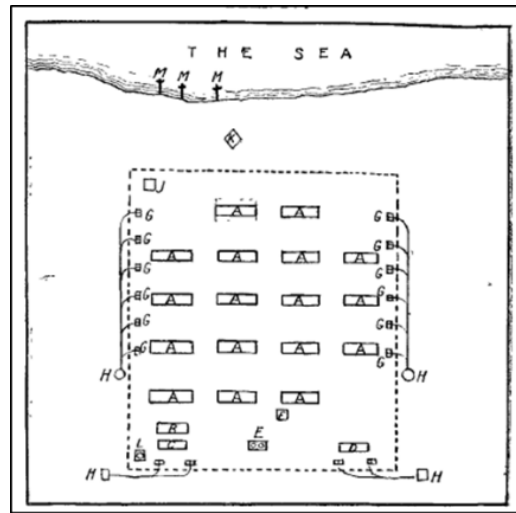
Geniş bir coğrafyaya yayılan Osmanlı İmparatorluğu'ndaki tahaffuzhanelerin nitelikleri ve büyüklükleri birbirinden farklı olmakla birlikte sistemsel olarak en düzenli ve yoğun kullanıma sahip tahaffuzhane örnekleri Kamaran ve Klazomen Tahaffuzhaneleri olduğu söylenebilir. Klazomen Tahaffuzhanesi'nin mimari yapılanmasını anlayabilmek için aynı dönemde inşa edilen ve Klazomen Tahaffuzhanesi gibi adaya konumlanan Kamaran Tahaffuzhanesi'nin mimari yapılanmasının incelenmesi önemlidir.

Kamaran Tahaffuzhanesi, Kızıldeniz'de özellikle hac kabilelerinin oluşturabileceği tehlikeyi önlemek amacı ile kurulmuş, yıl boyu açık olan ancak özellikle hac dönemlerinde yoğunlaşan Osmanlı'nın en büyük tahaffuzhanesidir (Yıldırım, 2021). 1907 yılında "The Lancet" dergisi Kamaran Tahaffuzhanesinin (Şekil 18) işleyişi ve mimari yapılanması ile ilgili gözleme dayalı bir yazı dizisi ele almıştır. Bu yazı dizisinden anlaşıldığı üzere Kamaran Tahaffuzhanesi birbirinden ayrı olarak inşa edilmiş altı adet farklı kordondan oluşmuştur. Kordonlar birbirinden tel çitlerle ayrılmış, böylelikle farklı kabilelerin birbiri ile temas kurması engellenmiştir. Bir kordondaki yapılanmaya ait işlevler incelendiğinde arish yapıları (A), eşyaların sınıflandırma alanı (B), medikal personel evi(C), hastane (D), sarnıç (E), mutfak (B), tuvalet birimleri (G), lağım çukurları (H), yönetici evi (J), cami (K), su kulesinden (L) oluştuğu görülmektedir (Şekil 19). Bir kordonun kendi bünyesinde barındırdığı işlevlere bakıldığında en baskın yapılanmanın barınma amacı ile kullanılan ve "arish" adı verilen yapılarıdır. Arish, bölgenin yerel malzemelerinden biri olan hurma ağacı yapraklarının kalın olan bölümlerinin yere sabitlendiği, diğer yaprakların ise belirli bir sistemle bağlanarak oluşturulan yapım sisteminde inşa edilmiş yapılara verilen addır. Çift cidarlı olarak inşa edilmeleri sayesinde güneş ışığından korunan bu yapılar genellikle yaz aylarında kullanılmaları tercih edilir (Eldek vd., 2021; Hantash,2016; Piesik,2012; Alquimi, 2014). Arish yapıları dışındaki yapıların yapım sistemi yığma taş tekniğinde ve tek katlıdır. Mutfak birimleri genellikle açık alanda bazen de tek bir yığma duvarın mutfak nişi olarak kullanılması ile oluşmuştur. Hastane yapısında, operasyon odası, bakteriyoloji laboratuvarı, mutfak ve eczane birimleri bulunmaktadır. Depo yapıları geniş alan kaplamaktadır. Tuvalet birimleri bu örnekte kordonun içinde yapılmıştır ancak Abu Saad tahaffuzhanesinde olduğu gibi bazı tahaffuzhanelerde kordondan ayrı olarak denizin üzerine kurulan iskelelerde inşa edilmiştir. Karantina yapılarındaki en önemli unsurlardan biri su yapılarıdır.

Kamaran Tahaffuzhane'sinde yeterli hijyene ulaşmak için üç farklı yöntem kullanılmıştır. Bunlardan birincisi deniz suyunun doğrudan kullanılması, ikincisi deniz suyunun özel makinalar ile içme suyuna dönüştürülmesi, üçüncüsü ise adada oluşturulan kuyuların ve sarnıçların kullanılması olarak tanımlanabilir. Bu üç sistemde adada aktif bir şekilde kullanılabilmesi için makinalar ve su boruları inşa edilmiştir. (Board, B. D. O. T. C, 1907).

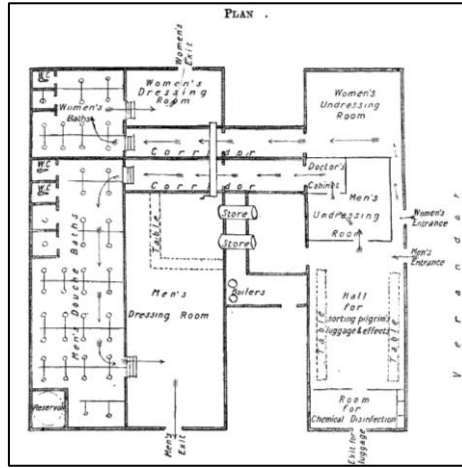


Şekil 18 - Kamaran Tahaffuzhanesi (Board, B. D. O. T. C,1907).

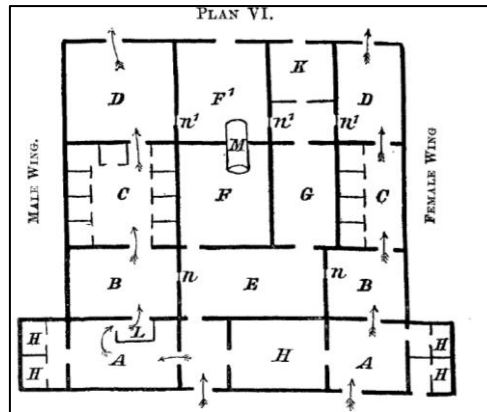


Şekil 19 - Bir kordona ait yerleşim planı (Board, B. D. O. T. C,1907).

Kamaran Tahaffuzhanesine ait tephirhane yapısının plan şeması incelendiğinde; plan şemasının aslında kullanıcıların hareketini tanımlayan bir kurgunun yansıması olarak planlandığı görülmektedir. Plan erkek ve kadın kullanıcılar ile eşyaların yapıya girişlerini birbirinden ayıracak şekilde oluşturulmuştur (Şekil 20). Eşyalar yapının ön kısmından içeri alınırken, bu alanda kimyasal dezenfektasyon ve sınıflandırma işlemlerinin yapıldığı alan bulunmaktadır. Kadın ve erkek kullanıcılar ise yapının yan tarafından birbirinden ayrı olarak içeri alınmaktadır. Her iki kullanıcı için ayrılan soyunma bölümünden sonra koridor ile banyo bölümüne ulaşılmaktadır. Koridor boyunca çıplak olarak tıbbi kontrolün yapılabilmesi için koridorda doktorun yer aldığı bir alan oluşturulmuştur. Plan şemasında oluşturulan farklı kullanıcılara ait bölümlenmenin yanı sıra, planda oluşturulan en önemli özelliklerden biri de yapının “temiz” ve “kirlili” olarak ayrılmasıdır. Bu ayrım iki adet etüv makinasının yerleştiği duvar ile oluşturulmuştur. Eşyalar etüv makinalarından çıktıktan sonra elle hareket ettirilen bir sistem sayesinde erkek ve kadınlara ait “temiz” alanlara ulaşarak işlev şemasının tamamlanması amaçlanmıştır. Bu sürecin tanımlanmasını sağlayan bu koridor aksına “banyo duş” koridoru anlamına gelen Fransızca “*salle des bains-douches*” denilmektedir. Koridor aksı boyunca duvarların çimento malzeme ile kaplandığı tavanlarda ise “*roses*” olarak tanımlanan ve deniz havasının içeri girmesini sağlayan boşlukların olduğu tanımlanmıştır (Board, B. D. O. T. C, 1907).



Şekil 20 - Kamaran Tahaffuzhanesi, tephirhane plan şeması (Board, B. D. O. T. C, 1907).



Şekil 21 - Osmanlı Tephirhanesi genel işlev şeması (Board, B. D. O. T. C, 1907).

Osmanlı tahaffuzhane yapılarında yer alan tephirhane yapısının genel tipolojik işlev şemasını gösteren bir çizim The Lancet dergisinin aynı yazı dizisinde yer almıştır (Şekil 21). Bu plan şemasında Kamaran Tahaffuzhanesi'ndeki akış şemasının temel kurgusu korunarak farklı bir plan şeması oluşturulduğu görülmektedir. Plan şemasında kadın ve erkek kullanıcılar için yapının iki bölüme ayrıldığı, her iki bölümde bekleme bölümünden (A), soyunma bölümüne (B), bu bölümden duşlara (C) ve giyinme bölümüne (D) ulaşılan bir akış şeması yer almaktadır. Doktor kabini erkek bölümün bekleme kısmında yer alırken (L), çalışanlar için her iki bölüm içinde mekân ayrılmıştır (H). Kadın ve erkek bölümünün soyunma kısımlarında dönen dolaplar(n) eşyaların toplandığı bölüme (E) ulaşmakta, etüv makinaları (M) ise eşyaların kirli bölüm (F) ve temiz bölüm (F') olarak ayrıldığı duvarın içine yerleştirilmiştir. Eşyaların ayrıldığı bölümde ise kimyasal dezenfektasyonun yapıldığı (G) alandan dezenfekte edilmiş eşyaların bulunduğu alana(K) ulaşılmaktadır. Temiz bölümünde giyinme bölümüne ulaşan döner dolaplar (n') bulunmaktadır (Board, B. D. O. T. C, 1907).

İzmir Karantina Teşkilatı (İzmir Quarantine Organization)

İstanbul'da kurulan karantina teşkilatından sonra ticaret açısından önemli bir limanı barındıran İzmir şehri seçilerek 29 Nisan 1838'de İzmir Karantina Teşkilatı kurulmuştur. Karantina teşkilatı İzmir'de ilk kurulduğu tarihten 1846 yılına kadar mevcut askeri hastane yapısında hizmet vermeye başlamış, ancak yapının bakımsız ve yetersiz olması nedeni ile yeni karantina binası yapılmıştır (Altun, 2014). 1855-1856 yıllarında kullanılıyor durumda olan yapının, taş ve ahşap kullanılarak yapılmış iki katlı bir yapı olduğu, ana koridora açılan yüksek tavanlı, geniş odalara sahip olduğu bahçesinin olduğu ve ölenlerin bu bahçeye gömüldüğü bilinmektedir (Böke,2009; Altun, 2014). Ancak karantina binası olarak seçilen alanın çevresinde yapılaşmaların artması sonucu karantina yapılanması şehirden uzak bir nokta olan Urla'ya taşınmıştır (Yüksel, 2006).

Urla/Klazomen bölgesinde yer alan karantina yapılanması inşa edilmeden önce 1866 yılında İzmir-Urla yolunun açılması ve telgraf hattının oluşturulması için çalışmalar başlatılmıştır. Yapılanmanın tam olarak inşa tarihleri bilinmese de ilk inşaat çalışmalarının 1866 ve 1869 yılları arasında yapılmaya başladığı (Böke, 2009), 1873 yılında yarım kalan inşaatların tamamlanması, 1902 yılında da karantina binasının tamir edilmesi ve ek yapı yapılması için ödenek yollandığı bilinmektedir (Karayaman, 2008). Bu nedenle tahaffuzhanenin zaman içerisinde özgün işlevi için eklemeler ve tadilatlar geçirdiği anlaşılmaktadır. Klazomen Tahaffuzhanesi bulaşıcı hastalıkların etkisinin yitirildiği 1950'lere kadar aktif olarak kullanılmış, 1950'lerde Deniz ve Güneş Enstitüsü, 1960'larda Kemik ve Mafsal Hastalıkları Hastanesi, 1986 yılından sonra Urla Devlet Hastanesi olarak kullanılmıştır. Halen Hudut ve Sahiller Sağlık Genel Müdürlüğü tarafından kullanılmaktadır (Aksu ve Başoğlu, 2013).

KLAZOMEN TAHAFFUZHANESİ (KLAZOMEN LAZZARETTO)

Bir önceki bölümde karantina yapılanmaları olan lazzaretto yapıları, yer seçimi, yerleşim şeması ve iç mekân kurgusu olmak üzere üç başlık altında incelenerek karantina işlevine yönelik mimari yapılanmaların genel özellikleri ortaya çıkarılmıştır. Yazının bu bölümünde, Klazomen Tahaffuzhane'nin özgün mimari yapılanması bu üç temel unsur üzerinden ayrı ayrı ele alınarak

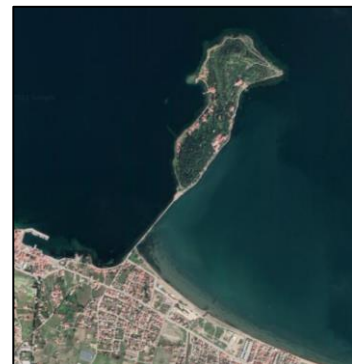
ortaya çıkarılacaktır. Özgün mimari yapılanmanın ortaya çıkarılabilmesi için temel olarak karantina adasındaki mevcut yapı stoğundan elde edilen veriler kullanılmıştır. Yapı stoğundan elde edilen veriler, arşiv ve literatür incelemeleri ile karantina işlevine yönelik mimari yapılanmaların genel özellikleri üzerinden yapılacak karşılaştırmalar doğrultusunda yorumlanarak Klazomen Tahaffuzhanesi'nin karantina adası üzerindeki 19. yüzyıl özgün mimari yapılanması ortaya çıkarılacaktır.

Yer Seçimi (Site Selection)

İlk Lazzaretto yapıları ve 15. yüzyıldan itibaren görülen liman lazzaretto yapılarında olduğu gibi Klazomen Tahaffuzhanesi'nin yer seçiminde de ada tercih edilmiştir. Seçilen bölge aynı zamanda Akdeniz ticaret yolları üzerinde bulunmaktadır. Günümüzde “karantina adası” olarak bilinen ada, İzmir merkezinin yaklaşık kırk kilometre batısında bulunan Urla ilçesinde yer almaktadır. Adanın en önemli özelliklerinden biri olan kara ile bağlantısını sağlayan yol sayesinde Klazomen Tahaffuzhanesi hem sular ile çevrilen izole bir alanda, hem de gerekli ihtiyaçların kolaylıkla sağlanabileceği bir konumda yer almaktadır (Şekil 22, 23).



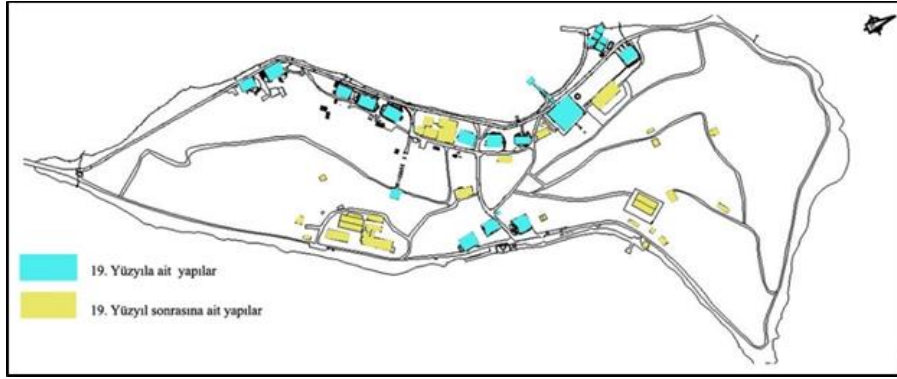
Şekil 22 - Karantina Adası'nın konumu.



Şekil 23 - Karantina Adası.

Yerleşim Şeması (Settlement Layout)

Klazomen Tahaffuzhanesi'ne ait özgün yerleşim şemasının ortaya çıkarılabilmesi için; öncelikle karantina adasındaki mevcut yapı stoğu incelenmiş, daha sonra arşiv belgeleri ve literatür incelemeleri yapılmıştır. Karantina Adasındaki mevcut yapı stoğunun, Klazomen Tahaffuzhanesi'ne ait yapılar olup olmadığının anlaşılabilmesi için, öncelikle yapıların cephe kurgusu, mimari üslubu ve yapı malzemesi üzerinden inceleme yapılarak yapıların hangi döneme ait yapılar olduğu tespit edilmiştir. Yapılan tespitler 2019 yılına ait mevcut yapı stoğunu gösteren harita üzerine işaretlenmiştir (Şekil 24). Yapılan incelemede, Karantina Adası'nda 19. yüzyıl dönem mimari özelliği gösteren yığma sistemde inşa edilmiş, tek katlı, benzer cephe kurgusuna sahip yapılar (Şekil 25) ile 19. yüzyıl sonrası döneme ait adanın Kemik Hastanesi ve Urla Devlet Hastanesi işlevi ile kullanıldığı dönemde inşa edilmiş betonarme tek ve çok katlı yapılar (Şekil 26) olduğu tespit edilmiştir. Mevcut yapı izleri üzerinden yapılan ilk incelemede 19.yüzyıl yapılarının genellikle adanın kıyıya yakın olan bölgelerinde inşa edildiği görülmüştür.



Şekil 24 - Karantina Adası, 2019 yılına ait harita
(İ. 1 N. K. V. K. B. K. M'ü arşivinden yararlanılarak yeniden düzenlenmiştir).



Şekil 25 - Karantina Adası'nda yer alan 19. yüzyıla ait yapılar (2019).



Şekil 26 - Karantina Adası'nda yer alan 19. yüzyıl sonrası inşa edilen yapılar (2019).

Karantina Adasında mevcut yapı stoğu dışındaki verilere yönelik yapılan incelemede, bir dönem tephirhane işlevi ile kullanıldığı düşünülen ve “küçük tephirhane” olarak tanımlanan yapının beden duvarına bitişik halde, yaklaşık üç metre yüksekliğinde denize kadar devam eden duvar izi tespit edilmiştir (Şekil 27). 19. yüzyıla ait mevcut yapı stoğu bu duvarın güneybatı ve güneydoğusunda konumlanmıştır. Duvarın kuzey doğusunda ise mezarlık izleri (Şekil 28) bulunmaktadır. Bu nedenle tespit edilen duvarın adayı tahaffuzhanenin farklı işlevlerine göre ayırmak ya da güvenliği kontrollü bir şekilde düzenlemek amacı taşıdığı söylenebilir. Karantina adasındaki mevcut izlerden tahaffuzhane işlevine yönelik olduğu düşünülen diğer husus ise su depolarıdır. Adada iki adet 19. yüzyıla ait su deposu bulunmaktadır. Bunlardan biri ana tephirhane yapısının arkasında, diğeri ise adanın doğusunda bulunmaktadır (Şekil 29). Ayrıca alanda yapılan incelemede iki tanesi batı, bir

tanesi güneydoğu olmak üzere üç adet iskele yapısı bulunduğu, kuzeybatı bölümünde iki adet, adanın batısında bir adet kıyıya yanaşmayı sağlamak için inşa edilmiş yapılara ait taşıyıcı izleri bulunduğu tespit edilmiştir. Adanın batısında yer alan iskelelerin biri tephirhane yapısının önünde yer almaktadır. İskelenin üzerinde tephirhane yapısının iç kısmına kadar uzanan ray sistemi bulunmaktadır (Şekil 30-a). Diğer iskele yapısı ise tahaffuzhaneye ait depo yapısı olduğu düşünülen beşli yapı kompleksinin önünde yer almaktadır (Şekil 30-b).



Şekil 27 - Küçük tephirhane yapısı ve yapıya bitişik duvar kalıntısı (2019).



Şekil 28 - Kuzeydoğu bölümünde tespit edilen mezarlık (2019).

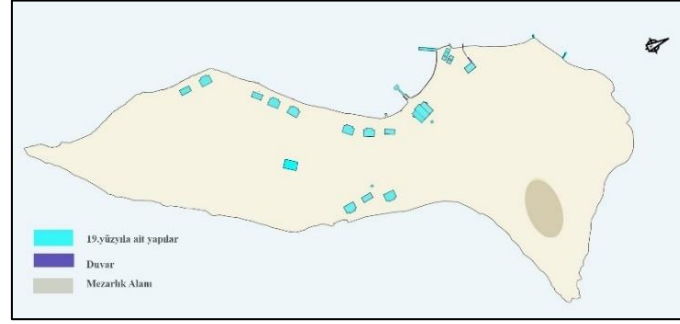


Şekil 29 - Su deposu (2019).

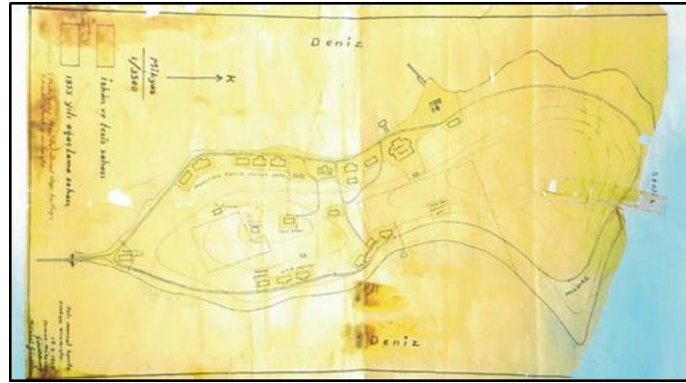


Şekil 30 - (a) Tephirhane yapısı ve depo yapıları (b) önünde yer alan iskeleler (2019).

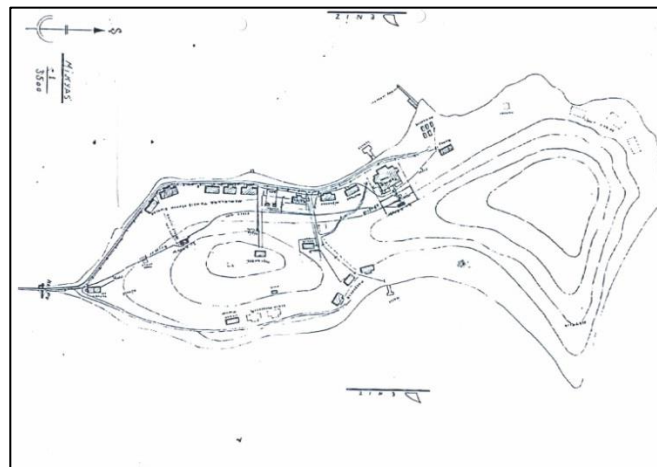
Karantina Adası'ndaki mevcut yapı stoğuna yönelik yapılan inceleme sonucu elde edilen verilerin Klazomen Tahaffuzhanesi'nin 19. yüzyıl özgün yapılanmasını tanımlayıp tanımlamadığının anlaşılabilmesi için ikinci aşamada arşiv ve literatür incelemesi yapılmış, yapılan tespitler ile adadaki mevcut yapı stoğu ve izlerden elde edilen veriler karşılaştırılmıştır. Bu amaçla öncelikle 2019 yılında tespiti yapılan 19. yüzyıla ait yapılar ve izleri gösteren harita, Karantina Adası'na yönelik 1955 ve 1935 tarihli haritalar ile karşılaştırılarak mevcutta yer almayan ya da değişen yapılar tespit edilmiştir (Şekil 31, 32, 33).



Şekil 31 - 2019 yılında tespit edilen 19. yüzyıla ait yapılar ve izler.



Şekil 32 - Karantina Adası, 1955 yılına ait harita. (İ. 1 N. K. V. K. B. K. M, 2019).



Şekil 33 - Karantina Adası, 1935 yılına ait harita (İ. 1 N. K. V. K. B. K. M, 2019).

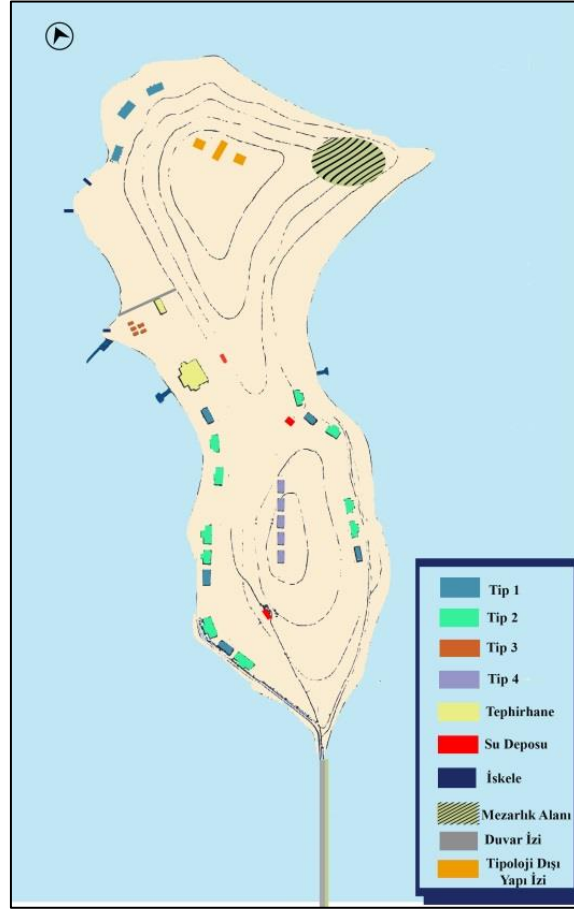
2019 (Şekil 31), 1955 (Şekil 32) ve 1935 (Şekil 33) yıllarına ait haritalar incelendiğinde, adadaki yapı stoğunda kayıplar ve eklemelerin olduğu anlaşılmaktadır. 1935 yılına ait haritada adanın kuzeydoğu bölümünde görülen üç adet dikdörtgen şeklinde ve bir kare şeklindeki yapının 1955 yılına ait haritada yer almadığı, adanın güney bölümünde ise mevcutta yer almayan ancak 1935 ve 1955 yıllarına ait haritalarda görülen üç adet yapı bulunduğu görülmüştür. Bu yapıların adadaki mevcut 19. yüzyıla ait yapıların büyük bir bölümü ile aynı aksta yer alması, oturma alanlarının kapladığı alan ve form olarak birbirine benzer yapılar olması nedeni ile Klazomen Tahaffuzhanesi'ne ait yapılar olabileceği muhtemeldir. 1935 ve 1955 yıllarına ait haritalarda adanın doğu bölümünde yer alan iskele mevcutta bulunmamaktadır. Bu nedenle bu iskele ile aynı aksta yer alan ve 2019 yılında yapılan incelemede tespit edilen iskelenin 1955 yılı sonrasında inşa edildiği ve tahaffuzhaneye ait iskele olmadığı anlaşılmaktadır. Şekil 31'de yerleri işaretlenen 19. yüzyıla ait yapılar ve mezarlık alanı ise 1935 ve 1955 yıllarına ait haritalarda görülmektedir.

Klazomen Tahaffuzhanesinin yerleşim şemasına ait literatürde çok fazla çalışma yer almamaktadır. Osmanlı arşivlerinden elde edilen, Klazomen Tahaffuzhanesi planında (Şekil 34) adanın yerleşim şeması net olarak görülmemişse de 1935 yılına ait haritada yer almayan adanın iki tepe noktasında yapı izleri olduğu görülmektedir (Adak, 2021). Diğer taraftan 2019 yılında yapılan incelemelerde tespit edilen su depolarının yerleri 1935 ve 1955 yıllarına ait haritalarda da görülmektedir. Temiz suyun adaya en yakın konumda yer alan ve Yıldıztepe olarak bilinen alandan demir borular kullanılarak adaya getirildiği, (Yılmaz, 2020) ve bu iki su deposu ile 1935-1955 yılları arasında inşa edilen su deposunun yeri de göz önüne alındığında, temiz su sisteminin adanın orta kısmında yer aldığı ve adadaki yapıların su kaynağına yakın olacak şekilde konumlandıkları anlaşılmaktadır.



Şekil 34 - Klazomen Tahaffuzhanesi Planı (Adak, 2021).

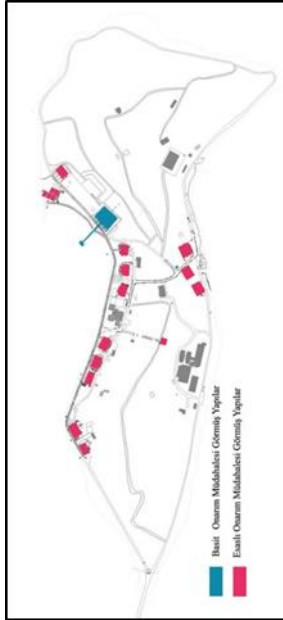
Klazomen Tahaffuzhanesi'nin özgün yerleşim şemasının ortaya çıkarılabilmesi için öncelikle 2019 yılında Karantina Adasında tespitler yapılmış, yapılan tespitler arşiv ve literatür çalışmaları ile karşılaştırılmıştır. Klazomen Tahaffuzhanesi'ne ait özgün yerleşim şemasının anlaşılabilmesi için son aşamada elde edilen bu veriler karantina yapılanmalarının genel yerleşim şemaları ile karşılaştırılarak yorumlanacaktır. Yapılan tespitler sonrasında Klazomen Tahaffuzhanesine yönelik yerleşim şemasının 19. yüzyıl lazzaretto yapılarında olduğu gibi serbest düzende konumlanan ve birbiri ile ilişkisi kesilmiş kütlelerden oluştuğu, ancak dönemin lazzaretto örneklerinden farklı olarak daha dağınık bir yerleşime sahip olduğu görülmüştür. Yapıların bir araya gelme düzenleri incelendiğinde, ikisi farklı tipolojide olmak üzere yapıların üçlü olarak bir araya geldiği ve bu üçlü sistemin belirli aralıklarla devam ettiği görülmüştür. Aynı döneme ait lazzaretto yapılarında görülen ve belirli grupları ayırmak için oluşturulan "kordon" sisteminin Klazomen Tahaffuzhanesinde de farklı şekilde ele alındığı, adadaki duvar izi ve yapıların bir araya gelme düzenleri de ele alındığında, adanın farklı kullanıcılara ya da karantinaya alınanların enfekte olup olmamasına göre ayrılarak belirli grupların birbiri ile ilişkisini kesecek şekilde tanımlı alanlar oluşturulduğu anlaşılmaktadır. Aynı dönem lazzaretto yapılarında olduğu gibi dezenfekte işlevine ait tephirhane yapısı ön planda tutulmuş iskeleler ile yapılara ulaşım sağlanmıştır. Bu doğrultuda hazırlanan şekil 35, elde edilen veriler sonrası hazırlanan Klazomen Tahaffuzhanesi'nin 19. yüzyıl özgün yerleşim şemasını göstermektedir. Lejantlarda gösterilen farklı tipolojilere ait yapıların detaylı incelemeleri iç mekân kurguları bölümünde ele alınacaktır.



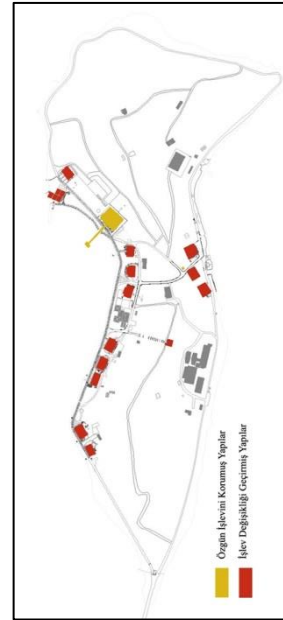
Şekil 35 - 19. yüzyıl Klazomen Tahaffuzhanesi yerleşim şeması.

Yapıların İç mekân Kurgusu (Interior Layout of Buildings)

Klazomen Tahaffuzhanesini oluşturan yapıların özgün iç mekân kurgusunun tanımlanabilmesi amacıyla öncelikle 19. yüzyıla ait yapıların mevcut iç mekân kurgusunun tahaffuzhane işlevine ait izler taşıyıp taşımadığı araştırılmıştır. Bu amaçla ilk olarak Şekil 31’de işaretlenen 19. yüzyıl yapılarının işlev değişikliği ve esaslı onarım geçirip geçirmedikleri irdelenmiştir. Şekil 36 ve 37’den görüleceği üzere su deposu ve tephirhane yapısı hariç diğer 19. yüzyıla ait yapılar esaslı onarım geçirmiş ve özgün işlevi dışında yeniden işlevlendirilerek idari, hizmet ve lojman yapıları olarak kullanılmışlardır. İşlev değişikliği süresince özellikle 1980’li yıllarda mekânsal ve yapısal müdahaleler gerçekleştirilmiş, birçok yapının plan kurgusu değişmiştir (İ.1.K.V.K.B.M.,2019). Tahaffuzhaneye yönelik özgün iç mekân kurgusunun ortaya çıkarılabilmesi için yapılar dezenfekte işleminin yapıldığı “tephirhane yapıları” ve tahaffuzhanede kalanların ve çalışanların kullandıkları “diğer yapılar” olarak iki başlık altında ele alınmıştır.



Şekil 36 - Esaslı onarım geçirmiş yapılar
(İ. 1 N. K. V. K. B. K. M’ü arşivinden yararlanılarak yazar tarafından düzenlenmiştir).



Şekil 37 - İşlev değişikliği geçirmiş yapılar
(İ. 1 N. K. V. K. B. K. M’ü arşivinden yararlanılarak yazar tarafından düzenlenmiştir).

Tephirhane Yapıları (Sterilization Buildings)

Klazomen Tahaffuzhanesi’nde karantinaya alınacakların ilk temas ettikleri yapı olan tephirhane yapısı tahaffuzhane işlevine ait en önemli yapı olarak kabul edilebilir. Yapı, tek katlı, yığma teknikle ve kütsel olarak üç parçalı olarak inşa edilmiştir. Ortada yüksek gabarili bir kütle ve bu kütle için iki yanında daha düşük gabarili simetrik iki kütle bulunmaktadır (Şekil 38). Plan şemasında ise bu simetrik kurgunun devam etmediği görülmektedir. Yapının ön cephesinde her bir kütle için açılan üç kapı bulunmaktadır. Ortada bulunan kütle için açılan kapı giriş holüne buradan da etüv makinalarının bulunduğu alana açılmaktadır (Şekil 39-a, 39-c). Giriş holünden yapının solunda yer alan kütle için bir kapı ile ulaşılırken, aynı kapının simetrisinde kapı formu verilmiş bir niş bulunmaktadır (Şekil 39-

b). Bu nedenle sağdaki kütleyle ana giriş holünden ulaşılamamaktadır. Solda yer alan kütle banyo, bekleme ve hazırlık işlevlerine ait ve birbiri ile bağlantılı üç birimden oluşmakta (Şekil 40-a) sağ tarafında yer alan kütle ise birbiri ile bağlantılı ve yapının içinden ulaşılan üç birimin yanı sıra, birbirinden bağımsız ve yapının dışından ulaşılan beş bağımsız bölümden oluşmaktadır (Şekil 40-b).



Şekil 38 - Tephirhane yapısı 1984 ve 2019 yılları (İ. 1 N. K. V. K. B. K. M, 2019).



(a)

(b)

(c)

Şekil 39 - Tephirhane yapısı iç mekân (2019) (İ. 1 N. K. V. K. B. K. M, 2019).



(a) Sol cephe

(b) Sağ cephe

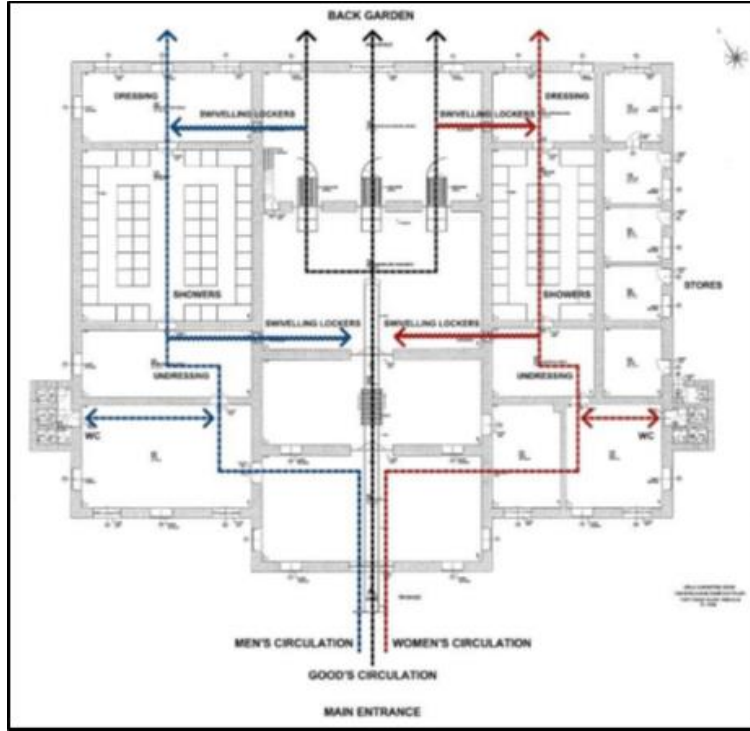
Şekil 40 - Tephirhane Yapısı (2019). (İ. 1 N. K. V. K. B. K. M, 2019).

İşlev değişikliği geçirmeyen tephirhane yapısında yapılan incelemede yapının plan şeması, cephe kurgusu ve malzemesinin büyük oranda korunduğu görülmüştür. Ancak yapının mevcut plan şemasının, 19. yüzyılda kullanıldığı özgün plan şemasını yansıtmadığı ya da dönem içerisinde eklemeler olup olmadığına anlaşılabilmesi için öncelikle dezenfekte işlemine yönelik işleyiş şeması incelenecektir. Bu amaçla bir önceki bölümde olduğu gibi mevcut yapıdan elde edilen veriler, arşiv ve literatür incelemelerinden elde edilecek tespitler ile aynı döneme ait tephirhane yapılarının işleyiş şeması üzerinden yapılacak karşılaştırmalar yorumlanarak özgün iç mekân kurgusu ortaya çıkarılacaktır.

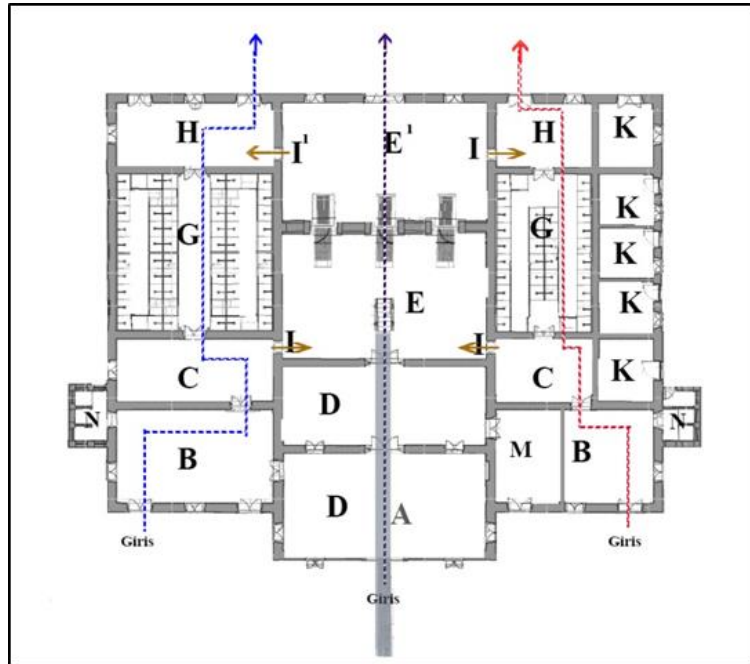
Literatürde yapılan incelemede etüv makinalarının 1891 yılından sonra adaya getirildiği bilgisi üzerine (Menekşe, 2020) yapının bu tarihten itibaren ayakta olduğu anlaşılmaktadır. Klazomen Tahaffuzhanesi'ne ait tephirhane yapısının işleyiş şeması detaylı olarak Yılmaz'ın makalesinde ele alındığı görülmektedir (Yılmaz, 2020). Bu çalışmada tephirhane yapısına ilişkin oluşturulan işleyiş diyagramında kullanıcıların eşyalar, kadınlar ve erkekler olarak üçe ayrıldığı, üç farklı kullanıcının da yapıya girişlerinin yapının ortasında bulunan aynı giriş kapısından, çıkışlarının ise yapının arka cephesindeki üç farklı kapıdan ayrı ayrı sağlandığı görülmüştür (Şekil 41). Önerilen bu işleyiş diyagramı ile yapının orta aksında yer alan giriş holünden iki kütleye de ulaşım sağlandığı bu nedenle sağ kütleye ulaşım sağlayan kapının simetrisinde yer alan mevcuttaki nişin özgün kullanımında orta holden sağ bölüme ulaşan kapı olduğu öngörülmüştür. Ancak bu kapı ile ulaşılan mekânın yapının sağ bölümündeki diğer mekanlar ile ilişkisi bulunmamaktadır. İşleyiş diyagramı yapının diğer bölümlerini özgün kabul etmiştir.

Literatürde yapılan incelemede ise 19. yüzyıl tephirhane yapılarının işleyiş diyagramlarının aynı kurguda olduğu, bu kurgu doğrultusunda farklı plan şemalarının oluşturulduğu görülmüştür. Osmanlı dönemi tephirhane yapılarında ve Klazomen Tahaffuzhanesi ile benzer özelliklere sahip Kamaran Tahaffuzhanesi'nin tephirhane yapısına ilişkin tanımlamalar bir önceki bölümde yer almıştır. Şekil 20 ve 21'de görüleceği gibi işleyiş diyagramında kullanıcıların yapıya giriş ve çıkışları ayrı ayrı kurgulanmış, etüv makinalarının bulunduğu alan yapının orta bölümünde konumlandırılarak kullanıcılar için ayrılan alanlar ile kısmi bağlantıların yapılması sağlanmıştır. Klazomen Tahaffuzhanesi tephirhane yapısında görülen işlev diyagramının üç parçalı olarak ele alınması, şekil 21 de gösterilen Osmanlı dönemi tephirhane yapılarının genel işleyiş diyagramında da görülmektedir. Bu diyagramda Klazomen Tahaffuzhanesi tephirhane yapısında olduğu gibi etüv makinalarının bulunduğu orta bölümün yanında yer alan iki bağımsız bölümün plan şeması birbirinin simetrisi değildir.

Yapıdaki mevcut izler doğrultusunda yapılan inceleme sonrasında yapının giriş cephesindeki özgün açıklıklar ve aynı döneme ait tephirhane yapılarının ortak işlev diyagramları incelendiğinde; eşyalar, kadınlar ve erkekler olarak üç farklı kullanıcının yapının farklı giriş kapılarından içeri alındığı ve birbiri ile temas ettirilmeden yapının içinde oluşturulan sirkülasyonla farklı çıkış kapılarından ayrıldıkları anlaşılmaktadır. Bu incelemeler doğrultusunda hazırlanan 19. yüzyıl tephirhane yapısının özgün işlev diyagramı şekil 42'de gösterilmiştir.



Şekil 41 - Sterilizasyon diyagramı, (Yılmaz 2020).



Şekil 42 - Klazomen Tephirhanesi işlev diyagramı.

Şekil 42'de görüleceği gibi tephirhane yapısının 19. yüzyıldaki özgün plan şeması ile 19. yüzyıl Osmanlı tephirhane yapılarının genel tipolojik plan şeması (Şekil 21) büyük oranda benzerlik taşımaktadır. Klazomen Tahaffuzhanesi'nde genel tipolojiden farklı olarak iskeleye yerleştirilmiş ray sistemi (A) mekânın içine kadar devam ederek etüv makinalarına (Şekil 40'a) kadar ulaşır, eşyalar

bu ray sisteminin devam ettiği aksta yapının içine alınır. Tipolojideki ana kurguda olduğu gibi kadın ve erkek kullanıcılar, yapının iki farklı kanadından içeri alınarak, bekleme salonundan (B), soyunma bölümüne geçer (C), buradan banyoların bulunduğu alana (G) (Şekil 40-b) ve giyinme bölümüne (H) geçiş yapılır. Soyunma ve giyinme bölümlerinden dezenfekte işlemlerinin yapıldığı (E, E') bölümlere el ile hareket ettirilen dolaplar (Şekil 40-c) ile kıyafetlerin ulaşımı sağlanır. Yapıda eşyaların giriş yaptığı ve sınıflandırıldığı alandan (D) dezenfekte işlemlerinin yapıldığı alana geçilir bu alan üç adet etüv makinası ile ayrılmıştır. Kirli olarak tanımlanabilecek eşyalar (E) dezenfekte işleminin tamamlanmasından sonra (E') bölümüne ulaşır. Kadın soyunma bölümünün yanında bulunan hacim (M) simetrik bir plan şemasında sonradan oluşturulmuş bir hacim gibi algılansa da daha önceki örneklerde ve genel tipolojik işleyişi şemasında da (Şekil 21) yer alan, eşyaların kimyasal dezenfektasyonu için ayrılan alan olduğu düşünülmektedir. Yapıda yapılan incelemede bu hacmin zemininde yer alan makina altlarına yerleştirilen beton kaidelerin varlığı alanın bu amaçla kullanıldığı fikrini güçlendirmiştir (Şekil 43-d). Bu nedenle bu bölümün yapının özgün kurgusunda olduğu ya da yapının inşasından kısa bir dönem sonra yapıya eklenmiş bir dönem eki olduğu düşünülmektedir. Genel tipolojiden farklı olarak yapının sağ kanadında yapının yan cephesinden ulaşılan hacimler bulunmaktadır. Açıklık oranları yapının diğer açıklıkları ile benzer olan bu bölümlerin yapının özgün plan kurgusunda olduğu ve personel için ayrılan alanlar olması muhtemeldir.



Şekil 43 - Tephirhane yapısına ait a) etüv makinaları b) banyolar c) hareketli dolaplar d) beton kaide izi (2019).

Tephirhane yapısının yanında tipolojik olarak diğer yapılara benzemeyen tek katlı 19. yüzyıl yapısı yer almaktadır (Şekil 44). Yapı ortada bir kütle ve bu kütlede iki yanında simetrik tek katlı iki kütlede oluşmaktadır. Her kütlede giriş ayrı ayrı sağlanmaktadır. Orta da yer alan mekân birbirine tek bir kapıdan bağlantı kurulan iki bölüme oluşmaktadır. Bu iki mekânı ayıran duvarın malzemesi yapının beden duvarlarından farklı malzemedir. Yapıda yapılan incelemede kapatılmış pencere ve kapı izleri bulunmaktadır. Yapının orta kütlede iki mekânı ayıran duvarda bulunan kapatılmış açıklık izi ve zemindeki izlerden bu izin etüv makinası izine ait olduğu anlaşılmaktadır (Şekil 45). Yapının Klazomen Tahaffuzhanesinde hangi işlevle kullanıldığına ilişkin literatür incelemesi yapılmıştır.



Şekil 44 - Küçük tephirhane yapısı (2019).



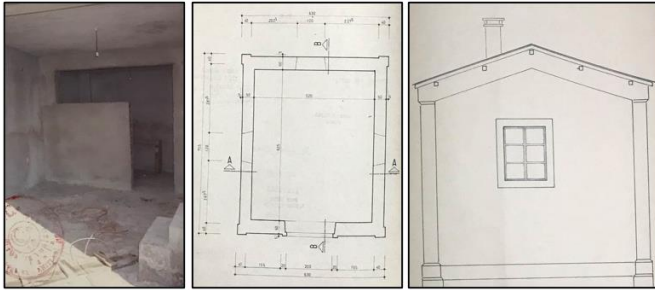
Şekil 45 - Etüv makinasına ait iz (2021).

Klazomen Tahaffuzhanesi'ndeki yapıların planlarını gösterildiği Adak'ın çalışmasında, yapı üç adet bağımsız tek hacimden oluştuğu görülmektedir (Adak, 2021). Diğer taraftan, Tersane-i Amire Fabrikalarında Geneste ve Herscher etüvleri model alınarak etüv makinası yapılması için çalışmalar başlanıldığı, başarılı olan bu çalışmalar sonrasında ise üretilen az sayıda etüv makinasının Beyrut, Sinop Tahaffuzhanesinin yanı sıra 1893 yılından sonra İzmir Klazomen Tahaffuzhanesi'ne yerleştirildiği bilinmektedir (Yıldırım, 2003). Bu veriler ile birlikte yapının daha önce idari işlevlere ait bir yapı olabileceği Tersane-i Amire Fabrikalarında üretilen etüv makinasının adaya ulaşmasından sonra yapının tephirhane olarak kullanılmaya başlandığı ancak daha sonraki dönemde yeniden işlev değiştirilerek mekansal değişime uğradığı sonucu çıkarılmaktadır.

Diğer Yapılar (Other Buildings)

Bir önceki bölümde açıklandığı üzere lazzaretto yapılanmalarında genel olarak depo, barınak, hastane, yönetici ve idarecilere ait yapılar, sarnıç, su deposu gibi yapıların olduğu, 19. yüzyılda ise dezenfekte alanlarının ortaya çıkması ile birlikte barınak ve depo için ayrılan alanların azaldığı görülmüştür. 19. yüzyıla ait Klazomen Tahaffuzhanesinde tephirhane yapısı dışında hangi işlevlere ait yapılar olduğu, bu yapıların mimari özellikleri ve iç mekân kurguları daha önce yapılan çalışmalarda bir bütün olarak ele alınmamıştır. Bu bölümde, adadaki mevcut yapı stoğu izleri ile birlikte literatür ve arşiv çalışmaları incelenecek, tahaffuzhaneyi oluşturan diğer yapılar tanımlanacaktır.

2019 yılında Karantina Adasındaki tephirhane yapıları hariç 19. yüzyıla ait yapı stoğu incelendiğinde yapıların oturma alanı ve cephe kurgu ile dört farklı tipolojiden oluştuğu görülmüştür. Ancak yapıların iç mekân kurgularında genel bir tipolojiden bahsetmek mümkün değildir. Bunun nedeni yapıların idari bina, lojman yapısı gibi yeni işlevlerine yönelik plan şemalarında oluşturulan değişikliklerdir. Mevcut yapı stoğunda yapılan incelemede, tüm yapıların dış beden duvarlarının taş kagir, iç bölücü duvarlarının ise delikli tuğla olduğu görülmüştür. Bazı yapılarda dış beden duvarlarının iç kısmına yerleştirilmiş betonarme kolon ve kiriş sistemi bulunmaktadır. Yapılan arşiv incelemesinde bu değişimlerin genel olarak 1984 yılında gerçekleştirildiği görülmüştür Rölöve belgelerinde tek hacimli olduğu görülen depo yapıları (Tip 3), eklenen döşeme ile birlikte lojman yapısına dönüşmüş (Şekil 46), “Tip 1”e örnek bir yapıda ise delikli tuğla kullanılarak oluşturulmuş iç mekân kurgusu görülmektedir (Şekil 47). “Tip 4” ise yapıya eklenen birim ile kare formulu oturma alanı dikdörtgene çevrilmiştir (İ.1.N.K.V.K.B.M, 2019).



Şekil 46 - “Tip 3” iç mekân değişiklikleri (1984) (İ. 1 N. K. V. K. B. K. M, 2019).



Şekil 47 - Şekil 47“Tip 1” iç mekân değişiklikleri (1984) (İ. 1 N. K. V. K. B. K. M, 2019).

Yapıların iç mekân kurgularının yok olması nedeni ile bu yapıların özgün plan kurgularının ortaya çıkarılabilmesi için literatür incelemesi yapılmıştır. Klazomen Tahaffuzhanesi’nde karantina süreçlerinin geçirilmesi için gerekli olan en önemli işlevlerden olan barınma ihtiyacı; gemilerde (Böke, 2009), tephirhane yapısının arkasında oluşturulan baraka ya da çadırlarda (Yılmaz, 2020) ve barınma alanları olarak ayrılan yapılarda karşılanmıştır. Tahaffuzhaneyi kullanmış olan yolcuların barınmaya ilişkin literatürdeki tanımlamalarına bakıldığında, 13 Ağustos 1884 tarihli Stamboul Gazetesinde “*yolcular için yapılmış lojmanların dört duvardan ibaret olduğu*” belirtilmektedir (Böke, 2009). İzmir Klazomen Tahaffuzhanesinde kalan bir İngiliz’in gözlemlerini içeren 21.09.1858 tarihli gazetede ise tahaffuzhanenin doğal çevresinin çok güzel olduğu, odaların yeterince geniş, yüksek

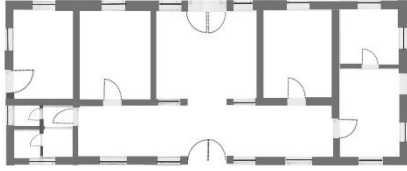

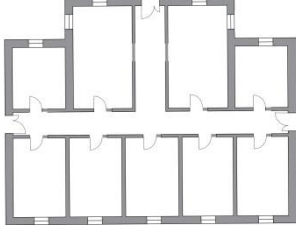

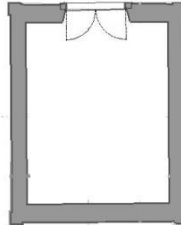

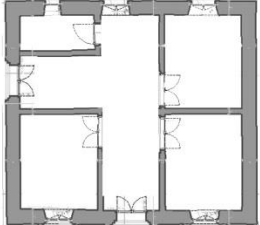

tavanlı ve havadar olduğu ancak mekânların kirli olduğu, en büyük sorunun da odaların bir ana koridor üzerinden ve küçük bir antreden geçilerek ulaşıldığı, antrenin bir yanında yemek pişirilebilecek küçük bir ocak öbür yanında ise küçük bir lavabonun yer aldığı girinti bulunduğu, bu bölüme ait pis sularının ise lağım çukuruna aktarıldığı belirtilmiştir (Beyru, 2005). Bu tanımlamalar doğrultusunda mutfak ve tuvalet birimlerinin barınma birimleri içerisinde çözümlendiği, ayrı kütleler olmadığı sonucu çıkarılmaktadır.

Adaya ilişkin literatürdeki diğer tanımlamalara bakıldığında, 13 Ağustos 1884 tarihli Stamboul Gazetesi'nde "... Karantinacılar için lojmanlar ve eşyalar için 5-6 depo inşa edildiği ve su getirildiği, yemek için ayrı lokanta olmadığı, iskelenin olduğu ancak eşyaları kaldırabilecek vinç olmadığı, çevreden izole edilmesinin ise yeterli olmadığı." tanımlanmıştır (Böke, 2009). 2 Haziran 1923 tarihli "The Lancet" dergisinde Klazomen Tahaffuzhanesi ile ilgili; "tahaffuzhanenin büyük bir tahaffuzhane olduğu, iyi bir dezenfekte yapısının, hastanesinin ve 2000 kişiyi alabilen kalma birimlerinin olduğu ancak savaşta çok zarar gördüğü" ifade edilmektedir (Clemow, 1923).

Betimlemeler, dışında adadaki yapıların mekân organizasyonları ve işlevlerine ilişkin bilgiyi Adak'ın çalışmasında rastlanmaktadır. Osmanlı arşivinden alınan plan örneklerinin yer aldığı çalışmada, tephirhane yapısı dışında karantinaya alınacakların kalacağı odaların, jandarma ve personel için barakaların olduğu, 1905 yılında hastahane, doktorlar ve gardiyanlar için odalar, çamaşırhane, tephirhane ve hamamların yeniden inşa edilerek tahaffuzhanenin yenilendiği, 1907 yılında karantinada bekleyecek yolcular için yeni bir parlatorya yapıldığı ifade edilmiştir (Adak, 2021). Ancak betimlemeler ile planlar karşılaştırıldığında, yapıların iç mekân organizasyonunda farklılıklar olduğu görülmüştür. Betimlemelerde barınaklar için ayrılan alanların dört duvar olduğu ya da ana bir koridor üzerinden ve küçük bir antreden geçilerek barınma alanlarına ulaşıldığı ifade edilse de Şekil 34'de gösterilen planlarda bu betimlemelere uyan yapılar bulunmadığı görülmektedir. Bu nedenle bu planların, tahaffuzhanenin ilk inşa planları olduğu, bazı yapıların inşa edilmediği ya da 1905 ve 1907 yıllarında adadaki genel tadilatlar sırasında plan şemalarının değiştirildiği anlaşılmaktadır.

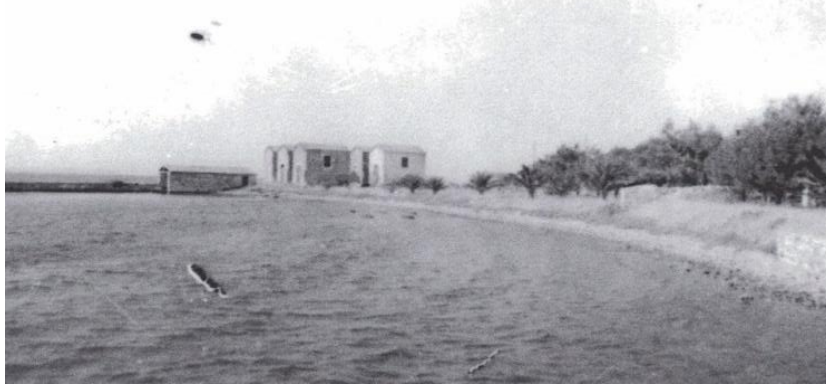
Mevcut yapıların özgün cephe kurguları ile arşiv ve literatür incelemelerinden elde edilen verilerin yorumlanması neticesinde dört farklı tipolojiye ait yapıların özgün iç mekân kurguları Tablo 1'de gösterilmiştir. "Tip 1" ve "Tip 2" tahaffuzhanedeki en baskın tipolojiye sahip yapılardır. "Tip 1"e ait yapılarda, yapının ön ve arka cephesinin orta aksından yapıya girildiği, giriş bölümünde geniş hacimlerin olduğu diğer odalara ise bu geniş hacimlerden ulaşıldığı görülmüştür. "Tip 2" ye ait yapılara ise ön ve iki yan cepheden giriş sağlandığı bu nedenle yapının iç mekan kurgusunun temel unsurunun bu giriş aksları ile oluşturulan koridor sistemi olduğu, mekandaki diğer odaların ise bu koridora açıldığı görülmüştür. "Tip 1", 1907 yılında yapılan parlatorya yapısının planı ile aynı plana sahiptir. Bu nedenle "Tip 1" olarak ifade edilen yapıların adanın ilk inşasında mevcut olmadığı, tephirhane yapısının eklenmesinden sonra adada yapılan tadilat sırasında inşa edildiği ve parlatorya olarak kullanıldığı anlaşılmaktadır. "Tip 2" ise barınma ihtiyacı ve idari personelin kullanım alanları olduğu düşünülmektedir. Her iki tipolojideki yapılar tek katlı ve yığma teknikle inşa edilmiş yapılardır.

Tablo 1 - Klazomen Tahaffuzhanesi Yapı Tipolojisi.

	Özgün Plan Şeması	1984 yılına ait Fotoğraflar (İ. 1 N. K. V. K. B. K. M, 2019)
Tip 1		
Tip 2		
Tip 3		
Tip 4		

Adanın kuzeybatı tarafında iki sıra haline yerleşmiş tek katlı dikdörtgen formlu yapılar (Tip 3) tahaffuzhaneye ait depo yapılarıdır (Şekil 48). Mevcutta beş adet bulunan yapılar, tek katlı dikdörtgen formlu yığma taş tekniği ile yapılmış, yuvarlak kemerli giriş kapısı olan ve dikdörtgen

pencere formlu yapılardır. Bu depo yapılarının önünde iskele yapısı bulunmaktadır. İskele yapısı ve depo yapılarının konumlanışı ele alındığında, bu iskelenin depoya ait yüklerin taşınması için kullanılması muhtemeldir.



Şekil 48 - 1982 yılına ait depo yapıları (Tip 3) (İ. 1 N. K. V. K. B. K. M, 2019).

“Tip 4” deki yapı adadaki en farklı yapıdır. Bu tipolojiye sahip alanda tek bir yapı bulunmaktadır. Konum olarak adanın en yüksek noktasına inşa edilmiştir ve görsel açıdan adanın birçok noktasına hâkim konumdadır. Özgünde kare plana sahip ve ön cepesinde üç açıklık bulunan yapı dönem içerisinde birçok eklemeye yapılarak özgün kurgusunu kaybetmiştir. Tablo 1, yapının özgün plan şemasını göstermektedir. Benzer bir plan şeması Şekil 34’te gösterilen plan örneklerinde bulunmamaktadır. Ancak aynı şekilde adanın vaziyetini gösteren planda, “Tip 4”ün bulunduğu adanın en üst konumunda, sıralı olarak beş yapı olduğu görülmektedir. Bu nedenle bu yapının da ilk inşa süreci sonrası değişime uğradığı ancak adadaki konumu dikkate alındığında tahaffuzhane çalışanlarının ve idarecilerin kaldığı barınma birimleri olduğu düşünülmektedir.

SONUÇ (CONCLUSION)

Salgın hastalıklardan korunmanın en önemli yollarından biri olarak görülen, 14. yüzyılda ilk kez uygulanmaya başlayan ve 20.yüzyılın ortalarına kadar devam eden karantina süreçlerinin sağlık ve toplum tarihi açısından taşıdığı önem kadar bu özgün işlevin mimari yansımaları da mimarlık tarihi açısından önem taşımaktadır.

Bu yazıda, günümüzde bir kısmı ayakta kalan Klazomen Tahaffuzhane’sinin 19. yüzyıldaki özgün mimari yapılanması ortaya çıkarılmıştır. Yazı öncelikle mimarlık tarihi açısından özgün bir işlev olan karantina yapılanmalarının tanımlanabilmesi için 14. yüzyıldan 19. yüzyıla kadar lazzaretto yapılarını inceleyerek bu işleve ait yapılanmaların genel mimari özelliklerini ortaya koymuştur. Yazının bu bölümü karantina yapılanmalarının mimari olarak anlaşılması ve bu yapılara yönelik araştırmalara sağlayacağı katkı açısından önem teşkil etmektedir. “Yer seçimi”, “yerleşim şeması” ve “iç mekân kurgusu” üzerinden yapılan incelemeler doğrultusunda; yer seçimine yönelik kriterlerin karantina yapılanmalarının inşa edildiği dönemden ve salgın hastalığın özelliklerinden bağımsız olarak ortak unsurlar içerdiği ancak karantina yapılanmalarının yerleşim şeması ve iç mekân kurgularının 14. yüzyıldan 19. yüzyıla kadar dönemin ekonomik ve teknolojik koşullarına, salgın hastalığın bulaşıcılık

ve tedavisine ilişkin bilgi ve varsayımlara ayrıca karantina süreçlerine ilişkin toplumların oluşturduğu düzenlemelere göre farklılıklar içerdiği yazıda örnekleriyle ortaya koyulmuştur.

Lazzaretto yapılanmalarının yanı sıra yazıda Osmanlı dönemindeki karantina süreçleri ve tahaffuzhane yapılanmaları da incelenmiştir. Osmanlı döneminde inşa edilen tahaffuzhanelerin yerleşim şemalarında birbirini tekrar eden yaklaşımlar olmadığı diğer bir taraftan tahaffuzhanelerde inşa edilen tephirhane işlevli yapılarda ise ortak bir işlev diyagramı ve tipolojinin olduğu ortaya çıkarılmıştır.

Klazomen Tahaffuzhane'sine yönelik daha önce yapılan çalışmalardan farklı olarak bu yazıda tahaffuzhaneyi oluşturan tüm yapıların bir bütün olarak ele alınması ve tahaffuzhaneye yönelik tüm alt işlevler ve bu işlevlere ait yapıların ortaya çıkarılması önemlidir.

Klazomen Tahaffuzhanesi'nin yer aldığı Karantina Adası'nın tamamında yapılar ve tahaffuzhaneye ait izler incelenmiştir. Yapıların birbirleri ile olan ilişkileri, cephe kurguları, yapıların iç mekanlarındaki mevcut izlere yönelik yazıda yapılan detaylı tanımlamalar kültür varlığı olan yapının belgelenmesi ve geleceğe aktarımı açısından önem taşımaktadır. Yazı alan incelemelerinden elde edilen verileri mimarlık ve sağlık alanında yaptığı literatür ve arşiv belgeleri ile karşılaştırmış, karantina yapılanmalarına yönelik genel tanımlamalar ile “yer seçimi”, “yerleşim şeması” ve “iç mekân kurgusu” üzerinden yorumlamıştır. Yapılan tespitler doğrultusunda Karantina Adası'ndaki Klazomen Tahaffuzhane'sinin özgün yapılanması Şekil 31'deki vaziyet planı ile gösterilmiştir. Yerleşim şemasında yapılan tespitler ile tahaffuzhane kullanımının adanın tamamını yayıldığı ve yapılaşmanın daha çok eğimsiz alanlarda olacak şekilde yerleştiği, tahaffuzhanenin tephirhane, parlatorya, depo, idari, barınma ve su deposu işlevlerini içeren ve farklı tipolojide yapılardan oluştuğu, yapıların belirli işlevleri bir araya toplayacak şekilde adada konumlandıkları, ayrıca ada kullanımının bazı işlevleri yada kullanıcıları kontrol altında tutulması için duvarlar kullanılarak ayrıldığı ortaya çıkarılmıştır.

Yazının devamında tahaffuzhaneye ait yapılar “tephirhane” ve “diğer yapılar” olarak ayrılarak iç mekân kurguları ortaya çıkarılmıştır. Klazomen Tahaffuzhanesi'ne ait tephirhane yapısının özgün işlev diyagramı ve özgün plan şeması mevcut izler ve literatür incelemeleri doğrultusunda ortaya çıkarılmıştır. Yazıda diğer yapılar olarak tanımlanan, parlatorya, depo, idari, barınma yapılarının iç mekân kurguları incelenerek tahaffuzhanenin dört farklı tipolojiden oluşan bir yapılanma olduğu ortaya çıkarılmıştır. Tablo 1'de dört tipolojinin 19. yüzyıldaki özgün plan şemaları ortaya çıkarılarak Klazomen Tahaffuzhanesi'nin 19. yüzyıldaki özgün yapılanmasının belgelenmesi sağlanmıştır.

Conflict of Interest Statement | Çıkar Çatışması Beyanı

Araştırmanın yürütülmesi ve/veya makalenin hazırlanması hususunda herhangi bir çıkar çatışması bulunmamaktadır.

There is no conflict of interest for conducting the research and/ or for the preparation of the article.

Financial Statement | Finansman Beyanı

Bu araştırmanın yürütülmesi ve/veya makalenin hazırlanması için herhangi bir mali destek alınmamıştır

No financial support has been received for conducting the research and/ or for the preparation of the article.

Ethical Statement | Etik Beyanı

Araştırma etik standartlara uygun olarak yapılmıştır.

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works | Fikir ve Sanat Eserleri Hakkında Telif Hakkı Beyanı

Makalede kullanılan fikir ve sanat eserleri (şekil, fotoğraf, grafik vb.) için telif hakları düzenlemelerine uyulmuştur.

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement | Yazar Katkı Beyanı

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/D/E/F/G/H

REFERENCES

- Adak, U. (2021). Doğu Akdeniz’de Salgın Hastalıklarla Mücadele: Klazomen (Urla) Tahaffuzhanesi. *Cibannüma Tarih ve Coğrafya Araştırmaları Dergisi*, 7(2), 131-156.
- Ak, M. (2011). 19. Yüzyılda Antalya’da Kolera Salgını. *Journal of International Social Research*, 4(17).
- Aksu, M., Başağaoğlu, İ (2013). “İzmir Urla-Klazomenai Karantina Teşkilatı”, *Lokman Hekim, MEÜ Tıp Fakültesi, Tıp Tarihi ve Folklorik Tıp Dergisi*, 2013 Supplement, 8TH Lokman Hekim Days Abstract.
- Altan, B. (2019). XIX. Yüzyıl Sonlarında Cizre’de Kolera Salgını ve Yol Açtığı Tahribat. *Mukaddime*, 10(1), 37-52.
- Altun, D. A. (2014). Cumhuriyet Öncesi Dönemde İzmir Hastanelerinin Mekânsal Gelişimi. *Tarih İncelemeleri Dergisi*, 29(2), 405-443.
- Alquimi, M. (2014). New techniques to use dates palm fronds in architectural and product design applications (Doctoral dissertation).
- Anoyatis-Pelé, D., Athanasopoulou, I., & Tsiamis, C. (2016). Cartographic Heritage in the Historical Study of Public Health: The Case of Mediterranean Lazzaretos. *e-Perimetron*, 11(1), 35-46.
- Arslan, A., & Polat, H. A. (2017). Travel from Europe to Istanbul in the 19th century and the Quarantine of Çanakkale. *Journal of Transport & Health*, 4, 10-17.
- Atar, Z. (2016). İzmit ve Çevresinde Kolera Salgını 1894. *Uluslararası Karamürsel Alp Ve Kocaeli Tarihi Sempozyumu II*, Ankara, 839-847.
- Ayar, M. (2007). *Osmanlı Devleti’nde Kolera: İstanbul Örneği (1892-1895)*. Kitabevi Yayınları.
- Aydın, E. (2004). 19. Yüzyılda Osmanlı Sağlık Teşkilatlanması. *Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi OTAM*, 15(15), 185-207.
- Bashford, A. (Ed.). (2016). *Quarantine: Local and Global Histories*. Macmillan International Higher Education.
- Blažina-Tomić, Z., & Blažina, V. (2015). *Expelling the Plague: The Health Office and the Implementation of Quarantine in Dubrovnik, 1377-1533* (Vol. 43). McGill-Queen's Press-MQUP
- Beyru, R. (2005). *19. Yüzyılda İzmir’de Sağlık Sorunları ve Yaşam* (Vol. 49). İzmir Büyükşehir Belediyesi Kültür Yayını.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 169(4368), 1389-1392.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 169(4367), 1317-1320.

- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 169(4371), 1607-1610.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 169(4373), 1741-1743.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 169(4370), 1518-1522.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 169(4371), 1607-1610.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 170 (4377), 190-192.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 170 (4376), 114-118.
- Board, British Delegate On The Constantin. (1907). Some Turkish Lazarets: And Other Sanitary Institutions in the Near East. *The Lancet*, 170 (4376), 114-118.
- Bonastra Tolós, J. (2006). *Ciencia, sociedad y planificación territorial en la institución del lazareto*. (Phd dissertation, Universitat de Barcelona).
- Bonastra, Q. (2010). Recintos sanitarios y espacios de control: Un estudio morfológico de la arquitectura cuarentenaria. *Dynamis*, 30, 17-40.
- Böke, P. (2009). İzmir Karantina Teşkilatının Kuruluşu ve Faaliyetleri (1840-1900). *Çağdaş Türkiye Tarihi Araştırmaları Dergisi*, 8(18), 137-159.
- Cebe, M. (2021). Urla Karantina Adası Tesisleri Mekansal Analizi. *Electronic Turkish Studies*, 16(4).
- Chase-Levenson, A. (2020). *The Yellow Flag: Quarantine and the British Mediterranean World, 1780–1860*. Cambridge University Press.
- Clemow, F.G., CMG., MD. Board, B. D. O. T. C. (1923). The Constantinople Board Of Health. *The Lancet*, 201 (5205), 1126-1127.
- Cliff, A. D., Smallman-Raynor, M. R., & Stevens, P. M. (2009). Controlling the geographical spread of infectious disease: Plague in Italy, 1347-1851. *Acta medico-historica Adriatica*. AMHA, 7(2), 197-236.
- Çavdar, N., & Karci, E. (2014). XIX. Yüzyıl Osmanlı Sağlık Teşkilatlanması'na Dair Bibliyografik Bir Deneme. *Electronic Turkish Studies*, 9(4), 255-286.
- Demirkol, K. (2018). Adana ve kolera (1890-1895). *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, (56), 141-156.

- Devaux, C. A. (2013). Small oversights that led to the Great Plague of Marseille (1720–1723): lessons from the past. *Infection, Genetics and Evolution*, 14, 169-185.
- Durand, J. N. L. (1833). *Raccolta e parallelo delle fabbriche classiche di tutti i tempi d'ogni popolo e di ciascun stile: (Recueil et parallèle des édifices de tout genre anciens et modernes remarquables par leur beauté, par leur grandeur ou par leur singularité.* G. Antonelli.
- Eldek, M.H.A., Elghwaby, M.M., Zekry, N.N. (2021). A New Framework for Achieving Sustainable Sinai House Through Building Materials and advanced Techniques. *International Journal of Scientific and Research Publications (IJSRP)* 11(5), 360-367.
- Gensini, G. F., Yacoub, M. H., & Conti, A. A. (2004). The Concept of Quarantine in History: From Plague to SARS. *Journal of Infection*, 49(4), 257-261.
- Hantash, T.A. (2016). Building A Zero Energy House For Uae: Traditional Architecture. Revisited, *ZEMCH 2016 International Conferance Proceedings* ,318-322.
- Howard, J. (1789). *An Account of the Principal Lazarettos in Europe.* Eyres.
- Ini, M. (2016). *Lazaretti in Venice and in its Territories, Trade, architecture, and social control* (MSc dissertation, The University of Edinburgh).
- İşler, D. (2019). Dünyanın En Eski Karantina Adası: “Lazzaretto Vecchio”. *Ankara Üniversitesi Sosyal Bilimler Dergisi*, 10(2), 97-107.
- İzmir 1 Numaralı Kültür Varlıklarını Koruma Bölge Kurulu Müdürlüğü, 2019.
- Jlang, X. (2018). *Verona: landscape and architectural interventions in the Lazarettos area.* Politecnico di Milano, Master thesis.
- Karayaman, M. (2008). *20. Yüzyılın İlk Yarısında İzmir'de Sağlık* (Vol. 53). İzmir Büyükşehir Belediyesi.
- Kehoe, M. *Golden Age of Priacy Maritime Quarantine For Plague.* Elde edilme tarihi: 20 Mayıs 2020, https://www.piratesurgeon.com/pages/surgeon_pages/quarantine7.html.
- Longhurst, P. (2018). *Materialising Contagion: An Archaeology of Sydney's North Head Quarantine Station* . The University of Sydney, Phd thesis.
- Maglen, K. (2003). Politics of Quarantine in the 19th Century. *Jama*, 290(21), 2873.
- McNeill, W. H. (1998). *Plagues and Peoples.*
- Menekşe, M. (2020) İzmir'de Kolera Salgını ve Etkileri (1893). *Tarih Araştırmaları Dergisi*, 39(67), 385-433.
- Nepean Historical Society. *Quarantina Statiton in 1875.* Elde Etme Tarihi; 5 Mayıs 2020, <https://nepeanhistoricalsociety.asn.au/history/quarantine-station/quarantine-station-in-1875/>.

- Piesik, S. (2012). *Arish: Palm-leaf Architecture*. London: Thames & Hudson.
- Risse, G. B. (1999). *Mending Bodies, Saving Souls: a History of Hospitals*. Oxford University Press.
- Sariyildiz, G (1989). *Hicaz Karantina Teşkilatı*. (Doktora Tezi, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü).
- Sehdev, P. S. (2002). The origin of quarantine. *Clinical infectious diseases*, 35(9), 1071-1072.
- Slatter, E. M. (1984). Illustrations from the Wellcome Institute Library: The New Lazaretto at Siros (Syra), Greece, in 1840. *Medical history*, 28(1), 73-80.
- Stuard, S. M. (1992). *A state of deference: Ragusa/Dubrovnik in the medieval centuries*. University of Pennsylvania Press.
- Tognotti, E. (2013). Lessons from the history of quarantine, from plague to influenza A. *Emerging infectious diseases*, 19(2), 254.
- Tuncbilek, Gonca Z. (2020). Quarantine (d) Space: Urla-Izmir (Smyrna) Island, *Space and Culture*, Vol. 23 (3), 246-252.
- Yıldırım, N. (2003). Tersane-i Amire Fabrikalarında Tebhir Makinesi/Etöv Üretimi ve kullanımı. *The Production and Use of Autoclaves at Ottoman Shipbuilding Plants*, 421-431.
- Yıldırım, N. (2006). Osmanlı Coğrafyasında Karantina Uygulamalarına İsyancılar Karantina İstemezük. *Toplumsal Tarih*, 150, 18-27.
- Yıldırım, N. (2016). İstanbul Boğazı'nda Karantina Uygulamaları. *Yeni Deniz Mecmuası*, no. 1, 44-61.
- Yılmaz, E. (2020). A Discussion on the Spatial Representation of the Ottoman Modernization: Urla Quarantine Building. *Online Journal of Art and Design*, 8(4).
- Yıldırım, C. (2021) Ada-Yı Tahaffuzun Memurları: Kamaran Adası Örneğinde Tahaffuzhane Çalışanları (1882-1916). *Stratejik ve Sosyal Araştırmalar Dergisi*, 5(3), 589-612.
- Yuksel, N. (2006). Esrefpasa'dan Karantina'ya. *Planlama Dergisi*, 3, 149-151.

BIOGRAPHY OF THE AUTHOR (YAZARIN BİYOGRAFİSİ)

Aylin GAZİ GEZGİN (Dr.)

Lisans Eğitimini 2007 yılında Eskişehir Osmangazi Üniversitesi, Mimarlık Bölümünde tamamladı. Yüksek lisans ve doktora eğitimini İzmir Yüksek Teknoloji Enstitüsü, Mimarlık Bölümünde 2011 ve 2016 yıllarında tamamladı. 2010 yılından itibaren Kültür ve Turizm Bakanlığı, İzmir 1 Numaralı Kültür Varlıklarını Koruma Bölge Kurulu Müdürlüğünde görev yapmakta olup aynı zamanda 2017 yılından itibaren Yaşar Üniversitesi, İç Mimarlık ve Çevre Tasarımı Bölümünde yarı zamanlı öğretim elemanı olarak çalışmaktadır. Çalışma ve ilgi alanları; hareketli strüktürler, tessellation ve mimarlık, tarihi yapıların yeniden işlevlendirilmesi.



Reading wellness principles of modern architecture via its examples in Güzelyurt

Feriha URFALI DOĞU¹, ORCID: 0000-0003-0966-5693
Lerzan ARAS², ORCID: 0000-0002-0130-751X

Abstract

Güzelyurt is a small old town in the western part of Northern Cyprus. After the division of the island and the forced displacement in 1974, people from the South side moved to the North side and settled in single and double storey houses. These houses which are mostly located at the periphery of the town were designed after modern architecture principles and they provided good life standards for crowded families with their large indoor and outdoor spaces. During the covid-19 outbreak in 2020 it was observed that these houses have enabled a tolerable lockdown period for their users in terms of personal comfort and safety. This study first focuses on the relationship of modern architecture with illnesses and wellness; then the space arrangements of these houses in Güzelyurt and their impacts to the life standards of the owners during the outbreak is analyzed. The aim of this study is to discuss the benefits of modern architectural principles to human health and then tried to suggest solutions to apply this guiding spirit to new housing design systems in town, which increase the quality of life, create a better protection for possible future outbreak risks and can be applied to other regions in North Cyprus.

Highlights

- Modern architecture design principles can be applied to post-pandemic house design.
- Güzelyurt houses can be good examples for implementation of these principles.
- Wellness concept in modern architecture can be a good tool in today's house design.

Keywords

Güzelyurt; North Cyprus;
Pandemic; Life at home; House
design; Modern architecture;
Wellness

Article Information

Received:
04.02.2022
Received in Revised Form:
02.07.2022
Accepted:
18.11.2022
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, European
University of Lefke, 99728 Lefke,
Northern Cyprus
furfali@eul.edu.tr
2. Faculty of Architecture, European
University of Lefke, 99728 Lefke,
Northern Cyprus
laras@eul.edu.tr



Modern mimarinin sağlık ilkelerini Güzelyurt'taki örnekleri üzerinden okumak

Feriha URFALI DOĞU¹, ORCID: 0000-0003-0966-5693
Lerzan ARAS², ORCID: 0000-0002-0130-751X

Öz

Güzelyurt Kuzey Kıbrıs'ın batısında küçük ve eski bir yerleşim yeridir. Adanın 1974 yılında 2'ye ayrılması ve zorunlu göçün ardından güney tarafındakiler kuzey tarafına geçerek tek ve iki katlı konutlara yerleşmişlerdir. Çoğunlukla kentin çeperinde yer alan bu konutlar modern mimarlık prensiplerine göre tasarlanmışlardır ve büyük iç ve dış mekanları ile kalabalık aileler için uygun yaşam standartları sağlamaktadırlar. 2020 yılında covid-19 salgınında bu evlerin modern mimari tasarımlarının kullanıcıların kişisel konfor ve güvenliği açısından tolere edilebilen bir izolasyon dönemi sağladığı gözlemlenmiştir. Bu çalışma öncelikle modern mimarlığın hastalık ve sağlıklı yaşam ile ilişkisine odaklanmaktadır. Daha sonra Güzelyurt evlerinin mekân düzenlemelerinin salgın sırasında kullanıcıların yaşam standartlarına olan etkileri analiz edilmektedir. Amaç; modern mimarlık prensiplerinin insan sağlığına olan faydalarını tartışmak ve bu yol gösterici ruhu; yaşam kalitesini yükselten, gelecekte olası salgın risklerine karşı daha iyi koruma sağlayan ve Kuzey Kıbrıs'ın diğer bölgelerinde de uygulanabilir yeni konut tasarım sistemlerine adapte edebilen öneriler oluşturmaktır.

Öne Çıkanlar

- Modern mimarlık tasarım prensipleri pandemi sonrası konut tasarımına uyarlanabilir.
- Güzelyurt evleri bu prensiplerin uyarlanması için iyi örnek oluşturabilirler.
- Modern mimarlıktaki sağlık kavramı günümüz konut tasarımı için iyi bir araç olabilir.

Anahtar Sözcükler

Güzelyurt; Kuzey Kıbrıs; Pandemi;
Ev yaşamı; Konut tasarımı; Modern
mimarlık; Sağlık

Makale Bilgileri

Alındı:
04.02.2022
Revizyon Kabul Tarihi:
02.07.2022
Kabul Edildi:
18.11.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Fakültesi, Lefke Avrupa
Üniversitesi, Lefke, KKTC
furfali@eul.edu.tr
2. Mimarlık Fakültesi, Lefke Avrupa
Üniversitesi, Lefke, KKTC
laras@eul.edu.tr

INTRODUCTION

As the world unexpectedly faced Covid-19 outbreak at the end of 2019, the systems in all fields were shaken. Economies collapsed, health sectors had to experience the worst scenarios, and the education sector had to shut down with all its tools. As it threatened the human life, the most important issue was first to survive; then to find new ways to protect the mankind from possible future outbreaks. Survival came with isolation for long periods, which is not the strong feature of humans. For their psychological health people have to socialize. If this need is somehow precluded, problems arise. But in force majeure situations like epidemics or pandemics, socialization should give way to other possibilities; we have to change our daily routine and replace socialization with something else; and our homes are best places for it, as everyone experienced during isolation periods. During the Covid-19 outbreak in 2020 the whole world spent a long time under lockdown at homes. Although the concept 'home' is always cherished and appreciated, it was never thought of being a 'mandatory isolation space'; but during these difficult times people discovered more values and qualities in home living. Home was the healthiest and secure place for all daily activities including working and socializing.

We are still going through pandemic days, but the vaccination enabled to relieve strict isolations and life seems to go back to 'normal'. This unidentified 'normal' comes with new rules, criteria and possible scenarios, especially about how to re-build our daily life and re-shape the urban spaces accordingly.

There is no doubt, that for our well-being and health we have to consider the environment we live in from many aspects: urban designing, public transportation, parks and other green areas, energy systems, communication tools, and especially our homes should be revised and adapted to post pandemic era.

The idea of re-organizing our lives and being prepared to possible new outbreaks is now the hot topic; but when it comes to thinking about how to re-shape the post-pandemic built environment, there are few researches. Manuel Duarte Pinheiro and Nuno Cardoso Luís made an analysis of researches related to pandemic and built environment. Although it was conducted 1 year ago (2020) the numbers can still give a general idea in 2021. According to their research on Web of Science (WoS), there has been a growth in the number of publications in 2020 about Covid-19 (more than

6000 references), but fewer than 1% of these refer to the built environment or buildings. On Science Direct, it is possible to find more than 8000 references, but, again, fewer than 1% of these are related to the built environment in any way (Pinherio and Luis, 2020). It seems that the concentration on other fields are more than the ones related to our environment and homes.

So, this research is aimed to contribute to literature by conceptualizing the importance of home in post pandemic era, evaluating the interaction between daily life habits and house designs during isolation periods; and suggesting possible ways for designing, which can be adapted generally; and as the research area a small town named Güzelyurt in North Cyprus is chosen. The main reason of this choice is the positive experience of users in their homes during pandemic. They were single and double story houses designed mostly by architects who followed modern architecture design principles. It is observed that these houses provided effective life standards to their users.

As Ibelings states, architecture is going through a new period since almost three decades with the effects of globalization which he called ‘supermodernism’ (Ibelings, 1998). As globalization shows it’s face in every field of life, the postmodern period seems to fade; and the efficiency of modern architecture design principles is visible again in force majeure situations.

Modernism was a rejection of the academic tradition of formal aesthetics and spatial hierarchies in favour of innovative creativity based on simplicity, abstraction, and the rationalization of problems arising from the place, destination, and available technology. An important point of the doctrine of modernism was the social program focused on the development of affordable housing communities along with social infrastructure and green areas (Tobolczyk, 2021). Besides its simple and pure forms and rational solutions, modern architecture tried to find best alternatives for fulfilling the basic needs of housing. In Le Corbusier’s phrases: “Modern life demands and is waiting for a new kind of plan both for the house and for the city...” (Le Corbusier, 1986).

This fact raises a question: Can modern architecture with its unique principles be applied to contemporary house design for establishing wellness, and can it be accepted as proven itself true with the pandemic experience in 2020? It is hoped to open a new debate platform about how the prioritization of wellness in modern architecture and its relationship to house design can be integrated to our era within new societal and cultural conditions and different needs of users.

MODERN ARCHITECTURE AS A TOOL FOR WELLNESS

The definition and conceptualization of the term ‘wellness’ is not easy. The assessment tools for wellness have been improved since its first mention after the end of the Second World War; and now according to Myers and his associates it is defined as “a way of life oriented toward optimal health and well-being, in which body, mind, and spirit are integrated by the individual to live life more fully within the human and natural community” (Miller & Foster, 2010).

The Berkeley Well-being institute indicates wellness somewhere between physical health and mental well-being with 7 attributes as; emotional, physical, environmental, intellectual, occupational, social and financial. Among these attributes, environmental wellness means that we live in balance, connection, and synergy with our surroundings (Davis, n.d).

The relationship between human and its surrounding environment was always a challenge for architects. Creating the balance, and connection to nature, and combining it with interior facilities was on the agenda of all architects; and wellness in its pure and simple definition tried to cover the need for the integration of humans to the natural and manmade environment with all positive attributes. According to Parikh and Parikh, wellness is a consequence or effect of the functional component of architecture. Put differently, architecture causes or creates wellness via its functional aspect. Meaning and wellness are a result of often hard-to-separate aspects of architecture where utility, firmness, and beauty may well merge in ineffable ways (Parikh & Parikh, 2018). In other words, following Vitruvius' well known architectural components, 'wellness' is a new attribute attached to the triangle of utility, firmness and beauty as a subordinate under utility. Utility can be defined differently according to its context; but when it comes to manmade environment and housing in modern environment, it is about shaping it gently and harmless to the nature. This is what Adolf Loos described, when he was speaking of the peasants' houses on the lake shores. He expressed his sense of environment as: "the sky is blue, the water green and everything is profoundly peaceful. Mountains and clouds are reflected in the lake, and so are houses, farmyards, courtyards and chapels. They do not seem man-made, but more like the product of God's workshop, like the mountains and trees, the clouds and the blue sky." But the architect's pencil designed a "false note in this harmony. As an unwelcome scream [...] a villa..." (Giorgi, 2014).

From his phrase it can be conducted that nature and manmade environment can have a safe, clear, and strong bound; whereas the architecture should serve them as a supporting component; and this was a well embraced phenomenon in modern architecture.

Modern architecture was driven by the design practice, production and technology but more than all of these with social equality, human's health and the harmony between all these attributes. Mies van der Rohe's famous slogan 'less is more' is actually a declaration of avoiding exaggeration and focusing on the pure and real needs of humans. In this sense wellness- in an unspoken way- became a principle in architectural design.

The relationship of architecture and wellness in modern architecture can have its roots from the second decade of 20th century, although it is not mentioned directly until the end of the second World War. The beginning of 20's was a threshold in architecture; and modernity was embraced in the society with an avant-garde expression and architecture was the driving tool.

The world experienced many illnesses since its existence. When considered last two centuries, especially the 20th century; tuberculosis, typhoid, polio, and in 1918 Spanish flu breakouts can be seen the most lethal outbreaks. The 1918 pandemic likely killed 50 million people, with some estimates suggesting the death toll could be as high as 100 million (Beach et al., 2020). It was a severe pandemic and its health effects were huge. This pandemic was a one-off occurrence—a never-to-be-repeated epidemiological disaster—or whether it could happen again (Honigsbaum, 2019).

It was right after World War I, and as a driver of urban renewal it served for new design systems. The breakouts encouraged urban planning, slum clearance, tenement reform, and waste management (Megaheda & Ghoneim, 2020), and the reshape of the built environment was also on

the agenda. It was time for recovery from the lethal effects of Spanish flu pandemic and the unbearable loss of the world war. The well-being of the society was tried to be re-established again. But at the same time the tuberculosis as the most dangerous illness was also threatening lives all over the world.

There are many diversified reasons of how modern architecture got its root, and one of the most common receptions is that modern architecture started as a reaction to the overwhelming complexity of historicism. Besides this acknowledged definition, modern architects were also interested in human health and wellness. Although the emergence of modern architecture cannot be reduced to improving health conditions and prioritizing the wellness of people in their built environment, both reasons can be counted as influential factors especially in housing and health care design.

Associating architecture with these issues resulted with the pure and unique geometries, flat roofs, balconies, terraces within the white painted concrete constructions; and new materials like steel, glass and leather were first notable and distinctive features of architecture. The practicality and introduction of new materials brought new perspectives to the design and ideal life standards beyond functionality. Modern architecture always tried to adapt itself to new objectivity (*Neue Sachlichkeit*), which was mainly related to fulfilment of function.

Modernism was well concerned with issues of tuberculosis. This disease which has survived for over 70,000 years, infected nearly 2 billion people worldwide (Pinherio & Luis, 2020). For that period, it was common for those suffering from tuberculosis to receive treatment at a sanatorium. Part hotel, part hospital, a typical sanatorium was located in a pastoral setting away from the claustrophobia of cities, and outfitted with design elements to promote hygiene and wellness. Patients were prescribed a regimen of fresh air, sunshine, gentle exercise, and nutrition. South-facing windows, porches, and balconies at sanatoria enhanced sun exposure, while interiors featured linoleum flooring that could easily be cleaned (URL-1). The open-air treatment with a strictly hygienic course of life were best means for dealing effectually with tuberculosis (Daniel, 2006).

Not only sanatoriums but houses also needed adjustments. In modern period these adaptations or in other words ‘fight against illnesses in an architectural way’ resulted with change of space arrangements. Le Corbusier was one of the pioneers who took it far beyond simple functionality so issues of light, air and waste dictated even the smallest details of his designs. The effects can be seen in many of his design including the cult design of Villa Savoy, Weissenhof settlement and Pessac houses. In 1922 Le Corbusier’s *immeuble-villa* design with auxiliary bedrooms and roof-terrace gardens was used for the Pessac social housing estate near Bordeaux and later for the experimental housing that was his contribution for the 1927 Weissenhof Siedlung Werkbund Exhibition in Stuttgart (Campbell, 2005). These houses demonstrated Le Corbusier’s famous five points which were pilotis, free ground plans, free design of the facades, horizontal windows, and roof gardens.

The Weissenhof settlement (*Weissenhof Siedlung*) in Stuttgart allowed patrons to personally experience a new vision of society through architecture based around the ideals of reducing costs,

simplifying housekeeping, and improving living conditions (URL-2). For Le Corbusier it was a realization of an idea which he had in mind for a long time. He gave form to the idea of dwelling as a single spatial entity both horizontally and vertically, (Joedicke, 1990), where he managed a comfortable daily domestic life inside the house. In his houses (known as houses 14 and 15) one enters on the lower level, under the piloti-supported mass (Figure 1). Inside is an entrance lobby with cloakroom, furnace room, coal cellar, laundry room, maid's room, and storage. The next level is the primary living story. Here, there is an eating space behind the stairs, and a kitchen and bathroom at the far edge. The roof level features an outdoor garden and sunbathing terrace (URL-3). The efficiency of these houses which almost leads to an impracticality was widely discussed as much as his design in Pessac houses.



Figure 1 - Maison de la Weissenhof Siedlung –Le Corbusier –photo Cemal Emden (URL-4).

In 1923 the businessman Henry Fruges asked Le Corbusier to design comfortable and functional houses for his workers (Figure 2). As Le Corbusier was very devoted to standardization and industrial production of housing he created 5 housing types where he could use a simplified and efficient working spaces. According these 5 types the first three have complete arrangement with open space at the entrance and living room on the ground level. The occupants' daily activities are closely related to the outside environment; hence, the architect places more emphasis on the entrance. The remaining two housing types are located in a less-favorable location in the base, so the ground level is designed to be working space and the living space is elevated to the second floor. Such spatial arrangement distances the occupants from the outside world, so the design of roof garden is emphasized as compensation (Hsu & Shih, 2005).



Figure 2 - Pessac Housing –Le Corbusier (URL-5).

Associating house with health and wellness could be seen generally in all house designs in modern period. The Lovell Houses of Schindler and Neutra which was well organized around his full regime of sun, air, exercise, fasting, and diet strategies (Colomina, 2019) was one of them. Neutra designed the house for Dr. Lovell and his family. The main aim was to enhance the health through architectural design; and Neutra improved the functionality of the house by using new construction techniques, new materials and also new kind of indoor and outdoor space arrangement. Standardized techniques, prefabricated components, and simplified assembly resulted in high quality construction (URL-6). This house with its open plan living areas, balconies and sleeping porches, windows with overhangs was an example of how to regulate indoor and outdoor facilities, air flow, sun light and temperature (Figure 3). Although it didn't have a roof garden, the pool at the garden supported a qualified daily outdoor life. The pool which is directly associated with the open plan living area strengthens the indoor outdoor relationship and as the house is suspended on the side of a cliff, the pilotis become essential tools for the space arrangement and create a strong lead to other spaces.



Figure 3 - The Interior of Lovell House (URL-7).

Le Corbusier was an influential architect. His way of thinking gave inspiration to his colleagues and challenged the house design in modern architecture. The social engineering behind his works and the desire to convert house design into a machinelike system brought not only standardization also new perspectives to space arrangements and to their relations. It cannot be claimed that only his 5 principles brought health and hygiene, just as it cannot be said that the use of the flat roof, balcony, summer house and recliner chair were the direct result of early treatment methods for tuberculosis, but the popularity of these modernist architectural features in the pursuit of good health and hygiene, placed them in the annals of a therapeutic lifestyle (Campbell, 2005).

Although modern architecture was shaped by the dominant medical obsession of its time tuberculosis and the technology that became associated with X-rays and produced a new and widespread change in the conception of space and the relation of inside to outside (Colomina, 2019), it cannot be reduced just to its geometrical attributes or space arrangement. It presented a life style, created hope and a new way of thinking of how to design homes which could provide comfort and health to humans. The spatial planning, whiteness, easy-to clean surfaces, exterior porches and gardens were tools reflecting the importance of human health and wellness; and besides that perfection in detail, unity and variety in mass, and availability for everyone made modern home design more evolutionary.

Tuberculosis as a serious illness of its period led architects to design houses with a sensitivity to people's health. The interior hygiene and cleaning, good ventilation, appropriate selection of material, enough sunlight and air penetration to spaces, invitation of nature inside, and a beautiful view to the exterior were indispensable. It was not just about rationalism or functionalism. The ideal of modernity in terms of house design was more about cherishing life at home considering the wellness of users.

Later in 40's after the 2nd World War this dedication or better defined social responsibility continued. One of the best examples was 'case study houses' program in United States. Between 1945-1966 architects designed 36 houses near Los Angeles reflecting modern design principles which included again practicality, new materials and an idealism of a domestic wealthy home life (Figure 4). This program was a reaction to post war prototype building design with the commitment of architects like Neutra, Soriano, Ellwood, and Eames. The purpose of the program was to provide a forum for talented architects, and it was reasoned that their work would be best served by showing it in context with furniture, floor coverings, lamps, textiles, flatware, pots and pans, even napery. Kitchens were fitted with the best of the new designs in ranges and refrigerators. An interruption in the flow of space became a sculptural statement (Mc Coy, 1975) which could be seen in many of these houses.

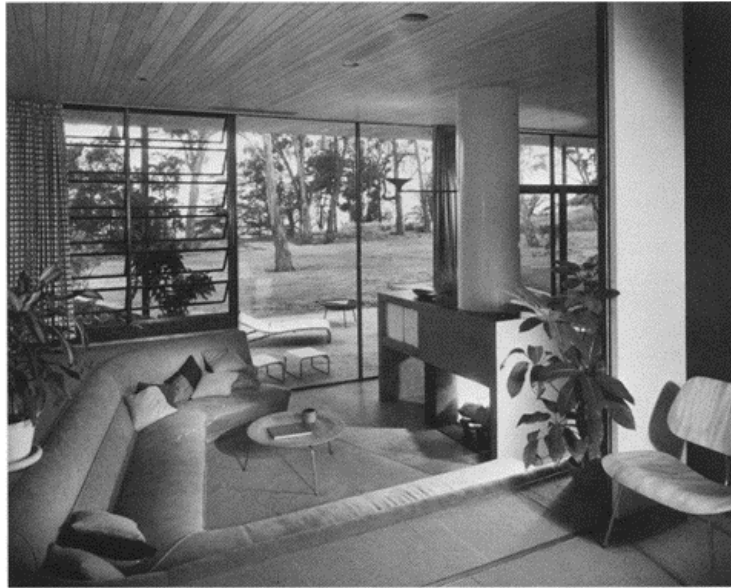


Figure 4 - Entenza House, the cylindrical chimney, the curve of step to the dining kitchen level (Mc Coy, 1975).

Valuing outdoor spaces as much as enclosed spaces, using cheap but new materials, creating clean surfaces with comfortable furniture, and well organized environmental factors like air flow, and sun shine were the goal of the program.

Modern architects were concerned about fulfilling the basic needs of the humans. Being socially engaged and thinking of better futures led them to think of every detail of human needs especially at house design.

According to Atmodiwirjo and Yatmo the basic human needs are those that are inevitable requirements towards human well-being, since they become the prerequisite before the other needs – that are more psychological, social, or cultural – could be fulfilled (Atmodiwirjo & Yatmo, 2015). At the same time, architects prioritized human lives, their needs and requirements within the framework of its general principles. These principles contained efficiency, simplification and standardization in terms of elements and space organizations. Fulfilling its functions with standards was strongly connected to wellness as a tool. Le Corbusier's well-known phrases 'the house is a machine for living in.' and where order reigns, well-being begins' were indicating the underlying principles in house design (Le Corbusier, 1986).

MODERN ARCHITECTURE IN CYPRUS

Modern architecture started to be introduced with its ideas and practices in Cyprus in the 1930s as a result of professional architects who received their education in Europe and applied their practices in Cyprus (Phokaides, 2009; Aljuboori, 2018). Polys Michaelides played a significant role during this period in the modernization of architecture (Fereos & Phokaides, 2006). On the other hand, Ahmed Vural Behaeddin, Abdullah Onar, Ayar Kashief, and Neoptolemos Michaelides are

significant names to be mentioned in relation to local Cypriot modernist architecture (Muhy Al-Din, 2017).

Cyprus went through a transitional stage in terms of political and social conditions but also in the field of architecture during the period between 1930 and 1960. During this period international trends started to take over the anonymous vernacular production in relation to architecture (Fereos & Phokaides, 2006).

The trend in architectural design during the 1930s and 1940s was colonial historicism and the local Art Deco moderne was seen on private and public buildings. This trend continued until the mid/end of 1950s when there was an emergence in international architectural modernism right after (Kiessel, 2014).

It is indicated by Fereos and Phokaides (2006) that unstable political conditions and the lack of architectural schools had an effect in the modern architecture to spread in Cyprus. Local architecture experienced fluctuations due to political scene, and until today, it was shaped by architects who received their education overseas in institutions with various architectural cultures (Fereos & Phokaides, 2006).

Aljuboori (2018) states that modern architecture existed distinctively in Cyprus between the end of World War II and 1960. The author also mentions that the architects at that time were affected by pioneers of modern architecture like Le Corbusier and in the first half of the twenty-century by avant-garde movement.

The effect of Le Corbusier continued in Cyprus after the 1930s according to the traces. The first application of 'pilotis' and International Style by the Cypriot Architect Polis Michaelides appeared in 1936 on the island who received experience in Le Corbusier's office (Kiessel, 2014).

One of the essential elements of Le Corbusier's "Five Points of a New Architecture" which appeared in 1926 is the "pilotis" which the function of it is to raise the building up into the air to get rid of darkness and dampness and to create a space underneath the building for circulation of cars (Figure 5) (Kiessel, 2014).

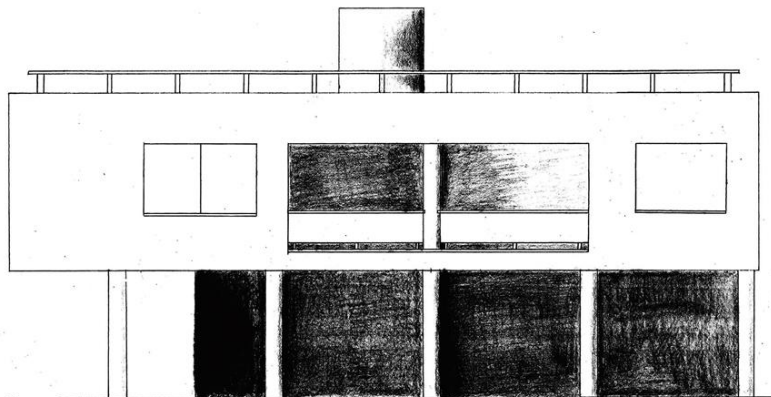


Figure 5 - Private residence in Famagusta-Maraş (Kiessel, 2014).

The most important architectural features are pilotis (columns), roof gardens, free façade, horizontal sliding windows, and free plans. Aljuboori (2018) states that the brutalist features, the simplicity, the nautical elements, and functionality all distinguished the modern architecture discourse of Cyprus. Residential and institutional architecture began to create a rational aesthetic which also created ties with the local vernacular choices (Phokaides, 2009).

It is obvious to see this trend in the architectural works by the first Turkish Cypriot modernist architect Ahmet Vural Behaeddin who completed his education in the 1950s and returned to the island. Phokaides (2009) stated that Behaeddin mainly designed private residences for the elite who had important social and political roles during the postcolonial period. Behaeddin used modernist vocabulary, furniture, and materials and this brought a cosmopolitan note to the domestic life (Phokaides, 2009).

Efrus Mass Houses is one of Behaeddin's works which has all the units towards the north. Behaeddin designed open areas and terraces towards the south to cut the direct sunlight in summer and these areas were also used by the family to gather together during winter (Figure 6) (Amen, 2017). There were common characteristics that these houses shared like the open plan. On the other hand, the living room and the dining room had a connection and on the other side there was a connection between the kitchen and the entrance of the house (Amen, 2017).

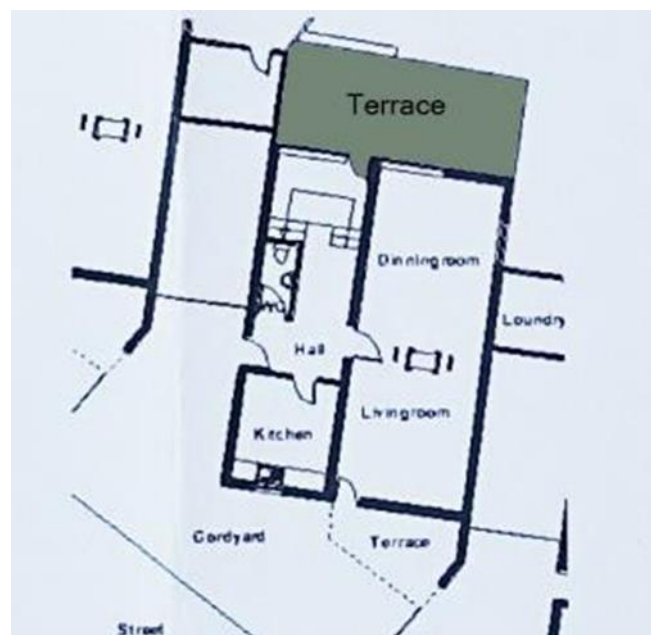


Figure 6 - Efrus Mass Houses (Esentepe, 2013).

Cyprus gained its independence in 1960 and modern architecture, as a symbol and an instrument of modernization and decolonization, became more important. The transition to Cypriot statehood and also the boom in tourist industry resulted in a boom in new buildings (Phokaides, 2009).

Another political break determined the end of the modern era (Fereos & Phokaides, 2006). Inter-communal violence started between Turkish Cypriots and Greek Cypriots in the 1950's and 1960's and civil war continued until 1974. As a result of ethnic conflicts between

two societies, the island was divided into two parts in 1974 (Gürel, Hatay & Yakinthou, 2012). The people from both sides were forced to displace and could not return to their houses or properties again. Many people both Greek and Turkish, lost their homes and properties when the island was divided into two with the artificial border, called the Green Line. With this Green Line Turkish Cypriots forced to migrate from South side to the North side of the island and Greek Cypriots from North to the South (IDMC, 2009). This division hampered the development process that started in the 1960s (Fereos & Phokaides, 2006).

Güzelyurt (Morphou) was one the regions where this displacement took place. It was predominantly Greek Cypriot before 1974. Nowadays the majority population consists of forced migrated Turkish Cypriots from the South side. Güzelyurt can easily be called a refugee town and although there were always Turkish Cypriot (Muslims) locals here (PRIO, 2011), this town was almost totally inhabited until the division of the island in 1974 by the Greek Cypriots (Hatay, 2007; PRIO, 2011). Currently the town is mainly inhabited by displaced Turkish Cypriots (KKTC SSTB, 2009; Şevketoğlu, 2010). According to the 2011 population census, 6696 locals are living in the region (URL-8).

GÜZELYURT HOUSES AND SPIRIT OF MODERN ARCHITECTURE

Güzelyurt is an old city, which hosts many different cultures. The traces of this differentiation shows itself mostly in residential architecture. Through history, 4 influential periods that affected the architecture in mostly the urban areas of Cyprus can be identified and according to Özey (2004), these were chronologically Ottoman (1571-1878), British (British I 1878 -1930, British II 1930-1960), and Modern (1960-present). These main periods on residential building types give the overall identity to the Güzelyurt city.

Although the story of Güzelyurt houses goes back to the 16th century, today's daily life with its habits and standards brings the focus of this study to single family houses, which are built between 1960-1992. According to authors' observations there are approximately 600 houses in the region built in the modern style. When it comes to the houses from other periods; it is observed that those which are still in good condition are either preferred for temporary sheltering by non-locals or international students of nearby universities.

In 1974 after the displacement people started their new lives in their new homes. These houses were mostly built in 60's following principles of modern architecture. In a short while the comfort and space organization of these houses started to awake interest and new architectural concepts for family housing have been implemented in the region, although there were some impeding conditions. On one side, the migration of younger generation out of the district to capital city Nicosia was continuing (PRIO, 2011); on the other side, the region was mentioned to have an uncertain future, which is based on reunification negotiation, which discusses the possibility of territorial readjustment that would put Güzelyurt under Greek Cypriot administration with statements like the Annan Plan, Perez de Cuellar, and Boutros Ghali (İlseven, 2016).

At that period most of the Turkish Cypriots were also in financial difficulties. Their economic purchasing power developed gradually in decades. At the same time with the rapid growth of the

population the demand for housing increased. In this context, the government took actions towards the housing market. In 1978 after enacting the Social Housing Law, (Gazioğlu, 1996) local authorities and private sectors began to build state public housing to meet the demands of low and middle income people in the 1980s (Hoşkara et al., 1999). Two types of housing were built as duplex public houses (with garden) and apartments in 4 stages in Famagusta, Kyrenia, Nicosia, Güzelyurt (Omorfou), and Lefke in North Cyprus. During this period, the central government in Güzelyurt invested money in social house dwellings. The biggest investment in town by the central government was the construction of the social house dwellings, which were built between 1984 and 1992. These new houses with their porches and gardens had similar plan types as the ones from 60's; but they were relatively smaller (Figure 7).



Figure 7 - Duplex type mass houses in Güzelyurt (Authors, 2021).

Local people in the town are mostly engaged in agriculture or husbandry. As 60% of the population is elderly and thereof retired, they have strong attachments to their houses; and most of their daily life activities occur at home. Life flows slowly in Güzelyurt houses. The most common habit is to gather at verandas in the morning for coffees with neighbours, and with the family at the back garden at weekends for barbecues.

The period between 1950 and 1975 was when Cypriot architects designed housing in Cyprus. There was a transition from traditional to modern houses and this enabled the houses to be designed according to user specification (Cogaloglu & Turkan, 2019). Cypriot architects used reinforced concrete frame system in the buildings (Figures 8, 9) during these years and this enabled the buildings to have flexibility in designs and more organic solutions. Another distinction of this period is that the spaces which make up the plan schemes are functional in design (Cogaloglu & Turkan, 2019).



Figure 8 – A Front façade of a modern house in Güzelyurt (Authors, 2021).

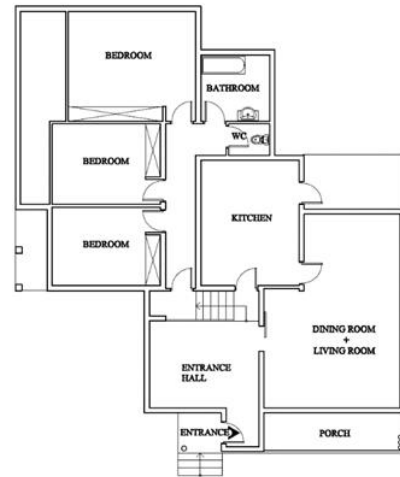


Figure 9 - A Plan schema of a modern house in Güzelyurt (Authors, 2021).

Most of the houses from 60's has 2 stories. Houses have a porch at the entrance; and an inviting hall. This entrance hall connects all rooms with a corridor. The ground floors involve 2 different living areas, a dining area, kitchen and cellar. Kitchens do not have open plan schemes, but connected to a 2nd porch. Sometimes a small study room is also possible. The bedrooms with balconies and bathroom are at the first floor (Figures 10,11,12). All houses have back gardens.



Figure 10 - A Façade of A modern house example from 60's in Güzelyurt (Authors, 2021).

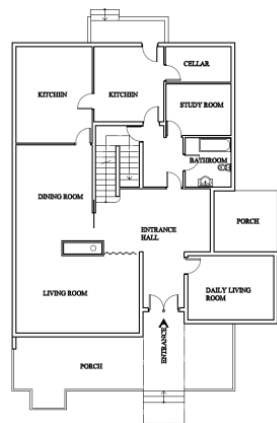


Figure 11 – The Ground Floor

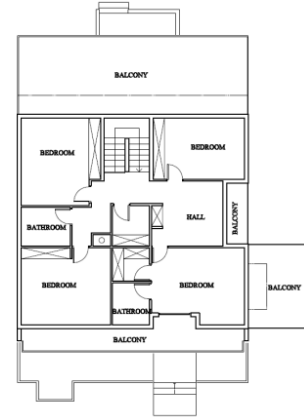


Figure 12 – The First Floor

The modernist architects always considered human health, comfort, and wellbeing in Cyprus by using pure and unique geometries, open and semi-open spaces such as balconies, terraces, and flat roofs. Amen (2017) states that the enormous terraces are places where the Cypriot people usually gather in their daily lives to spend their evenings. This routine still continues today. Especially

during the pandemic, the people in Güzelyurt went through this period with more comfort by having the flexibility to spend time indoors and outdoors in their houses (Figures 13, 14). The social houses followed the same design principles in a more relatively small scale; but having a front porch and back garden remained as essentials.



Figure 13 - The Interior of a modern house in Güzelyurt (Authors, 2021).



Figure 14 - The exterior of a modern house in Güzelyurt (Authors, 2021).

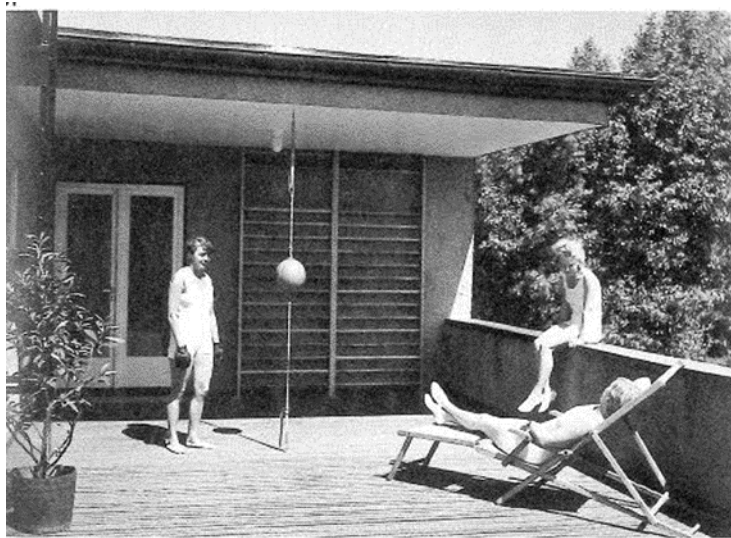
LEARNING FROM GÜZELYURT HOUSES FOR POST-PANDEMIC PERIOD

In 1929 Sigfried Giedion published a manifesto in his book *Befreites Wohnen* (Liberated Living). In this book (Figure 15) he referred home as a place which makes our life easier, a place which is not a monument, not expensive, not with an eternal value (Giedion, 1929). While he was associating home mostly with hospitals or sanatoriums, he reflected an idea of being resilient, economic and healthy. It was more about practicality and suitability, and about fulfilling the functions which best serve for the users.



Figure 15 - *Befreites Wohnen*-Cover (Giedion, 1929).

This manifesto belongs to 92 years back; almost a century. At that time the world was facing tuberculosis, and was in a period of recovery from the World War I. People were trying to adapt to new conditions; and everything was centred around healthy and free lives, liberated from all concerns. In the 1920s and 1930s terms like “function”, “purpose” or “nature” were used all the time to describe an objective analysis and design process—with architectural movements being labelled “functionalism” or “new objectivity” (‘Neue Sachlichkeit’). Design and construction processes were based on optimising housing according to insolation diagrams. This was considered to have not only economic, but also hygienic and social benefits—up to the point of liberating housing and its inhabitants, providing “Light, air, opening” (‘Licht, Luft, Öffnung’) (Figure 16) (Seelow, 2017). This was understandable because of the effects of tuberculosis. Freeing homes from illnesses was the main focus.



**Figure 16 - Theo Effenberger. house in the Werkbund housing exhibition. Breslau. 1929.
From Beatriz Colomina, X-Ray Architecture (Colomina, 2019).**

In years this ‘new objectivity’ turned itself into a new search of forms, aesthetics and comfort. Their interior-exterior relations, the feeling of spaciousness and qualified interior decoration were new attributes. The form-function relationship was still valid; and modern architecture was trying to keep the wellness of users with a tendency of keeping white and pure geometries, balconies or porches at homes. The journey of modern architecture between 20’s and 60’s resulted in healthy, liberated, and minimal house designs.

Now in 2021 the world is experiencing again an outbreak. When both periods with their unique circumstances are compared, it is as lethal as tuberculosis, and more resilience and sustainable solutions are necessary in case the world faces another outbreak and lockdown in future.

The measures should start by re-examining our houses. Housing characteristics have gained more importance in people’s lives due to the stay-at-home attitude experienced during the Covid 19 pandemic (Schellenberg & Fonberg, 2020). This reality brings some questions, such as (1) how to effectively avoid disease propagation, (2) how to minimize the environmental effect, and (3) how to maintain and improve the comfort of people spending most of their time at home (Tokazhanov

et al., 2020). Although life styles and cultures in different societies change the architectural design parameters, health factors and sanitary conditions are the same; and they can be applied to every different scheme. The outbreak showed that houses are no longer spaces, where we spend our time, create memories, feel safe and comfortable. Now they are also the only protective places in every single condition.

Güzelyurt houses proved themselves as having well protective and comfortable spaces. Based on their space arrangements, indoor outdoor relations, balconies and porches, ventilation systems, sun penetration and gardens; these houses are reflecting modern design principles and the sensitivity of modern architecture to human wellness.

So, how can we take some lessons and adapt a new housing system? Is it possible to find the guiding spirit of modern architecture in these houses and, if so how can it be applied to a post-pandemic design?

The pandemic in 2021 taught us the importance of green spaces, flexible building systems, the balance of indoor and outdoor spaces and indoor hygiene. Based on this experience, and on the characteristics of Güzelyurt houses, the post-pandemic houses for future can have the attributes, which are listed in the Table 1 below.

Table 1 - Characteristics of Güzelyurt houses and the new suggestions for the post-pandemic houses (Authors, 2021)

Modern Design Principles	Reflection on Güzelyurt Houses	New Suggestions for Post-Pandemic Period
1. Pure forms with cubic volumes & flat roofs / roof gardens / emphasis on horizontal planes	Using pure forms & flat roofs	Using pure forms and flat roofs, Green roof terraces especially for the apartment type and social housing projects
2. Clean Aesthetic / rejection of ornament / new materials	Using traditional materials like stone in new ways and new structural systems like reinforced concrete frame system	Easily cleanable surfaces, touchless working house appliances, the coating materials of furniture to be antibacterial
3. Promotion of human comfort and health	Use of shading devices with appropriate use of glass for having natural light and air	Intelligent house systems for good ventilation, interior hygiene and cleaning, 1 wet space at the entrance halls, Enough natural sunlight and air penetration to spaces
4. Balanced indoor /outdoor relation	Having strong relation between indoor and outdoor spaces. (green gardens, balconies and porches)	Open and semi-open spaces like roof terraces, balconies and porches, Having larger gardens.
5. Open floor plans	Designing the areas together like living and dining area	Instead of open plans separate rooms, Extra 1 or 2 rooms for storage & working areas, Partitions/ folding elements.

It is possible to observe the modern period effects which are using pure forms with cubic volumes and flat roofs in Güzelyurt houses. Although it is very common to use flat roofs in modern houses, it is observed that the roof terraces are not commonly used in daily life. It is more common to use balconies, terraces, and gardens in single and double storey houses (Figure 17) in Güzelyurt and these open and semi-opened places are often used to socialize with family members and neighbours (Figure 18).

The people needed open and green areas during the pandemic lockdown for their physical and also mental health's. The term wellness involves the humans physical and mental wellbeing. Due to the pandemic, we remembered once more the importance of open and semi-opened spaces such as gardens, balconies, and terraces for wellness. It was observed that the space organization and the relationship created between the interior and exterior spaces positively affected the family members during this period. The people were able to comfortable move around in the open spaces of the houses during isolation.



Figure 17 - Outdoor space examples of modern houses in Güzelyurt (Authors, 2021).



Figure 18 - Outdoor space examples of modern houses in Güzelyurt (Authors, 2021).

Ateek (2020) believes that open areas like courtyards, gardens, and green roofs help enhance the mental health of the people in house quarantine and that the people will be in more interaction with the open areas of the house and public buildings after the pandemic. The open and semi-opened spaces which are common in Güzelyurt houses should be a design criterion for the houses in the future. Especially the roof garden usage of modern architecture, should be integrated to the communal life units like social house-dwellings and apartments. Thus, the people will have the opportunity to continue their living in spaces healthier and more integrated with the nature.

When the Güzelyurt houses are evaluated according to social wellness, it is observed that the neighbourhood relations and socializing with the family members continued during the pandemic period, just as it was before the pandemic period, by protecting social distance in open areas. The Güzelyurt houses enabling this kind of socialization is yet related to the spatial organization of the houses.

It is possible to see that the modern houses in Güzelyurt are far from ornamentations and designed with new interpretations with traditional materials. These houses are well decorated and are rich in material usage indoors (Figures 19, 20). These houses were obviously very successful during the pandemic in relation to user comfort and health. Space influences how and where people socialize,

manage domestic waste and recycling, store goods, prepare and consume food, the privacy for studying, relaxing, working, leisure time, and the adaptability to new requirements (e.g. Isolation, disability) (D'alessandro et al., 2020). Starting from this point, the space organizations of Güzelyurt houses and the idea of having separate rooms for each space in these houses gave many advantages to users during pandemic period. The houses were effective in enabling the family members to protect social distance and to isolate themselves when needed during this period. The family members comfortably continued their daily lives in separate rooms. Therefore, the design trend of the modern houses proved to be effective in supporting and protecting human health and wellness.



Figure 19 - Indoor space examples of modern houses in Güzelyurt (Source: Authors).



Figure 20 - Indoor space examples of modern houses in Güzelyurt (Source: Authors).

Spatial borders and organizations and the material choice of the houses will be quite crucial. Larsson et al., (2020) indicate avoiding shared rooms, providing unisex single-user wet space with a small sink, a toilet and a separate shower / bathroom. The authors also put forward the importance of natural ventilation. Easily cleanable surfaces, touchless working house appliances, the coating materials of furniture to be antibacterial will come into prominence in relation to hygiene. Organizations of the plans and the new materials will allow the people to get over the possible pandemic process more comfortably and healthily.

The houses in Güzelyurt are considerably successful in relation to natural lighting and the designs that welcome the nature. The use of shading devices with appropriate use of glass to receive natural light and air will also be preferred in the houses after the pandemic. Moreover, intelligent house systems can be adapted for good ventilation and contactless surfaces for interior hygiene and cleaning could all be used in the future homes. In addition, initial contact happens at the main entrance halls, so wet spaces could be designed close to entrance halls in the future homes to ensure hygiene. Also, natural sunlight and air penetration to spaces will obtain more importance after the pandemic period. The protection of social distancing will also be considered in interior space arrangements.

When the Güzelyurt houses are evaluated according to environmental wellness, it is observed that these houses are in balance and harmony with the nature and man-made environment. The strong relationship of these houses with the open and closed spaces has provided comfortable and healthy

environments to users (Figure 21, 22). The people who lived in single and double storey houses were luckier than the people who lived in apartments during the pandemic process. The people in apartments experienced boredom during this process. People realized the importance of indoor gardens even in multi-storey buildings during quarantine (Makhno, 2020; Wainwright, 2020). For this reason, green gardens should be arranged for multiple storey houses in each floor for socializing. The users have experienced the importance of the relationship between indoor and outdoor spaces during this process. It is obvious that open and semi-open spaces will gain more importance especially for the apartment type housings in the future. During pandemic period, people tended to cultivate in their own gardens. Therefore, future homes will have larger green garden areas.



Figure 21 - Open and semi-open space examples of modern houses in Güzelyurt (Source: Authors).



Figure 22 - Open and semi-open space examples of modern houses in Güzelyurt (Source: Authors).

The open plan application which belongs to modern architecture cannot be observed very often in Güzelyurt house plans. Mostly, each space was thought for separate areas. The open plan idea is mostly seen in Güzelyurt social house dwelling projects. It is obvious that the open plan idea will experience a change after the pandemic. Megahed & Ghoneim (2020) propose that an end might come to the open-plan spaces and more partitions between departments could be introduced as design solutions and layout after the pandemic period. In the post-pandemic period, instead of open plans, each space will be designed separately, also extra 1 or 2 rooms will be necessary for storage and working areas for the users. The spaces in the houses during the pandemic period have transformed into multi-functional spaces. Keenan (2020) supports that innovative multi-purpose furniture and adaptive spaces for eating, working and studying will be needed. Spaces will be transformed into other spaces according to need after pandemic period.

Houses that can provide effective social isolation and protection against viruses and infections is obviously required for people (Megahed & Ghoneim, 2020) and they can become more sustainable through ensured flexible and adaptable spaces which are easily adaptable according to the changing needs and lifestyles for residents (Capolongo et al., 2020; Wainwright, 2020).

The experiences gained during the pandemic process has once more evoked us about the importance of spatial organizations and the positive effects of outdoor spaces on humans' wellness.

By deducing from the Güzelyurt houses built in a modern style, one of the most important aims of this study was to lead the way for the future houses. In this context, it is thought that the above evaluations and suggestions will be beneficial for the wellbeing and health of the users for possible future pandemics.

CONCLUSION

Architecture is concerned about people's lives. Tuberculosis which was a critical illness of its period resulted in architects designing houses sensitive to human health. This was a primary responsibility of the modern architects. Another pandemic which recently has significantly affected the whole world is Covid-19. The importance of house conditions was once more put on display in relation to people's health and well-being due to the lockdown because of the Covid-19 (D'alessandro et al., 2020). Many people had to continue work and education at their homes because of the lockdown during the pandemic. This has resulted in changes to our daily life conditions and habits. People had to spend most of their times at home due to the lockdown. Thus, owners started to transform the spaces in their homes. Parts of the living rooms, bed rooms, and kitchens were transformed into offices or classroom environments. It was observed that the houses which were designed after modern architecture principles in Güzelyurt allowed an endurable lockdown period during the outbreak of Covid-19 in 2020 in relation to personal comfort and safety of their owners. The users experienced the importance of the relationship between the open and closed spaces and saw the advantage of the gardened houses over the houses without gardens. It is not certain when the Covid-19 pandemic will end but it will be beneficial to develop suggestions about the designs of the future houses respectively.

The Güzelyurt houses which are designed in a modern style, have provided the users with comfortable spaces during the isolation process. Thus, these houses have a crucial feature of guiding the future houses. In the scope of the question asked at the beginning of the study, Is modern architecture still valid; or can its principles be applied to contemporary house design in post pandemic period? Following are the results:

- Using pure forms, flat roofs and roof gardens which are the key elements for Modern architecture will gain more importance after post pandemic.
- The requirements of modern architecture like enough sunlight and air penetration, natural ventilation, appropriate material selection, interior hygiene and cleaning, indoor and outdoor facilities, inviting the nature inside, and a beautiful view of the surrounding will gain more importance in the future homes.
- Using partitions between departments to ensure adaptable spaces for all users and multi-purpose furniture will be a requirement for indoor spaces.

- Instead of open plans, each space will be designed separately, also extra 1 or 2 rooms will be necessary for storage and working areas for future houses. The modern period Güzelyurt houses definitely have a separate laundry, cellar, study at the entrance floors, storage spaces, and an extra room for necessities. These spaces can easily be transformed to serve various functions after the post pandemic period. The space organizations of the modern houses have a quality of guiding the future homes.
- Entrance halls are the places where the first link between the external world is created. For this reason, a wet space can be designed at these locations for hygiene. Wet spaces with a toilet, small sink, and a separate shower would be a necessity after the pandemic period.
- Intelligent housing systems for good ventilation and interior hygiene and cleaning will be on the agenda. Easily cleanable surfaces, non-contact household appliances, choosing anti-bacterial materials for furniture will be on the agenda in relation to hygiene.
- Visible and accessible green elements and spaces will gain importance and future homes will have larger garden areas.

Through this study, the guidance of house designs for post pandemic period is researched and some suggestions are provided. There are still many questions which haven't been answered in relation to space and environment designs after the pandemic, so more multidisciplinary studies are needed in this context. It is a requirement to use healthy design and planning strategies more effectively to be able to create more sustainable architecture and environments for potential future pandemics.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support has been received for conducting the research and/or for the preparation of the article.

Ethical Statement

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/E/F/G/H/I

AUTHOR 2: A/B/C/D/E/F/G/H/I

REFERENCES

- Aljuboori, F. (2018). The influence of Le Corbusier on the emergence of the aesthetic values in the Modern Architecture of Cyprus. *Journal of Contemporary Urban Affairs*, 2(1), 1-12. <https://doi.org/10.25034/ijcua.2017.3651>
- Amen, A. M. (2017). The inspiration of Bauhaus principles on the modern housing in Cyprus. *Journal of Contemporary Urban Affairs (JCUA)*, 1(2), 21-32. <https://doi.org/10.25034/ijcua.2017.3645>
- Ateek, G. (2020). Future of sustainable architecture: Rethinking Covid-19 a pandemic or turning point?
- Atmodiwirjo, P., & Yatmo, Y.A. (2015). Architecture as machine; Towards an architectural system for human well-being.
- Beach, B., Clay, K., & Saavedra, M.H. (2020). The 1918 influenza pandemic and its lessons for Covid-19. Working Paper 27673. <http://www.nber.org/papers/w27673>
- Campbell, M. (2005). What Tuberculosis did for Modernism: The influence of a curative environment on modernist design and architecture. *Medical History*, 49(4), 463–488.
- Capolongo, S., Rebecchi, A., Buffoli, M., Letizia, A., & Carlo, S. (2020). Covid-19 and cities: From urban health strategies to the pandemic challenge. A decalogue of public health opportunities. *Acta Biomedica*, 91(2), 13-22.
- Cogaloglu, M., & Turkan, Z. (2019). Plan organization in XX. Century housing architecture in North Cyprus. *Revista Amazonia Investiga*, 8(22), 381-388.
- Colomina, B. (2019). *X-RAY architecture*. Lars Müller Publication.
- D'alessandro, D., Gola, M., Appolloni, L., Dettori, M., Fara, G.M., Rebecchi, A., Settimo, G., & Capolongo, S. (2020). COVID-19 and living space challenge. Well-being and public health recommendations for a healthy, safe, and sustainable housing. *Acta Biomed*, 20(91), 61–75. doi: 10.23750/abm.v91i9-S.10115.
- Daniel, T.M. (2006). The history of tuberculosis. *Respiratory Medicine*, 100(11), 1862–1870. doi:10.1016/j.rmed.2006.08.006
- Davis, T. (n.d.). Definition of Wellness: Meaning, Dimensions, and Examples. <https://www.berkeleywellbeing.com/wellness-definition.html>
- Esentepe, B. M. (2013). Space transformation and change in mass housing in Nicosia, North Cyprus (unpublished master thesis). Eastern Mediterranean University, Gazimağusa, North Cyprus.
- Fereos, S., & Phokaides, P. (2006). Modern architecture in Cyprus between the 1930s and 1970s: The search for modern heritage. *Docomomo Journal*, 35.
- Gazioğlu, T. (1996). Social housing schemes in the TRNC. Northern Cyprus Monthly –Kıbrıs IV [online], (5). Available from: <http://www.cypnet.co.uk/ncyprus/economy/econ10.htm>
- Giedion, S. (1929). *Befreites Wohnen*. Lars Müller Publication.

- Giorgi, E. (2014). Wellness and happiness: how and why Architecture must contribute to a cultural revolution, Conference: ATINER - Fourth Annual International Conference on Architecture.
- Gürel, A., Hatay, M., & Yakinthou, C. (2012). *Kıbrıs'ta yerinden olmak sivil ve askeri çatışmanın sonuçları: Olaylar ve algılamalara genel bir bakış, Rapor 5*. Peace Research Institute Oslo.
- Hatay, M. (2007). *Is Turkish Cypriot population shrinking? An overview of the ethno-demography of Cyprus in the light of the preliminary results of the 2006 Turkish Cypriot census*. Peace Research Institute Oslo.
- Honigsbaum, M. (2019). *The pandemic century: One hundred years of panic, hysteria and hubris*. C. Hurst & Co. Publishers.
- Hoşkara, Ş.Ö., Çavuşoğlu, B.T., & Öngül, Z. (1999). Legal frameworks and housing environments in North Cyprus. *METU JFA*, 26(1), 81-100.
- Hsu, C. C., & Shih, C. M. (2005). A typological housing design: The case study of Quartier Fruges in Pessac by Le Corbusier. *Journal of Asian Architecture and Building Engineering*, 5(1), 75-82.
- Ibelings, H. (2002). *Supermodernism: Architecture in the Age of Globalization*. NAI Publishers, Rotterdam.
- Ilseven, S. (2016). Assessment of the impacts of population decline in the town of Güzelyurt on the socio-economic structure of TRNC. *Anthropologist*, 23(3), 335-342. doi: 10.1080/09720073.2014.11891953
- Internal Displacement Monitoring Centre –IDMC (2009). *Cyprus: Prospects remain dim of political resolution to change situation of idps*. Switzerland: Norwegian Refugee Council.
- Joedicke, J. (1990). *Weissenhofsiedlung Stuttgart*. Karl Kraemer Verlag Stuttgart.
- Keenan, J.M. (2020). Covid, resilience, and the built environment. *Environ. Syst. Decis*, 40(2), 216-221. doi: 10.1007/s10669-020-09773-0
- KKTC Sivil Savunma Teşkilat Başkanlığı (2009). *Kuzey Kıbrıs Türk Cumhuriyeti gezi kitabı*. Lefkoşa: Sivil Savunma Teşkilat Başkanlığı Yayını.
- Kiessel, M. (2014). Direct and indirect influences of Le Corbusier on the architecture of Cyprus. In: A. Öztürk, & A. Yücel (Eds.), *A Swiss in the Mediterranean. The Cyprus Talks on Le Corbusier*.
- Larsson, N. Kujawski, W., Mangone, G., & Delcourt, H. (2020). *Pandemics and the built Environment*. International Initiative for a Sustainable Built Environment.
- Le Corbusier. (1986). *Towards a new architecture (13th Edition)*. Translated by Frederick Etchells, Dover Publications, NY.
- Makhno, S. (2020). Life after coronavirus: How will the pandemic affect our homes? Dezeen. <https://www.dezeen.com/2020/03/25/life-after-coronavirus-impact-homes-design-architecture/>
- Mc Coy, E. (1975). Arts & architecture case study houses. *Perspecta*, 15, 54-73.

- Megaheda, A.N., & Ghoneim, E.M. (2020). Antivirus-built environment: Lessons learned from Covid-19 pandemic. *Sustainable Cities and Society*, 61, 102350.
- Miller, G., & Foster, T. L. (2010). *Critical Synthesis of Wellness Literature*, The BC Atlas of Wellness. University of Victoria Faculty of Human and Social Development & Department of Geography, Canada.
- Muhy Al-Din, S. (2017). The influence of Mediterranean modernist movement of architecture in Lefkoşa: The first and early second half of 20th century. *Journal of Contemporary Urban Affairs*, 1(1), 10-23. [https://doi.org/10.25034/1761.1\(1\)10-23](https://doi.org/10.25034/1761.1(1)10-23)
- Özay, N. (2004). A comparative study of climatically responsive house design at various periods of Northern Cyprus architecture. *Building and Environment*, 40(6), 841-852.
- Parikh, A., & Parikh, P. (2018). *Choice architecture: A new approach to behavior, design, and wellness*. Routledge, NY.
- Phokaides, P. (2009). Architecture and Modernity in Cyprus. EAHN Newsletter No 2/09 [Newsletter of the European Architectural Historians Network]. https://www.academia.edu/4987823/Architecture_and_Modernity_in_Cyprus
- Pinherio, M.D., & Luis, N. C. (2020). COVID-19 could leverage a sustainable built environment. *Sustainability*, 12(14), 5863, 1-27.
- PRIO. (2011). *Internal displacement in Cyprus: Mapping the consequences of civil and military strife. Routes of Displacement and Resettlement: Nicosia / GEUNYELİ*. Available from: <http://www.prio-cyprus-displacement.net/default.asp?id=300>
- PRIO. (2011). *Internal displacement in Cyprus: Mapping the consequences of civil and military strife. Routes of Displacement and Resettlement: MORPHOU*. Available from: <http://www.prio-cyprus-displacement.net/default.asp?id=334> (Accessed date: 22 January 2021).
- Schellenberg, G., & Fonberg, J. (2020). Housing characteristics and staying at home during the COVID-19 pandemic. (Catalogue no. 45280001).
- Seelow, M.A. (2017). Function and form: Shifts in modernist architects' design thinking. *Arts*, 6(1),1. doi:10.3390/arts6010001
- Şevketoğlu, M. (2010). Historical introduction: Cyprus and the Morphou region. M. Jones and J.A. Milward (eds.), *In The canopy of heaven: The ciborium in the church of St. Mamas, Morphou, Cyprus*. United States: Supporting Activities that value the Environment (SAVE), 19-45.
- Tobolczyk, M. (2021). *Contemporary Architecture: The Genesis and Characteristics of Leading Trends*, Cambridge Scholars Publishing, UK.
- Tokazhanov, G., Tleuken, A., Guney, M., Turkyilmaz, A., & Karaca, F. (2020). How is COVID-19 experience transforming sustainability requirements of residential buildings? A review. *Sustainability*, 12(20), 8732. doi:10.3390/su12208732.
- URL-1. <https://www.artsy.net/article/artsy-editorial-modernist-architects-believed-designs-healthier>
- URL-2. https://www.archdaily.com/490048/ad-classics-weissenhof-siedlung-houses-14-and-15-le-corbusier-and-pierre-jeanneret?ad_source=search&ad_medium=search_result_all

URL-3. <https://www.archdaily.com/490048/ad-classics-weissenhof-siedlung-houses-14-and-15-le-corbusier-and-pierre-jeanneret>

URL-4. <https://lecorbusier-worldheritage.org/en/maisons-de-la-weissenhof-siedlung/>

URL-5. <https://www.dezeen.com/2016/07/26/le-corbusier-colourful-cite-fruges-workers-housing-fashionable-apartments-unesco-world-heritage-list/>

URL-6. https://issuu.com/dirthouse-photography/docs/neutra_health_house-was_it_really_healthy

URL-7. https://commons.wikimedia.org/wiki/File:Lovell_Health_House_3.jpg

URL-8. <http://www.stat.gov.ct.tr/nufus2011.aspx>

Wainwright, O. (2020). Smart lifts, lonely workers, no towers or tourists: Architecture after coronavirus. *The Guardian*. <https://www.theguardian.com/artanddesign/2020/apr/13/smart-lifts-lonely-workers-no-towers-architecture-after-covid-19-coronavirus>

BIOGRAPHIES OF THE AUTHORS

Feriha URFALI DOĞU (Assist. Prof. Dr.)

Feriha Urfalı Dođu, graduated from European University of Lefke, Faculty of Architecture, and she completed her Master and Doctorate degrees at the same university. She is currently working as Assist. Prof. Dr. at European University of Lefke, Faculty of Architecture in North Cyprus. Her interest areas are social sustainability, forced displacement and its effects on society and cities, housing and architecture, vernacular architecture.

Lerzan ARAS (Prof. Dr.)

Lerzan Aras, graduated from Istanbul Technical University, Faculty of Architecture, and she completed her Master and Doctorate degrees at the same university. She is currently working as Professor at European University of Lefke in North Cyprus and the dean of Faculty of Architecture. Her interest areas are; Architectural theory, criticism, daily life, social responsibility, basic design education, sociology and architecture.



Depiction of Bodrum Halicarnassus in the historical cartographic materials between 15th and 19th Centuries

Burak BEYHAN¹, ORCID: 0000-0001-7301-4639
Feray KOCA², ORCID: 0000-0003-0351-8123

Abstract

Historical cartographic materials provide us with significant evidence not only about the evolution of spatial setting in a city and region, but also conception of it from different worldviews. In this context, Bodrum, the site of ancient Halicarnassus in the Eastern Mediterranean, can be considered as a perfect laboratory for the observation of this evolution and conceptions owing to the availability of a number of historical maps belonging to the different eras and traditions. By revealing four mapping traditions for elaboration of the historical cartographic materials available for Bodrum, the study re-read the history of Bodrum city with reference to, on the one hand, the evolution of spatial configuration of the old and remarkable buildings in the city, and on the other hand, the manifestation of the different world views and conceptions, which is realized by employing a two-folded lens that reformulates history as cartography while contextualizing cartography as history. Georeferencing is also used as an auxiliary method of analysis for the fixation of spatial elements.

Highlights

- Study cross-fertilizes history and cartography for urban history.
- Study formulates a non-prescriptive approach.
- Study reveals the political aims behind the maps depicting Bodrum.
- Study questions the possibility of a unifying perspective.
- Study presents Bodrum as depicted in the maps.

Keywords

Urban history; Historical maps;
Critical map history; Eastern
Mediterranean; Bodrum

Article Information

Received:
14.02.2022
Received in Revised Form:
21.07.2022
Accepted:
17.10.2022
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Muğla Sıtkı
Koçman University, Muğla, Türkiye
burakbeyhan@mu.edu.tr
2. Faculty of Architecture, Muğla Sıtkı
Koçman University, Muğla, Türkiye
feraykoca@mu.edu.tr

15. ve 19. yüzyıllar arası tarihi kartografik malzemelerde Bodrum Halikarnas tasviri

Burak BEYHAN¹, ORCID: 0000-0001-7301-4639
Feray KOCA², ORCID: 0000-0003-0351-8123

Öz

Tarihsel kartografik materyaller bize sadece bir şehir ve bölgedeki mekansal ortamın evrimi hakkında değil, aynı zamanda farklı dünya görüşlerinin şehir ve bölge anlayışı hakkında da önemli kanıtlar sağlar. Bu bağlamda, Doğu Akdeniz'deki antik Halikarnas'ın konumlandığı Bodrum, farklı dönemlere ve geleneklere ait çok sayıda tarihi haritanın mevcudiyeti nedeniyle bu evrim ve anlayışların gözlemlenmesi için mükemmel bir laboratuvar olarak düşünülebilir. Çalışma, Bodrum için mevcut olan tarihi kartografik malzemelerin irdelenebilmesi için dört haritalama geleneğini ortaya çıkararak, bir yandan, şehirdeki eski ve dikkat çekici binaların mekansal biçimlenişinin evrimine ve diğer yandan, farklı dünya görüşlerinin ve anlayışlarının tezahürüne atıfta bulunmak suretiyle, Bodrum şehrinin tarihini yeniden okumaktadır. Bu, tarihi, haritacılık olarak yeniden formüle ederken, haritacılığı da tarih olarak bağlaştıran iki katlı bir mercekle kullanılarak gerçekleştirilmiştir. Coğrafi-sabitleme de yardımcı bir çözümleme yöntemi olarak mekansal unsurların sabitlenmesinde kullanılmıştır.

Öne Çıkanlar

- Çalışma, kent tarihi için tarihi ve haritacılığı harmanlar.
- Çalışma, kuralcı olmayan bir yaklaşım formüle eder.
- Çalışma, Bodrum'u tasvir eden haritaların arkasındaki siyasi amaçları ortaya koyar.
- Çalışma, birleştirici bir bakış açısı olasılığını sorgular.
- Çalışma, Bodrum'u haritalarda gösterildiği gibi sunar.

Anahtar Sözcükler

Kent tarihi; Tarihi haritalar; Eleştirel harita tarihi; Doğu Akdeniz; Bodrum

Makale Bilgileri

Alındı:
14.02.2022
Revizyon Kabul Tarihi:
21.07.2022
Kabul Edildi:
17.10.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Fakültesi, Muğla Sıtkı Koçman Üniversitesi, Muğla, Türkiye
burakbeyhan@mu.edu.tr
2. Mimarlık Fakültesi, Muğla Sıtkı Koçman Üniversitesi, Muğla, Türkiye
feraykoca@mu.edu.tr

INTRODUCTION

Both for the exploration of evolution of historical cities and also for the elaboration of evolution of mapping traditions, the Mediterranean provides us with a unique laboratory. This is because of not just its ancient history, but also availability of a rich set of cartographic materials for many cities in the Mediterranean. One of the exceptional locations for which a good number of historical cartographic materials is available in the Mediterranean basin is Bodrum, the site of ancient Halicarnassus. Elaboration of these historical cartographic materials within their time frame provides us with important inferences not only for city and regional planning, but also for architecture. Indeed, proper intervention into spatial processes necessitates a more complex understanding and comparison of both the spatial configuration of entities in a given environment and various depictions and representations of these configurations. In addition, the analysis of the spatial processes helps us to decipher the patterns and the relationships in the geographic context.

Ancient Bodrum, home to Halicarnassus, was founded in Caria Region, where the sea-dependent Minoan colonies coming from Crete and the islands in the Aegean Sea settled in the coastal areas around 1000 BC. While the presence of indented shores in Caria provided natural bay and harbor features, the forested areas behind the steep mountains in inner Caria provided timber to the sea-dependent colonies (Gür, 2012). With the Persian invasions in Anatolia in 480-386 BC, the colonies were destroyed and satrapies were established. Like this; Halicarnassus became the capital of the Carian Satrapy around 400 BC. Under Hekatomnid Rule, Halicarnassus and its local region was Hellenized and a modern Greek-style metropolis was founded for the first time in Caria (McNicoll & Milner, 1997). It was a first for Asia Minor that Halicarnassus was a developed maritime trade center and had a defensive power surrounded by strong fortification walls and adopted a modern lifestyle for its period. Halicarnassus, which was the synthesis of the political and administrative style of the east and the modern life style of the west, under the influence of both Persian and Greek, had been significant in terms of influencing the political and cultural history of Anatolia in ancient times. In the following ages, due to the importance of being the capital of the ancient period, Bodrum preserved its historical importance and turned into a research and observation area for many travelers and explorers. The iconic structures of the city of Halicarnassus have been important landmarks for all travelers' cartographic maps.

The first historical cartographic material in which Bodrum is denoted with its landmarks belongs to 15th century. It is available in Cristoforo Buondelmonti's (1465-1475) *Liber Insularum Archipelagi*. Although the center of attention of the respective book is islands, some parts of the Anatolian coasts are also described with reference to the basic landmarks of the time. Similar maps such as

the ones in Pîrî Reis' (1521; 1526) *Kitâb-I Babriye* were mainly produced from 15th to 17th century. Beginning from 18th century onwards, one can find the maps in which the center of attention is directly Bodrum and its close environs (such as Giovanni Battista Borra's map). In the 19th century, the modern maps prepared for military purposes also portray Bodrum in a detailed context (such as Thomas Spratt's map).

Based on these materials, in this paper there is an attempt to re-read the history of Bodrum as depicted in maps, which also necessitates a re-reading of the history of maps. The main method of analysis employed in this paper is actually a two-folded lens. The first fold of the lens is based on Harley's (1989a) suggestion for consideration of cartographer as an author using a sign system for the production of maps that can actually be considered as a form of text. Although both map readers and cartographers view map as objective and scientific representations of reality, the selection of elements displayed on maps and the way of their exhibition is determined by the values of the cartographers and the culture into which they were born (Harley, 1989b).

Thus, cartographer tells the story he or she wants to tell by selecting, omitting, classifying and symbolizing actions, events, experiences, and ideas, which makes the final product extremely subjective. In this context, along the first fold of the lens, a deconstructive effort is made. This deconstruction process is described by Harley (1989b) as a discovery of the silences and inconsistencies testing the map's superficial trustworthiness. Hence, main task along the first fold is an exploration of the social forces structuring cartography and contextualization of the existence of power together with its effects "in all map knowledge", which actually contextualizes cartography as history via critical map history.

The second fold of the lens is based on Ethington's (2007) suggestion for reformulation of history as cartography. Accordingly, it is argued that presentation of the past's knowledge can actually be considered as a cartographic experience in terms of mapping the places of history. This consideration is based on the expansion of the meaning of mapping so that it represents the topological relations among *topoi* covering not only points, lines, or polygons, but also actions, events, experiences, and ideas that are imperative in the construction of both space subject to mapping and mapping over time.

Along the second fold of the lens, the main task is a close examination of interconnections between, on the one hand, events and experiences accumulated in place, and on the other hand, evolving actions and ideas in the representation of the space. In this context, along the second fold of the lens, reading history can be considered as a cartographic experience in terms of establishment of interconnections between not only the *topoi* in each layer, but also two sets of particular layers and their *topoi*. While the first set of layers can be defined as the various configurations of space evolving over time in Bodrum, the second set of layers can be defined as the various representations of this space.

In addition to the main method of analysis which is a qualitative one based on a novel combination of suggestions of Harley (1989a; 1989b) and Ethington (2007), georeferencing method in GIS (Geographic Information Systems) is also used as an auxiliary method of analysis for the fixation of spatial elements over time. Georeferencing provides us with a one-to-one match between two sets of 'ground control points' (GCPs) that are map elements that can be recognized in both reference map

whose projection is known and the historical map. In this process, if possible, GCPs should be equally distributed through the whole raster image of the historical map. GCPs should also be designated as the spatial elements that are well-identifiable (such as holly spaces that have remained unchanged over time). The methods used for georeferencing a map can be categorized into two general groups (Balletti, 2006; Cajthaml, 2011; Herrault et al., 2013); (1) those with global & non-exact algorithms using all GCPs for obtaining a transformation to be applied on the whole raster image, and (2) those with local & exact algorithms using different sets of GCPs for different portions of the raster image.

Although for the historical cartographic material having a correct map projection or high degree of accuracy (such as Thomas Spratt's Bodrum map), global & non-exact algorithms (such as linear and lower order polynomials) can be used for georeferencing (Podobnikar, 2010), for the historical maps without any map projection and low degree of accuracy, it is more appropriate to use local & exact algorithms such as 'thin plate spline' (TPS) (Podobnikar and Šinkovec, 2004). Employment of TPS also requires the fulfilment of basic topological conditions. Since, except for the map prepared by Spratt, the historical maps used in this study do not fully meet the basic topological conditions, only Spratt's map is georeferenced by using Quantum GIS (QGIS), a Free and Open Source Software (FOSS) for GIS, to produce a map showing the significance of spatial elements in various depiction of Bodrum.

Within the framework drawn above, the next section is devoted to the contextualization of different versions of Bodrum in historical maps with an emphasis on the imprints of different geopolitical manifestations encoded in the maps. Later, these manifestations are further deconstructed by using various perspectives and by revealing the possibility of a unifying framework as opposed to a polarizing framework. The final section presents some concluding remarks based on the non-prescriptive approach formulated in the paper.

BODRUM IN HISTORICAL MAPS THROUGH A HISTORY OF MAPS

The chart showing Kos Island and its environs in Cristoforo Buondelmonti's (1465-1475) *Liber Insularum Archipelagi* can be considered as the first cartographical material partly depicting Bodrum (Figure 1). Buondelmonti was a Florentine monk and known for his travels made through Ionian and Aegean Seas at the beginning of the 15th century (Tolias, 2012). According to Tolias (2007), *Liber Insularum Archipelagi* provides us with an example of early regional geography.

Buondelmonti's *Liber Insularum Archipelagi* is the first example of a genre called *isolario* meaning 'Book of Islands' (Tolias, 2007). Sometimes, the charts in *isolario* are also accompanied by geographical and historical information, textual annotations on the maps, and in rare cases, by a poem-like structure such as the one authored by Bartolomeo Da Li Sonetti (1485), a Venetian ship captain. Sonetti's maps particularly exhibit a nautical character in terms of employment of the technique of the portolan charts associated with a compass and scale (Tolias, 2012).

As a representation of the Mediterranean region the first *isolario* was actually part of the territorial rivalries between the Ottoman Empire and the Western Christian nations in terms of its reflection of the territorial imperatives of a given society, more precisely the vested interests of the European powers in the Eastern Mediterranean (Tolias, 2007; Perreault, 2019). Indeed, when examined, a

clear political aim for the legitimization of the Latin presence throughout the territories of the Eastern Mediterranean can be found in the *Liber Insularum Archipelagi* such that the cartographic images and the accompanying text link the classical heritage to the Latins while reaffirming their presence and the so-called legitimate and temporal possessions of the Christian Church in the Eastern Mediterranean (Tolias, 2012; Perreault, 2019).

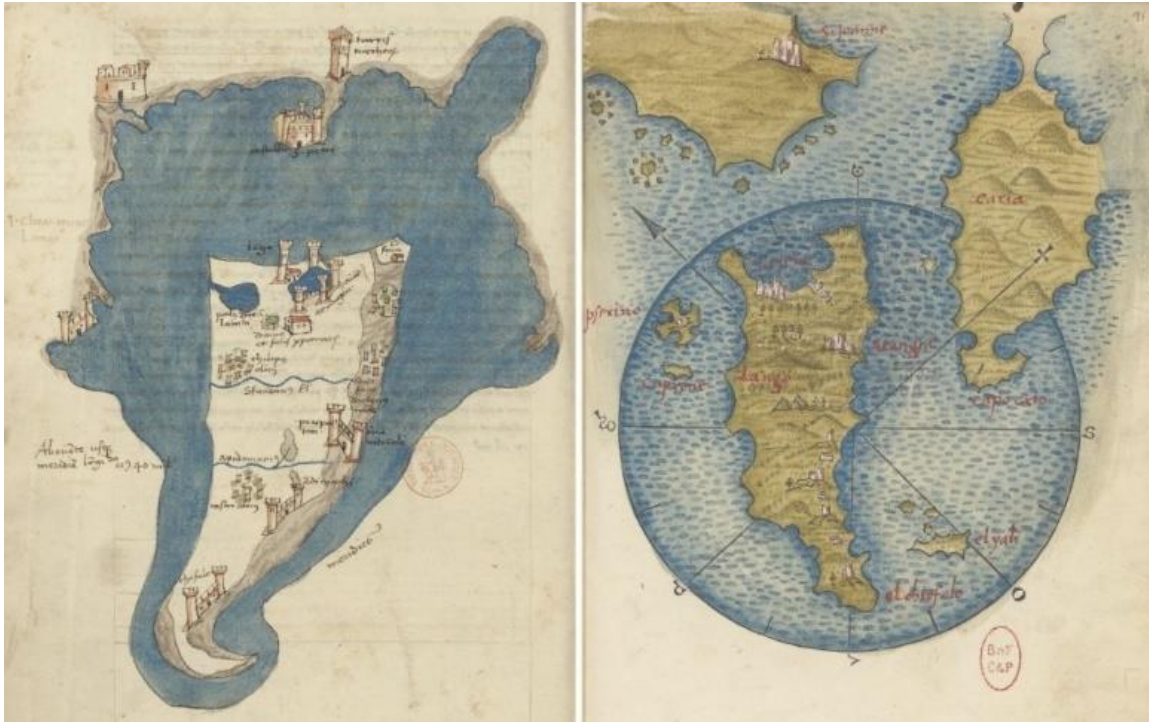


Figure 1 - Buondelmonti's (left) and Sonetti's (right) charts showing Kos Island, Bodrum Harbor and Knidos. Source: Buondelmonti (1465-1475, p. 26v) and Sonetti (1485, p. 35).

In the cartographic images involved in the *Liber Insularum Archipelagi*, the island is represented as surrounded by water, which emphasizes the territory as a piece of land independent of the mainland. Kos Island is also depicted in a similar fashion. What is remarkable in the chart whose center is Kos Island is the importance assigned to some locations along the Anatolian coasts such as Bodrum. Bodrum Castle together with a tower to its north-east inland can be identified in the charts of Buondelmonti (1465-75) and Sonetti (1485) in the form of both symbolic and textual annotations (Figure 1). Although the tower is depicted separate from the castle, most probably it represents one of the towers in the castle, particularly the highest one known as French Tower. Bodrum Castle built by the St. Jean Knights in 1402 under the name of St. Peter's Castle is titled accordingly in these charts, which reveals the importance of Bodrum for Christianity in the Eastern Mediterranean. Datça peninsula is also titled Caria showing the antique roots of the region.

In the 16th century, Bodrum can also be seen in the maps in *Kitâb-ı Bahriye* (usually translated as “The Book of Navigation”) authored by Pîrî Reis (1526) (Figure 2). Although Emiralioglu (2016) considers *Kitâb-ı Bahriye* as the first *isolario* in Ottoman Turkish, Tolias (2007) positions it in between a narrative portolan and an *isolario*. Indeed, *Kitâb-ı Bahriye*, on the one hand, parallel to the portolan, follows the seaways along the Mediterranean coasts, and on the other hand, parallel to the *isolario*,

provides the readers with a detailed mapping of each island and the nearby coasts. There are two versions of *Kitâb-ı Bahriye* (Yilmaz, 2010; Emiralioğlu, 2016). The first one is dated 1521 and it was prepared for the use of sailors in a simpler and handier form. The second one is a more detailed and ornate work prepared as a deluxe edition to be presented to Suleyman the Magnificent in 1526 for the use of the imperial court.

Pîrî Reis served as the master of one of the ships of Kemal Reis, a famous Admiral of the Ottoman Navy and his uncle, and sailed with him all around the Mediterranean, which allowed him to examine the harbors and make the maps which were collected in his *Kitâb-ı Bahriye* (Yilmaz, 2010; Nemlioğlu Koca, 2020). As being a narrative portolan, each map in *Kitâb-ı Bahriye* is associated with a detailed description of not only maritime conditions, shallow waters and reefs, but also potable water sources along the coasts and geographical features of both the islands and inland in terms of history of the settlements and local culture (Pîrî Reis, 1521, 1526). In this respect, in his work, Pîrî Reis (1526) particularly warns us about the illusion created by the topography of the region. Accordingly, in his description of Kos Island, he notes that although a high mountain on the south side of the Island creates an impression of another island from afar, all are one island. As elaborated in the subsequent part of this section, the cartographers in the Russian Navy seems to have fallen into a similar failure in their map depicting Bodrum and its environs.

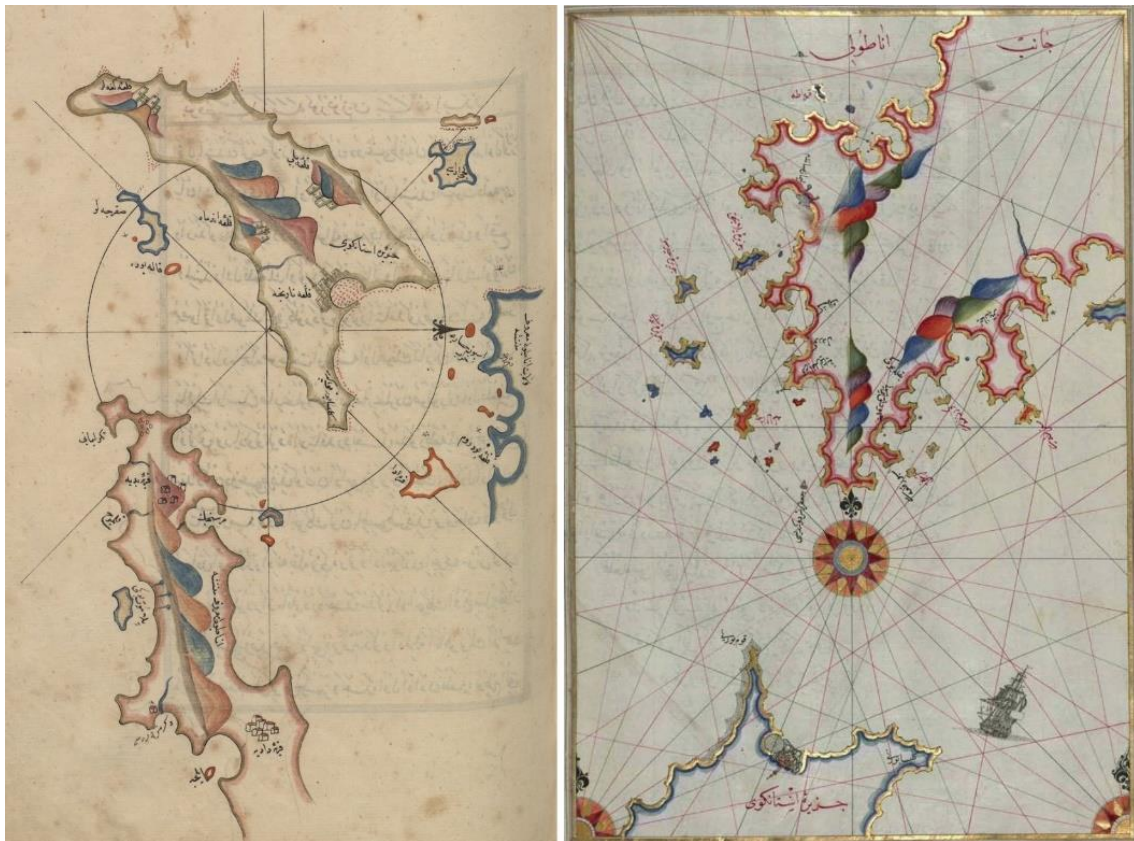


Figure 2 - Kos Island and Bodrum – maps from detailed versions of *Kitâb-ı Bahriye*. Source: Pîrî Reis (1526).

On Pîrî Reis' maps covering Bodrum (Figure 2), there is no particular symbol showing the castle or tower in Bodrum harbor. However, in one of the detailed versions of the book, the existence of a castle in the harbor is explained in a text annotation attached to the entrance of the harbor (the map on the left of Figure 2). In the map, the island to the south-east of Bodrum harbor is titled as "Sığır" island that should be Görecek Island, today. Compared with inland, Kos Island is described by using symbol annotations in a more detailed context, which affirms its similarity with *isolarios*.

Pîrî Reis's map can also be contextualized with reference to, on the one hand, the exposition of a different worldview, and on the other hand, the declaration of an imperial claim in terms of instrumentalization of maps as a tool of power. For the latter, as Emiralioglu (2016, p. 3) argues, the Ottoman Empire was the largest empire in the Old World and "was broadcasting its imperial claims to universal sovereignty in both the East and the West" via practical geographical information, which reveals the fact the "Ottoman court was aware of the symbolic and practical value of the geographical works and took advantage of them". When the name of the book is reconsidered, the worldview behind *Kitâb-ı Bahriyye* also becomes more traceable. The book can also be translated in to English as "Book of Seafaring" or "Book of Sea Lore". Since Pîrî Reis considered the sea as a science and sailing as an art, he actually named his book only "Bahriyya" designating the image of the sea as the building block of his work, which has also roots in Sufism (Tasavvuf) (Sır, 2015).

In the 18th century, one of the first maps mainly focusing on Bodrum was produced by Giovanni Battista Borra in 1750 (Figure 3). Giovanni Battista Borra was an Italian engineer and architectural draughtsman. After meeting Robert Wood in Rome, he joined Wood's team as an architectural draughtsman for his antiquarian expedition to Asia Minor and Syria in 1750-51. Starting their journey from Izmir, they first followed a route to Istanbul, and then, to the sites of Laodicea (Eskihisar) and Hierapolis (Pamukkale), and after visiting these ancient cities, they returned back to the sea at Bodrum on October 10th, 1750 (Hutton, 1927; Mighetto, 1995). Borra's (1751) sketches provide us with the first graphical records of many antique cities.

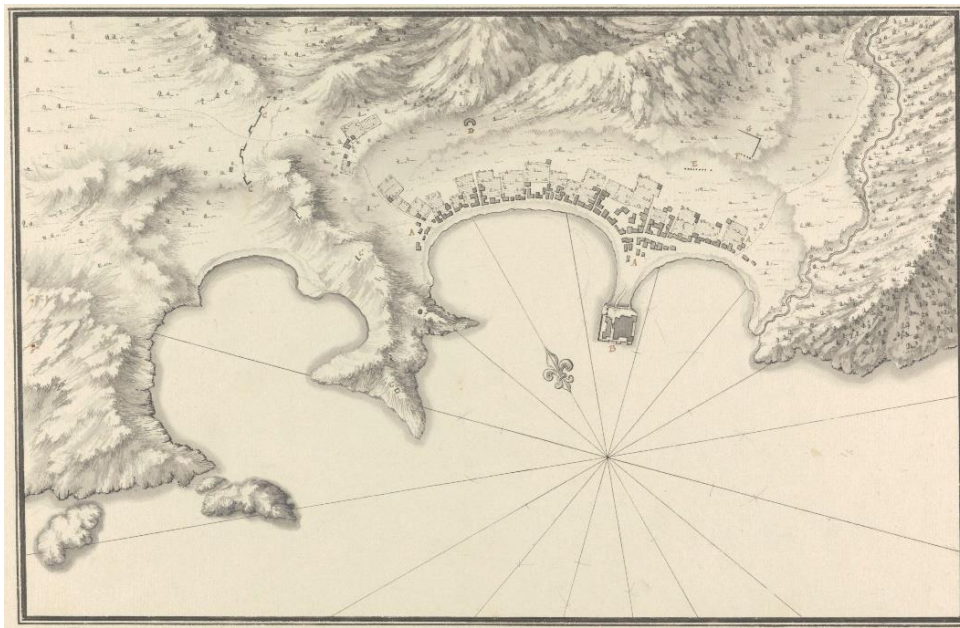


Figure 3 - Topographical Map of Halicarnassus at its Harbor. Source: Borra (1750).

Borra's Bodrum map presents a bird's eye view to the north-east over the harbor and its environs. The view seems to be segmented by Gumbet Bay, Bodrum Bay, mountains and hills. Towards the south-west of Gumbet Bay, two islands are visible. The big one to the south of small one should be Görecek Island. Farming plots with houses (marked on the map with letter A) attached to them surrounds Bodrum harbor. The Castle (B), parts of the walls (C), and Amphitheatre (D) are noticeable on the map together with other historical remains. Those remains marked with E should be "Doric Portico" with 30 columns belonging to Stoa. Compared with the other buildings, the castle is drawn in a detailed context in the map. The remains marked with F and G indicate a great platform and its southeastern extension, most probably occupied by the Temple of Mars. The particular details given in the map for ancient remains are in line with the search for exposition of Christianity in the Eastern Mediterranean and its link with antiquity.

Chronologically, the second map depicting Bodrum in the 18th century was prepared during the first archipelago expedition of the Russian Navy between 1769 and 1774 (Figure 4). The map made in 1772 presents a panoramic view of Bodrum that was taken from the frigate Tino (marked on the map with letter D) taking part in Russian-Turkish war of 1768-1774. According to description provided for the map, the city of Bodrum has an ancient fortification (A) with cannons and the building (B) used by a military battery. The map also shows the position of Turkish ships (C) in the harbor. Although at first glance the island to the west of Tino can be considered to be Görecek Island, the symbols on the map showing five windmills situated on top of the hill between Bodrum and Gumbet bays reveal that it is actually a small peninsula at the southern end of a relatively bigger peninsula separating these bays. In spite of this mistake that seems to stem from the illusion created by topography of the region in the map, it helps us trace the origin of the well-known historical windmills of Bodrum to 1772. In the Russian map, the island to the south of Tino should be Kara Island.

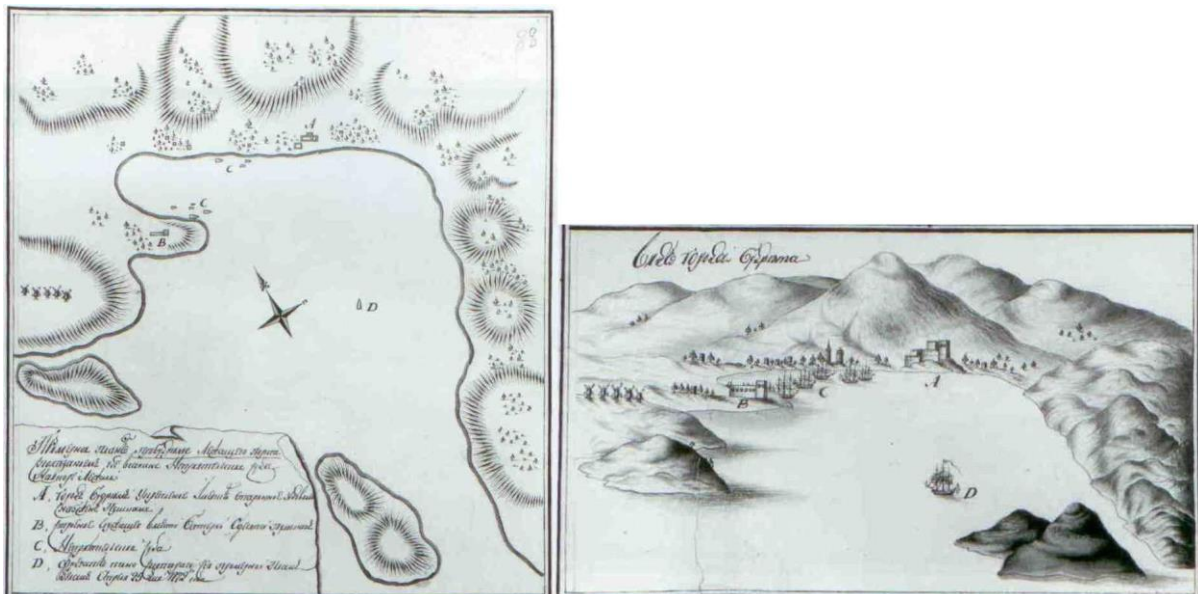


Figure 4 - Chart and a panoramic view of Bodrum. Source: Modified from https://commons.wikimedia.org/wiki/File:Bodrum_1772.jpg

The third map depicting Bodrum in the 18th century and published in 1782 focuses on the harbor and town (Figure 5). The map titled “Plan du port et de la ville de Boudroum” (Map of the port and town of Bodrum) was published in Marie-Gabriel-Florent-Auguste Comte de Choiseul-Gouffier’s (1782) well-known *Voyage Pittoresque de la Grèce* whose illustrations were produced by his team of skilled artists and draftsmen who were in charge of taking records of the location and topographical images of the places they visited during his journey to the Ottoman Empire to find the sites of ancient history and literature (Pedley, 2012).

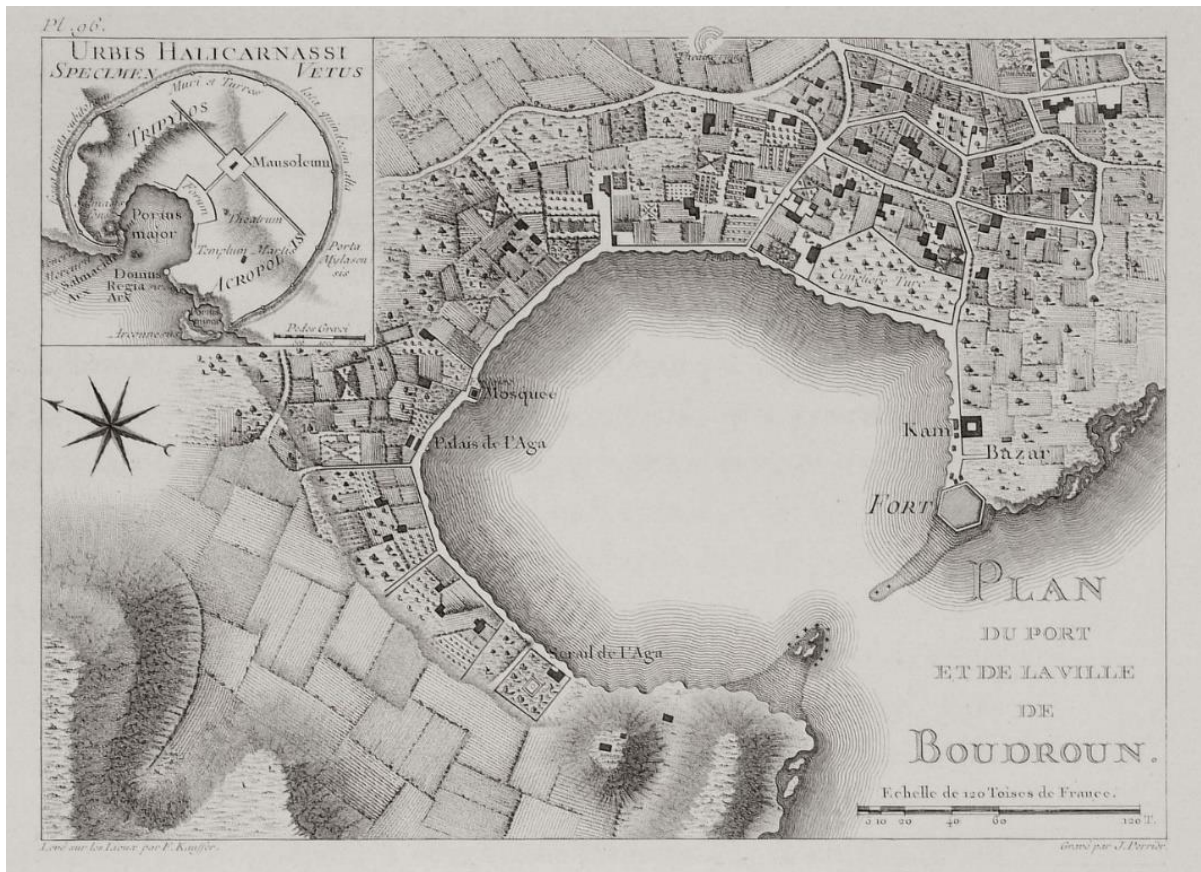


Figure 5 - Map of the harbor and town of Bodrum. Source:

https://commons.wikimedia.org/wiki/File:Plan_du_port_et_de_la_ville_de_Boudroum_-_Choiseul-gouffier_Gabriel_Florent_Auguste_De_-_1782.jpg.

Auguste de Choiseul-Gouffier was a monarchist elite who served as French ambassador to the Ottoman Empire from 1784 until the fall of the French monarchy. After arriving at the Anatolian shores along the Gulf of Macri (Fethiye) in 1776, Choiseul-Gouffier proceeded inland for exploration of the Ottoman territories. As Brummett (2020) remarks, in the *Voyage Pittoresque*, Choiseul-Gouffier (1782) created an image of Ottoman local space for his readers with the engravings serving to illustrate Ottoman space and style to his audience. Choiseul-Gouffier had a passion for antiquity that can be contextualized within the late 17th century’s historiographical movement based on not only literature but also the relics and topographical descriptions for reproduction of imageries of the landscape and the material objects of the past (Pedley, 2012).

A plan of the ancient Halicarnassus is placed on left corner of Choiseul-Gouffier's Bodrum map as a cartouche, which reveals the search of Choiseul-Gouffier for the remnants of the ancient city in the picturesque remains found on the surface. The detailed version of this cartouche can be found as a separate map in Arrian & Chaussard (1802) to depict the ancient Halicarnassus for the contextualization of circumstances of Alexandre the Great's siege of the city (Figure 6).

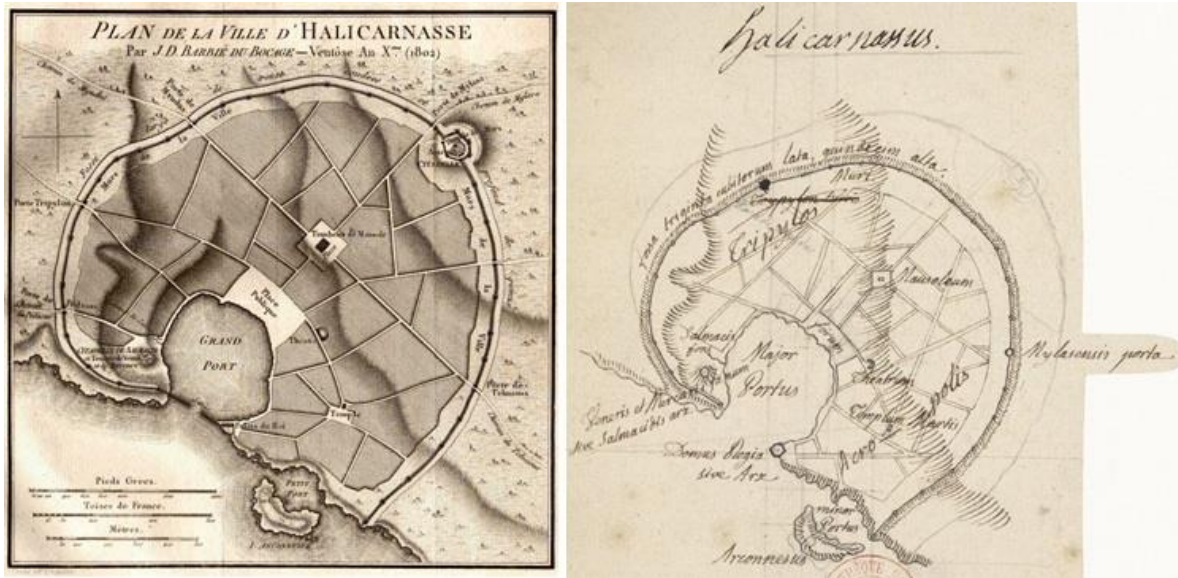


Figure 6 - Map of the city of Halicarnassus (left) and original sketch (right) by Barbié Du Bocage. Source: for published version (left) Arrian & Chaussard (1802), and for sketch (right): modified from <https://gallica.bnf.fr/ark:/12148/btv1b84701203/f20.item>.

It is drawn by Jean Denis Barbié du Bocage who also revised the maps accompanying Choiseul-Gouffier's the *Voyage Pittoresque* in 1782. Barbié du Bocage was a French cartographer and cosmographer active in Paris during the late 18th and early 19th centuries. Although after Choiseul-Gouffier's death, Barbié Du Bocage sustained the publication of the *Voyage Pittoresque* (Lowe, 1936, p. 206), he also prepared the maps and plans to accompany some other books of the time. Plan de la ville d'Halicarnasse seems to be actually product of such a cooperation with Chaussard.

In Choiseul-Gouffier's Bodrum map, Palace of Agha, the Fort, bazaar area and central mosque of Bodrum are marked together with the buildings and plots of land and fields (Figure 5). However, parallel to the map of Borra, except for location of these important buildings and places, the road network and buildings in the town can be considered as picturesque elements. The bazaar area is marked next to the castle. To the north of the Fort in Choiseul-Gouffier's map, there is a Turkish Cemetery which is not marked in other maps. In the map, there is a symbolic annotation for the Amphitheatre whose location seems to be wrong.

The mosque marked in the map is Tepecik Mosque which was built in 1740 by Haji Hasan Agha, the steward of shipbuilder Kızıllıhisarlı Mustafa Pasha. This mosque is an example of the Yalı Type Mosques having rare examples in Ottoman architecture. The mosque was built on an island formed by the sea, and its connection with the land was provided by a bridge, which was due to the fact that the founder of the mosque was a sailor and it was aimed for sailors to perform their prayers

immediately before coming ashore (Maden & Eğılmez, 2018). For this reason, Tepecik Mosque had a pier so that ships could dock.

A close examination of the ancient Halicarnassus map attached to Choiseul-Gouffier's Bodrum map provides us with important inputs for the exploration of the hidden agendas. Barbié Du Bocage's ancient Halicarnassus map published in Arrian & Chaussard (1802) particularly differs from both the original sketch and the one attached to Choiseul-Gouffier's Bodrum map in terms of location of a specific ancient gate, namely Mylasa gate (Figure 5 and 6). The location of this gate in Arrian & Chaussard (1802) is wrong. Another issue is related to the location of the castle. In the ancient texts, the fort is described on an island, called Zephyria or Zephyrion (Newton & Pullan, 1862; Bean & Cook, 1955). Although it was connected to the land by an isthmus, it seems to have been artificially sundered (Bean & Cook, 1955). There is further mention of a minor secret port hide by a wall circuit terminated in the castle. Based on these considerations, it seems that Barbié Du Bocage was loyal to the description of the ancient texts instead of the scientific considerations. Indeed, according to Vitruvius' (Vitruvius & Morgan, 1914) description of the panorama, the secret harbor should have reclined approximately to the south or even south-east of the palace, which is completely in line with the spatial configuration of secret harbor and the palace in Barbié Du Bocage's map.

Overall, these plans and charts prepared by Borra, Russian Navy, Choiseul-Gouffier and Barbié Du Bocage are different from other geometrically surveyed city plans of the time. Particularly, the ones produced by Borra and Choiseul-Gouffier's team for small towns located along the Aegean coasts were intended to serve as illustrations providing readers with an orientation for the texts of antiquarian research. Thus, as emphasized by Pedley (2012), these plans can only be properly considered within the framework of antiquarian mapping of the 18th century during which the European scholars were particularly interested in everything related to the ancient Greek civilization. The extent of this interest was such that, as Papachristou and Pazarli (2011) remark, on the base of descriptions of Pausanias in his *Voyage in Greece*, a plan showing Olympia sanctuary was created by Barbié Du Bocage.

In this respect, what is further problematic is the misplacement of some artifacts in these maps. For example, Papachristou and Pazarli (2011) argue that Barbié Du Bocage's Olympia plan published by Barthélemy in *Voyage du jeune Anacharsis* is wrong owing to the fact that the stadium positioned to the west of Mount Kronos instead of east. A similar observation can also be made for the maps prepared for Bodrum by these early surveyors. For example, the Amphitheater is placed in both Choiseul-Gouffier and Barbié Du Bocage's maps to the south of Mausoleum in a location close to the port. On the contrary, the actual location of Amphitheater is to the north-west of Mausoleum in a location farther from the port compared with the Mausoleum.

It is known that due to his post tying him to Paris Barbié Du Bocage produced his maps on the base of the site work conducted by the civil engineer Foucherot during Choiseul-Gouffier's expedition (Della Dora, 2007). Little is known about Foucherot who is identified by some as a civil engineer and by some others as an architect (Lowe, 1936). This may be the reason for these kinds of misplacements (such as Amphitheater). It seems that Barbié du Bocage didn't visit the area. He used what is produced by Choiseul-Gouffier's team on the site.

Two other maps depicting Bodrum at the beginning for 19th century can be mentioned. The first one belonging to 1804 is actually a portolan chart showing Bodrum port and its environs (Figure 7). It was available in the collection of maps of the ports and harbors of the Mediterranean originally compiled by Joseph Roux and revised by Jean Joseph Allezard, a former captain of the French Navy (Johnson, 2004), in 1804 and 1817 with the addition of plans generally relating to the Eastern Mediterranean. The first edition of these maps depicting harbors, gulfs and coves, and the shallows and deep points of the sea in detailed drawings was published by Joseph Roux, the French royal hydrographer, in 1764 (Johnson 2004; Faričić & Mirošević, 2017).

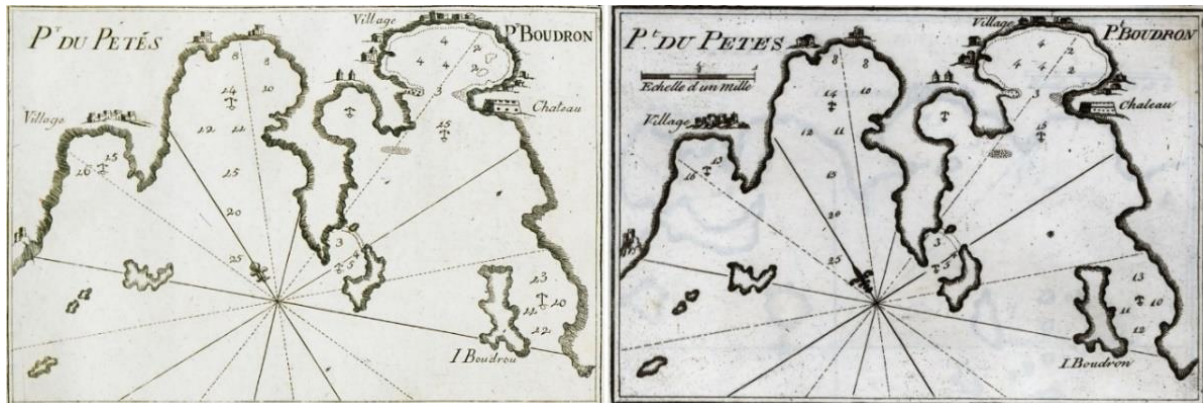


Figure 7 - Port du Petes (Bitez), Port Boudron from 1804 (left) and 1817 (right) editions by Allezard.

These maps can be best described as examples of post-portolans which were followed by a mapping tradition based on modern cartographic techniques. Apart from the information required to enter the ports, these maps often include details of city buildings, mills, bird's eye view of castles, etc. In Allezard's Bodrum map, a chateau is visible in the place of the Castle. Most probably two towers-like building symbols shows one of the towers on Salmakis (Kaplan Kalessi) part of Bodrum. The symbols for buildings surrounding the coastal area of the port is in line with the description of the town in other maps.

The second map is available in Beaufort (1817) (Figure 8). This map is based on the sketch produced by Beaufort for Bodrum harbor in 1811. In the British Navy, Beaufort was mainly responsible for the preparation of the accurate maritime charts of the coastline, harbors, reefs, shoals and islands, and also investigation of the historical sites and noteworthy features of the coastline such as climate, inhabitants, settlements, and landscape (Friendly, 1977; Duggan, 2017). Under Beaufort's direction, the number of ships involved in navigational and hydrographic research had increased to 17 in 1855 (Friendly, 1977). With activities of Captain Beaufort and subsequently his colleagues including Captains Graves in the 1830's and 1840's, British hydrographers produced the maps of the shores of Mediterranean (Duggan, 2017).

In Beaufort's map, important landmarks such as mosques, burying ground, castle and palace (Seray) are marked together with the location of Bazaar. Interestingly, Beaufort's map also informs us about the existence of a shipyard. Although Beaufort also mentions about the remains of a theatre, he didn't show it in his map given in Beaufort (1817). Nevertheless, in his map titled as "Chart of the Promontory of Boodroom with the Karabaghla Islands and the North Point of the Island of

Kos”, the location of the ancient theatre is shown. In this map, there is also a “Sketch of the Harbour of Boodroom” which provides us with further details about the ancient city parallel to his map in Beaufort (1817, p. 84). In the respective sketch there is also information in relation to the latitude and longitude for a tower (SE Tower) in the castle: $37^{\circ} 1' 21''$ North $27^{\circ} 25' 18''$ East.

In his book, Beaufort (1817) provides us with a description of the harbor and its two ancient stone piers which were then demolished. He further mentions about the fact that the remains of walls of the ancient city and columns, damaged sculpture, and “broken inscriptions are scattered in different parts of the bazaar and streets” together with the other ruins in the vicinity of the town (Beaufort, 1817, p. 90).

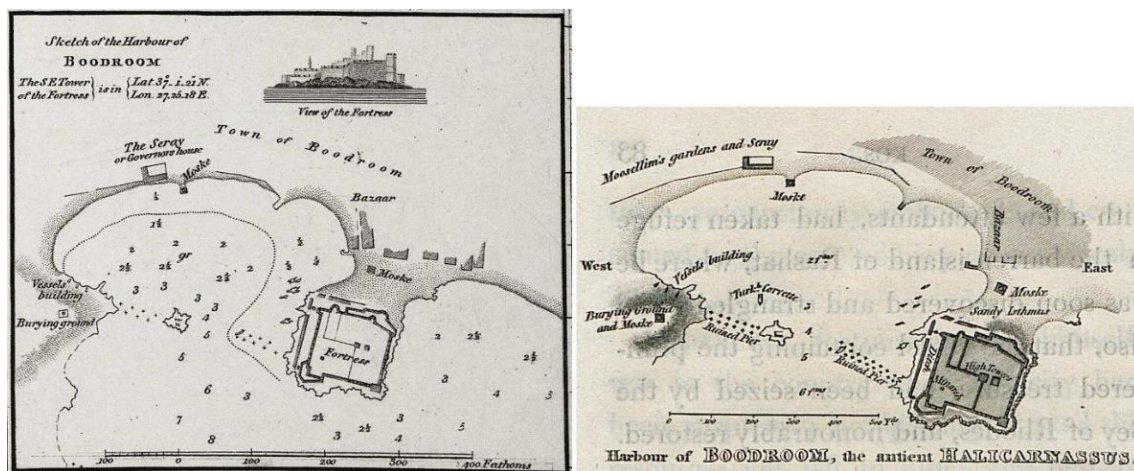


Figure 8 - Harbor of Bodrum, the ancient Halicarnassus in 1811. Source: Sketch (left) from https://commons.wikimedia.org/wiki/File:Chart_of_the_Promontory_of_Boodroom_with_the_Karabagh_a_Islands_and_the_North_Point_of_the_Island_of_Kos_-_by_Francis_Beaufort_F.R.

Three mosques and one minaret are marked in Beaufort’s map. The first mosque close to Seray is Tepecik Mosque. The one to the north of the castle is Kızılhisarlı Mustafa Pasha Mosque. The mosque was built in 1723 by Kızılhisarlı Mustafa Pasha who came to Bodrum with his sons between 1688 and 1718 to build a shipyard (Maden & Eğilmez, 2018). After the construction of the shipyard, building activities increased intensively in Bodrum. After his death, Kızılhisarlı Mustafa Pasha was buried with his son, Cafer Pasha, who was a captain (*kaptan-ı derya*) like himself, in the tomb located in the Tersane District of Gemibası Neighborhood. Burying ground marked with the third mosque in Beaufort’s map actually shows the location of this tomb. The minaret marked in Beaufort’s map inside the castle is the evidence of another mosque in Bodrum harbor. It was actually Bodrum’s oldest mosque known as “Kale Mosque” which was converted by Suleyman the Magnificent from a church in 1523 (Evliya Çelebi, [1671-1672] 1935).

The last map analyzed was prepared by Thomas Spratt in 1847 for the United Kingdom Hydrographic Office (UKHO) (Figure 9). The map has the latitude and longitude information for Kalessi Point ($37^{\circ} 1' 52''$ North, $27^{\circ} 27' 35''$ East) that interestingly corresponds to one of the towers known as English Tower in Bodrum Castle. In the map, there is a note in relation to “Magnetic variation in 1901, decreasing 5’ annually”. Thus, some information in Spratt’s map may

have been added or modified after the original survey. When examined, it becomes evident that this seems to be valid for the lighthouse located at the entrance of Bodrum harbor. It is known that the Lighthouse was constructed in the second half of 19th century (Nemlioğlu Koca, 2018).

Thomas Spratt served in the flotilla of ships developed under Beaufort's direction for navigational and hydrographic research (Friendly, 1977; Maempel, 1986). He was a man with a strong interest in the geology and archaeology of the Eastern Mediterranean for the identification of ancient cities (Maempel, 1986; Della Dora, 2007). In his map, Bodrum castle is titled as the Castle of St. Peter recalling its connection with the Christianity in the Eastern Mediterranean, which confirms his interest in antiquity. Thanks to his interest in archeology, the site of Mausoleum is also depicted in its correct location.

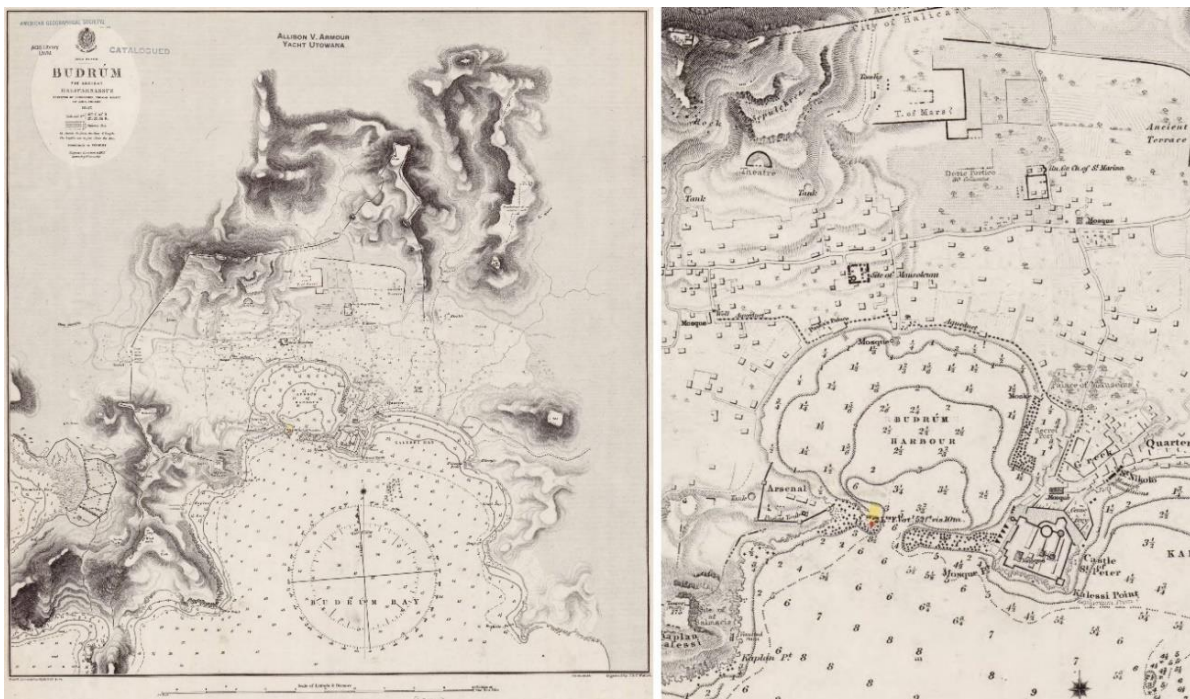


Figure 9 - Bodrum – the Ancient Halicarnassus (focus on harbor - right).
Source: modified from UKHO (1847).

Three additional mosques are marked on Spratt's map. The first one located on the map to the north of Bazaar on the coast cannot be followed today. The second one located to the east of Mausoleum is Türkkuyusu Mosque built in 1767. There is no information about the builder of this mosque (Maden & Eğilmez, 2018). To the north of this mosque, the Ruins of Greek Church of St. Marina is marked on Spratt's map. The third additional mosque marked on the map is either Tulumba Masjid or most probably Eski Çeşme Masjid built in 1746 by a person named Haji Ibrahim for whom there is no information (Maden & Eğilmez, 2018). Although the mosque in the Eski Çeşme Neighborhood is also referred to as Tulumba Mosque, it is known that Tulumba Masjid was built by Tabak Haji Ali in the same neighborhood near the shipyard in 1780. As a matter of fact, when Spratt visited Bodrum, the settlement mentioned as a town in Ottoman official documents was consisting of nine districts (Umurca, Çarsi, Kelerlik, Greek, Kiliseli, Tepecik, Yenikoy, Turk-Kuyusu and Eski Çeşme Neighborhood) (Erdoğan & Özgiray, 2017).

The ruins of a Greek Church to the west of the site of Salmakis (Kaplan Kalessi) and St. Nikolo Church to the east of Kızılhisarlı Mustafa Mosque are also marked on Spratt's map which describes the part of Bodrum settlement around St. Nikolo Church as Greek Quarter. Inside the harbor, a line of aqueduct can be followed from Kızılhisarlı Mustafa Pasha Mosque in the east to Eski Çeşme Mosque in the west to convey water. St. Georgio point can be seen in the map together with İkinci and Meshrik Points to the east and Deguir Point to the west. Windmills are particularly visible together with these points in Spratt's map.

It is important to remark that neither the ruins of the churches nor the location of Mausoleum are depicted in Thomas Graves' map, which confirms Spratt's strong interest in the archaeology and history of the eastern Mediterranean. Spratt's map can also be easily distinguished from the preceding maps of Bodrum by its depiction of ancient remains in a more scientific manner. Instead of depiction of the existence of apparently missing items and being loyal to the ancient texts, Spratt relied on the actual evidences observed in the field for spatialization of the artifacts mentioned in the ancient texts.

It is observed that Spratt's map was actively used and enriched in the subsequent years by the scholars focusing on the area. For example, Newton and Pullan (1862) marked the fields and gardens of remarkable residents of Bodrum on the map produced by Spratt in their book about the history of discoveries at Halicarnassus, Cnidus & Branchidæ. Bean and Cook (1955) also uses Spratt's map in their study depicting ancient remains in Bodrum peninsula. Overall, the depiction of ancient city walls, ruins of both churches and ancient landmarks in Spratt's map reveals the effort to expose the presence of Christianity in the Eastern Mediterranean and its link with antiquity. Nevertheless, the map also increasingly depicts the components symbolizing Islamic values. This may be attributed to the strategic military concerns requiring objective knowledge about the social and cultural characteristics of the geography subject to mapping.

For the fixation of the spatial elements discussed in this section, a map (Figure 10) showing the location of the elements concerned is produced on the base of Spratt's map. For this purpose, 19 couples of GCPs are identified on the historical map and reference map already georeferenced in WGS 84 / UTM zone 35N. Tanks, Windmills, corner of old buildings such the Castle, Mosques and ruins were used as GCPs. After designation of GCPs, Spratt's map is georeferenced by using the first order polynomial transformation (POL1). In QGIS (2022), the list of residuals for individual GCPs can also be exported as a table that can be further processed to calculate Root Mean Square Error (RMSE) values for the historic map georeferenced in this study. RMSE provides us with a quality assessment in terms of map's mathematical correctness by reviewing the positional accuracy of the individual transformed points (Podobnikar, 2010; Panecki, 2015). Accordingly, RMSE value for Spratt's map is calculated as 20.631 meters. When the scale and time of the map is considered this error seem to fall within the acceptable limits. The existence each of spatial elements in various historical maps analyzed in this paper can also be checked in Table 1. The next section will further address the silence of the maps for those elements in connection with the method of analysis developed in the paper by combining the suggestions of Harley (1989a; 1989b) and Ethington (2007).

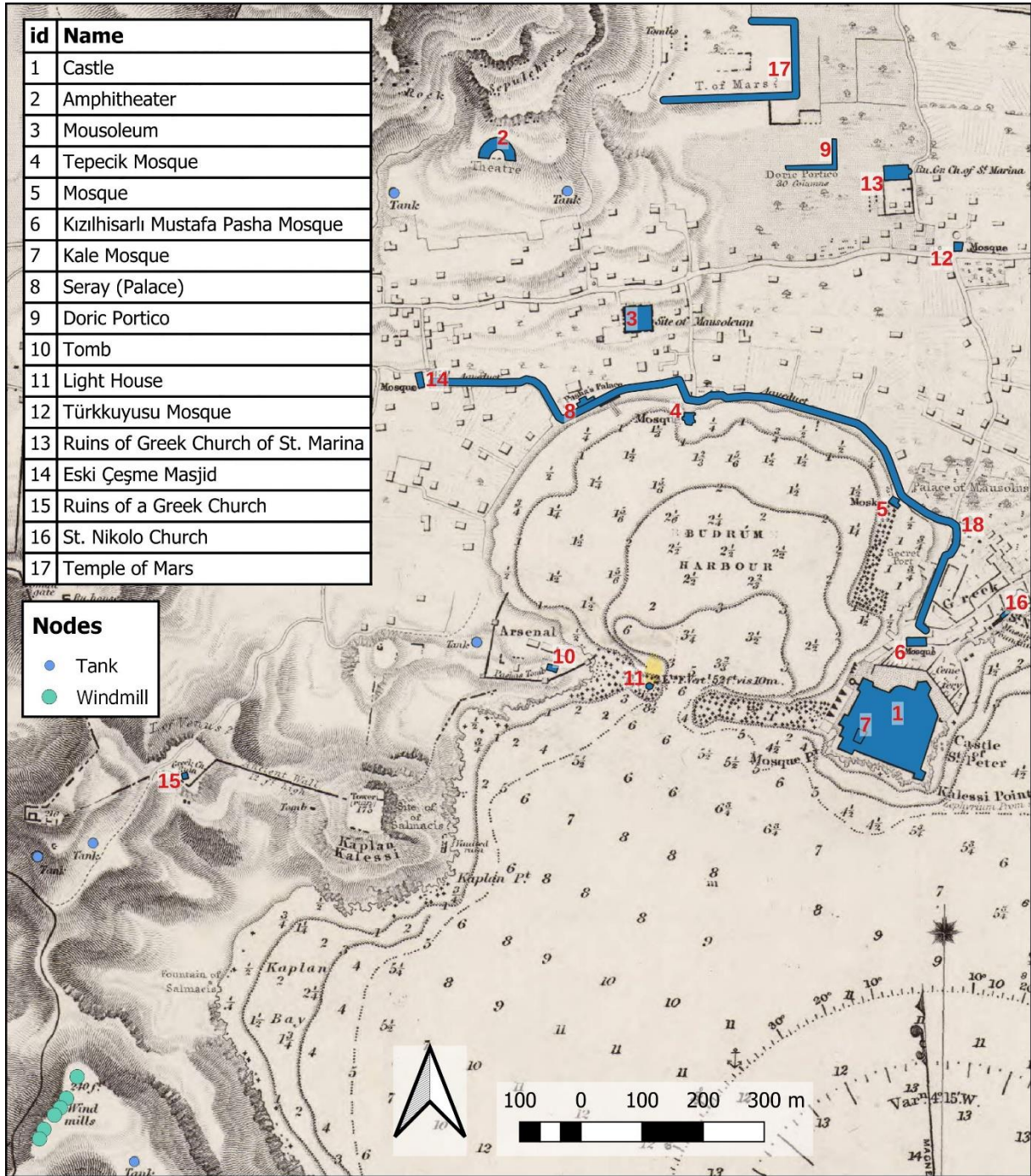


Figure 10 - Some of the spatial elements traced over time and maps used in the study. Source: Authors' (2022) elaborations on the map modified from UKHO (1847).

Table 1 - Comparison of the existence of some of the spatial elements in the maps used in the Study.

id	Name	Historical Maps Depicting Bodrum								
		Buondelmonti and Sonetti	Pîrî Reis	Borra	Russian Navy	Choiseul-Gouffier	Du Bocage	Allezard	Beaufort	Spratt
1	Castle	X	X	X	X	X	X	X	X	X
2	Amphitheater			X		X				X
3	Mousoleum						X			X
4	Tepecik Mosque				X?	X			X	X
5	Mosque									X
6	Musafa Pacha Mosque								X	X
7	Kale Mosque								X	X
8	Palace (Seray)					X			X	X
9	Doric Portico			X						X
10	Tomb								X	X
11	Light House									X
12	Türkkuyusu Mosque									X
13	Ruins of St.Marina									X
14	Eski Çeşme Masjid									X
15	Ruins of a Church									X
16	St. Nikolo Church									X
17	Temple of Mars			X						X

AN ELABORATION OF THE VARIOUS PERSPECTIVES

The attempt to re-read history of Bodrum in maps reveals the importance of also re-reading maps in history in terms of exposition of the hidden agendas encoded in the maps and the evolution of the spatial configuration of the landmarks encapsulated in the maps. The chronological order and the dominant characteristics of the historical cartographical materials used in this study is summarized in Figure 11 together with their short descriptions. Overall, four mapping traditions can be identified for the period analyzed with a specific focus on Bodrum; (1) charts and maps produced between the 15th and 17th centuries for various types of *isolarios* and similar books (such as the ones in Buondelmonti, Sonetti and Pîrî Reis' books); (2) the 18th century mappings of antiquity (such as Borra and Choiseul-Gouffier's maps) characterized by picturesque representations; (3) post-portolans (such as Allezard's map) mainly serving for navigational purposes before the military surveys; and (4) the 19th century military surveys (such as Spratt's map) characterized by modern cartographic techniques.

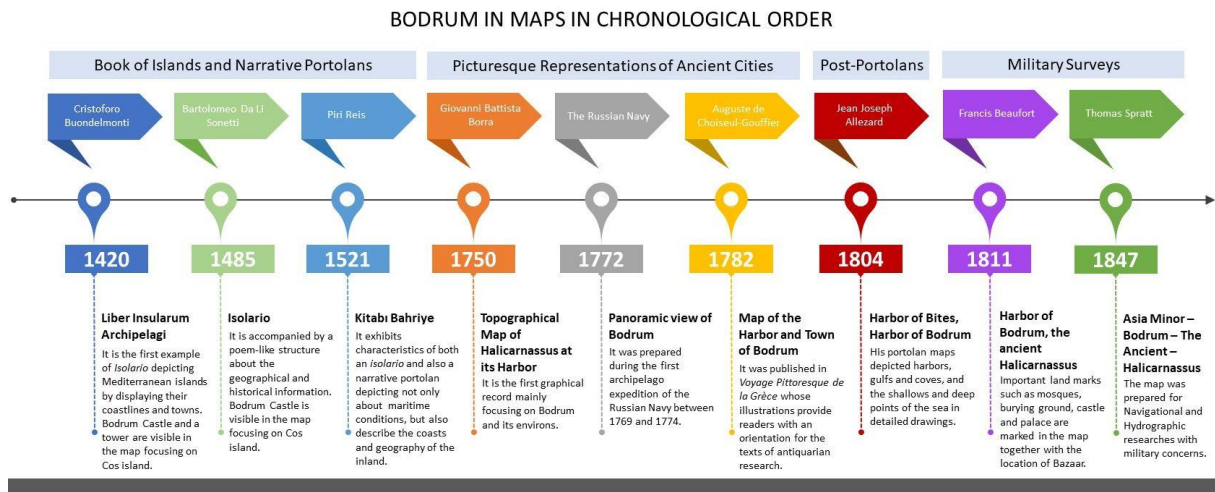


Figure 11 - Chronological order and characteristics of the historical cartographical materials for Bodrum (Produced by the authors).

The Menteşe Principality, which dominated the Southern Aegean before the era of “Book of Islands and Narrative Portolans”, provided an important economic activity between the east and the west by developing maritime trade with the Genoese and Venetians, who held the Mediterranean trade, due to its strategic position in Anatolia and the Mediterranean (Metin, 2013). In addition, due to the fact that the Menteşe Principality was not strong enough to threaten the Venetians as a navy power, it made the development of commercial relations beneficial for both parties by keeping the Venetians unresponsive to the Turkish advance (Laiou, 2003). However; during the era of “Book of Islands and Narrative Portolans”, southern Aegean region covering Bodrum witnessed the increasing Ottoman Rule in both the inland and sea thanks to the institutionalization of the Ottoman Navy during the same era, which resulted in the complete restructuring of the administrative, political and economic life in the region. Although the ongoing trade with the Venetians in the South Aegean under Ottoman rule was interrupted, new ships were built in the shipyards on the shores of Bodrum in order to strengthen the Ottoman Navy, which would pave the way for the Ottomans to become a military power in the Mediterranean.

It is actually for this interruption that “Book of Islands” came into existence. As argued in the previous section, an obvious political strategy for the legitimization of presence of the Latin over the territories of the Eastern Mediterranean can be observed in *the Liber Insularum Archipelagi*. In this paper, the second fold of the lens is developed to further explore the inner dynamics of construction of this strategy. Along the second fold of the lens used in this study, each map or chart can be considered as a layer whose *topoi* involves not only the physical entities forming a spatial configuration in terms of accumulation of events and experiences, but also the ideas and actions giving direction to the representation of these configurations. Actually, the trajectory of each *topoi* between different layers provides us with the material evidence of historical categories, which can, in turn, be examined for the possible implications for continuity, interruption and evolution of various styles of narratives and world views imperative in the mapping practice at the very beginning along the first fold of the lens that looks for conceptualizations behind various representations.

Continuity of trajectories of both representations of physical entities and conceptualizations of the representations can easily be first observed in the tradition of *isolario* as exemplified in the works of Buondelmonti and Sonetti. This mapping tradition with small interruptions in the method of narration evolves into a hybrid model in the case of Pîrî Reis' *Kitâb-ı Babriye* imprinted with the characteristics of both *isolario* and portolans. Although the early charts and maps prepared by Buondelmonti, Sonetti, and Pîrî Reis seem to serve for navigational purposes, as elaborated in the paper, a hidden agenda can be easily identified behind their creation in terms of declaration of a particular world view with reference to visual enjoyment of the ancient narratives or the imperial power. In this respect, the particular silences and inconsistencies embedded in the maps provides us with some further clues about the social norms and values encoded in the maps. Particularly, the discontinuity of trajectories can be considered as a special case of silences and inconsistencies because ignorance occupies the initial phase of any silence.

Indeed, the silence of Borra's map about the mosques in Bodrum deserves attention. It is a known fact that in 1750 when Wood's team visited the town, there were at least four mosques in Bodrum. Although this ignorance is relatively interrupted with the depiction of a mosque in Choiseul-Gouffier's map, it seems that this is an acceptance of the reality of the time owing to the fact that the basic intention for this particular map can also be easily read via the cartouche depicting the ancient Halicarnassus and placed on left upper corner of the map. One can easily sense the tension and inconsistency between the images of the ancient city given in the cartouche and the actual one depicted in the map. For example, the secret port marked in the cartouche suddenly disappears in the map of the town. By revealing the existence of apparently missing items, as Della Dora (2007) argues, Choiseul-Gouffier meant to do justice to ancient narrators one of whom is Herodotus born in Halicarnassus. Based on this argument, Della Dora (2007) further argues that Choiseul-Gouffier's work was not only antiquarian and ideological but also metaphysical in character.

Nevertheless, some inconsistencies between different maps depicting Bodrum seem to have stemmed from technical issues not conscious interventions that can be considered as being part of deliberate strategies. For example, the inconsistencies between different Bodrum maps in relation to the location of ancient Mylasa Gate and the Amphitheater are illustrative for the technical problems experienced in the translation of an observation to the map or in the finalization of a sketch as a map.

While, probably owing to its military intention, there is, again, no written depiction for Islamic symbols in Bodrum map prepared by the cartographers in the Russian Navy during their first archipelago expedition; in the panoramic view attached to the bottom of the map, a minaret like structure can actually be identified (Tepecik Mosque in Table 1).

For a fuller depiction of those landmarks symbolizing overwhelming existence of Islamic values in Bodrum maps, one should wait the maps prepared by the members of UKHO in line with the modern cartographic techniques, which again seems to stem from a necessity of the reality of the time because of the fact that a more detailed depiction of the ancient Halicarnassus prevails the other elements in these early modern maps. In these mapping practices, while a trajectory of reality is extended by inclusion of some previously neglected *topoi* such as mosques probably because of military strategic concerns, a trajectory of retrospectivity evolves into a trajectory of evidences as

in the case of depiction of ancient Halicarnassus with reference to material evidence. Thus, although a comparison of the volumes authored by Beaufort (1817) preceding the maps of UKHO and Choiseul-Gouffier (1782) reveals, as Duggan (2017) remarks, rather different approaches for the use of both the textual narrative and the illustrations; sharing a common ancestral past their maps are characterized by a search for the presence of Christianity in the Eastern Mediterranean and its link with antiquity.

Of course, the silence observed in the early maps prepared by the European surveyors for some elements in the depiction of Bodrum can also be argued to be valid on the other side of rivalries between the Ottoman Empire and the Western Christian nations. On the Ottoman part, as remarked in the previous section, Pîrî Reis marks neither the castle nor the tower with a symbol in his maps showing Bodrum. With relative interruption in the trajectory concerned, the symbolic importance attached to them is weakened in the representation of Pîrî Reis, who exposes a different worldview in his map that can be characterized by the declaration of imperial claims together with the other maps in his book.

Instead of providing a perspective polarizing the various depictions of Bodrum in historical maps, a perspective uniting what is in hand can also be formulated. Interestingly, the help comes from Cevat Sakir Kabaagaçlı, a famous novel and story writer known as the Fisherman of Halicarnassus who lived in Bodrum. According to Özveren (2017), many parallels can be found between the views and thoughts of “Fisherman of Halicarnassus” and Fernand Braudel. Özveren (2017, p. 15) argues that “[b]y characterizing the Mediterranean as a continent in its own right, the Fisherman accomplished a revolution of almost equal significance to that of Braudel who relocated the Mediterranean from the subordinate status of a backdrop or stage to history to becoming its main” central character. The 16th century is particularly important for Braudel in his characterization of the Mediterranean world as a unit of analysis in terms of establishment of a certain balance of power between the rival poles of not only East and West, but also North and South. According to Braudel (1972), the Mediterranean world as “a meeting place of many peoples” functions as a “melting-pot of many histories” such that almost identical worlds with the same rhythm of life and without any need for adaptation in case of a movement from one world to the other can be found in the countries bordering the Mediterranean.

The unity of the Mediterranean as conceived by Braudel can also be observed in the Fisherman’s (Halikarnas Balıkçısı, 1991) conception of the Mediterranean as a continent in its own right. According to Özveren (2017), this can be considered as the Fisherman’s reaction to the claims about the Western civilization’s superiority having philhellenic foundations that he was taught at Oxford University while he was studying history there. Instead of counterpoising himself in the East as against the West, the Fisherman conceived the Mediterranean as distinct from the West (Özveren, 2017).

At a higher level, the general similarity between the charts and maps presented in *isolarios* and Pîrî Reis’ *Kitâb-ı Babriye* can actually be conceptualized on the basis of this melting pot characteristics of the Mediterranean that should be definitely considered as a unit of analysis. This seems to be an alternative and yet more convincing way of re-reading the history in maps via the historical evolution of mapping traditions in the Mediterranean. The continuity in the general style of

narration in the charts and maps of Buondelmonti, Sonetti, and Pîrî Reis can be considered as a special case of the continuity in the life styles of the Mediterranean people mentioned by both Braudel and Fisherman of Halicarnassus.

CONCLUDING REMARKS

In recent years, a number of researchers has reinforced the consideration of maps as tools of projection of world perspectives of the central powers by using Harley's (1989a; 1989b) methodology. In this context, it can be easily argued that without exception those European cartographers and surveyors having a common ancestral past tried to reflect past in the present by superimposing history on geography with an intention to master territory through a search for exposition of Christianity in the Eastern Mediterranean and its link with antiquity. Nevertheless, it is observed that over time the symbols revealing the prevalence of Islamic values were increasingly and inevitably depicted in the maps of which Bodrum is part thanks to the empirical observations made on the site to frame the truth instead of prioritizing the ancient narratives for the formulation of the truth.

Overall, maps depicting Bodrum help us trace the origin of not only basic spatial elements involved in the construction of a place, but also various and different representations of this place as a configurational framework of these elements. In this respect, based on the maps produced for Bodrum, although this study reaffirms Harley's (1989a; 1989b) argument about the fact that "cartographic facts are only facts within a specific cultural perspective" and maps are "a particular human way of looking at the world", it also put forward a new agenda and perspective via the elaboration of Braudel (1972) and the Fisherman of Halicarnassus' (1991) contributions for the contextualization of the historical cartographical materials by questioning the possibility of a unifying perspective instead of a polarizing one.

A unifying perspective is valuable as a connotation for the legitimization of intervention into the spatial processes at different scales. In this context, for geographical studies of the settlements, with particular reference to Bodrum Halicarnassus, this study exemplifies the provision of a complex understanding of what is manifested not only in the spatial configuration of entities in a given environment, but also in various depictions and representations of these configurations.

By shedding some light on the sociocultural and political context of Bodrum maps' creation, the study also reveals the importance of conceptualization of history as cartography, as suggested by Ethington (2007), in the provision of a non-prescriptive approach. The possibility of looking at the maps from various and different perspectives balances the analytical priorities assigned to the high- and low-level trajectories of *topoi*. While the traces of a low-level trajectory tend to reveal opposing world views, the trace of a high-level one may well support a shared destiny and world view that also seems to epitomize the history of civilization having roots in the Mediterranean.

Conflict of Interest Statement | Çıkar Çatışması Beyanı

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement | Finansman Beyanı

This work received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Statement | Etik Beyanı

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Copyright Statement for Intellectual and Artistic Works | Fikir ve Sanat Eserleri Hakkında Telif Hakkı Beyanı

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement | Yazar Katkı Beyanı

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/G/H

AUTHOR 2: C/E/G/H

REFERENCES

- Allezard, J.J., & Roux, J. (1817). Recueil de 163 des principaux plans des ports et rades de la Méditerranée, dont 40 ont été dernièrement publiés par Jean Joseph Allezard ancien Capitaine de Marine et plusieurs des autres corrigés. Livourne: Chez Joseph Gamba. Retrieved December 24, 2021, from <https://cartotecadigital.icgc.cat/digital/collection/atles/id/100/>
- Arrian & Chaussard, P.J-B. (1804). Histoire des expéditions d'Alexandre, rédigée sur les mémoires de Ptolémée et d'Aristobule ses lieutenants, par Flave Arrien, de Nicoméde, surnommé le nouveau Xénophon, consul et general romain, disciple d'Épictète. Paris: Charles Pougens.
- Balletti, C. (2006) Georeference in the analysis of the geometric content of early maps. e-Perimtron, 1(1), 32-39.
- Bean, G.E., & Cook, J.M. (1955). The Halicarnassus Peninsula. Annual of the British School at Athens, 50, 85-171.
- Beaufort, F.R.S. (1817). Karamania, or A Brief Description of the South Coast of Asia Minor and the Remains of Antiquity. London: R. Hunter. Retrieved December 24, 2021, from <https://digi.ub.uni-heidelberg.de/diglit/beaufort1817>
- Borra, G.B. (1750). Topographical Map of Halicarnassus at its Harbor. Retrieved December 24, 2021, from <https://collections.britishart.yale.edu/catalog/tms:27018>
- Borra, G.B. (1751). Wood 16. Another sketchbook in pencil and ink by Borra, covering Naples, Asia Minor and Egypt. Giovanni Battista Borra. (Unpublished) Retrieved December 24, 2021, from <https://sas-space.sas.ac.uk/9486/>
- Braudel, F. (1972). The Mediterranean and the Mediterranean world in the age of Philip II. London: Fontana.
- Brummett, P. (2020). Chapter 11 - Visualizing Ottoman Space: Choiseul-Gouffier and the Passage through Anatolia, 1776. In F. Castiglione, E. Menchinger, & V. Simsek (Eds), Ottoman War and Peace: Studies in Honor of Virginia H. Aksan (pp. 193-207). Leiden, The Netherlands: Brill.
- Buondelmonti, Cristoforo (1465-1475). Liber Insularum Arcipelagi. Retrieved December 24, 2021, from <https://gallica.bnf.fr/ark:/12148/btv1b55010482q>
- Cajthaml, J. (2011) Methods of georeferencing old maps on the example of Czech early maps. In Proceedings of the 25th International Cartographic Conference. Paris: International Cartographic Association.
- Choiseul-Gouffier, M.G.F.A. (1782). Voyage Pittoresque de la Grece: Tome premier. A Paris. Retrieved December 24, 2021, from <https://gallica.bnf.fr/ark:/12148/btv1b8449081d.texteImage#>
- Della Dora, V. (2007). Geo-strategy and the persistence of antiquity: surveying mythical hydrographies in the eastern Mediterranean, 1784–1869. Journal of Historical Geography, 33(3), 514-541.
- Duggan, T.M.P. (2017). Depicting and Charting the Southern Coastline of Anatolia – Record of

- the Later Toponyms of Phaselis: Palyopoli-Paleopolis, Tekiroba, Gironda-Phionda-Fironda-Fionda – The 1812 Report of Rapid Coastal Erosion – The (Doubtful?) Islands and Evidence leading Towards a Date for the Collapse of the Upper Courses of the Inner Harbour Arm at Ancient Phaselis, Antalya. *Phaselis*, 3, 1-48.
- Emiralioglu, P. (2016). *Geographical knowledge and imperial culture in the early modern Ottoman Empire*. London: Routledge.
- Erdoğan, M.A., & Özgüray A. (2017) *Bodrum Yarımadasının Tarihi Coğrafyası*. Bodrum: Halikarnas Matbaacılık.
- Ethington, P.J. (2007). Placing the past: ‘Groundwork’ for a spatial theory of history. *Rethinking History*, 11(4), 465-493.
- Evliya Çelebi (1935). *Evliya Çelebi Seyahatnâmesi, Anadolu, Suriye, Hicaz (1671-1672) - Dokuzuncu Cilt*. Istanbul: Devlet Matbaası.
- Faričić, J., & Mirošević, L. (2017). Carta di cabotaggio del Mare Adriatico (1822–1824): A Turning-Point in the Development of Adriatic Maritime Cartography. *Imago Mundi*, 69(1), 99-111.
- Friendly, A. (1977). *Beaufort of the Admiralty: The Life of Sir Francis Beaufort 1774–1857*. London: Hutchinson and Company.
- Gür, B. (2012). Minos, Miken ve Hititler Ekseninde Batı Anadolu’daki Muhtemel Sömürgecilik Faaliyetleri, *The Journal of Academic Social Science Studies*, 5 (6), 233-249.
- Halikarnas Balıkcısı (1991). *Altıncı Kita Akdeniz*. Sadan Gokovali (Ed.), Ankara: Bilgi Yayınevi.
- Harley, J.B. (1989a). Historical geography and the cartographic illusion. *Journal of Historical Geography*, 15(1), 80-91.
- Harley, J.B. (1989b). Deconstructing the Map. *Cartographica*, 26(2), 1-20.
- Herrault, P.A., Sheeren, D., Fauvel, M., Monteil, C., & Paegelow, M. (2013). A comparative study of geometric transformation models for the historical ‘Map of France’ registration. *Geographia Technica*, 1, 34-46.
- Hutton, C.A. (1927). The Travels of ‘Palmyra’ Wood in 1750-51. *The Journal of Hellenic Studies*, 47(1), 102-128.
- Johnson, B. (2004). The modest life and times of Joseph Roux: A hydrographer of 18th century Marseilles. *IMCoS Journal*, (96), 27–37.
- Laiou, A. (2003). Marino Sanudo Torsello, Bizans ve Türkler: 1332- 1334 Türklere Karşı İttifakın Perde Arkası, Çev. Murat Keçiş, *Tarih Araştırmaları Dergisi*, XXII/34, 183-205.
- Lowe, C.G. (1936). Fauvel's first trip through Greece. *Hesperia: The Journal of the American School of Classical Studies at Athens*, 5(2), 206-224.
- Maden, F., & Eğilmez, M. (2018). Osmanlı Donemi Bodrum Cami ve Mescitleri. *History Studies*, 10(3), 155-178.
- Maempel, G.Z. (1986). TAB Spratt (1811–88) and his contribution to maltese geology. *Melita*

- Historica, 9(3), 271-308.
- Mcnicoll, A. W., Milner, N.P. (1997). Hellenistic Fortifications from the Aegean to The Euphrates, Clarendon Press, Oxford.
- Metin, T. (2014) Ortaçağ Akdenizinde Menteşe Beyliğinin İktisadi Faaliyetleri ve At Ticareti, Türkiye Sosyal Araştırmalar Dergisi, 173(173), 255-272.
- Mighetto, P. (1995). Viaggiatori in oriente 1749-1857: studi dell'architettura antica deli Asia Minore, attraverso le relazioni dei viaggiatori europei nell Impero Ottomano, rel. Donatella Ronchetta, Politecnico di Torino, Facoltà di Architettura II (pp. 306-309) Retrieved from <https://areeweb.polito.it/ricerca/hierapolis/old/hierapolis/viaggiatori/DEFAULT.HTM>
- Nemlioğlu Koca, Y. (2018). Denizlerimizi Aydınlatanlar: Türkiye'de Fenerlerin Kuruluşu ve Gelisimi. Journal of ETA Maritime Science, 6(2), 103-117.
- Nemlioğlu Koca, Y. (2020). Reading Geography: A Systematic Evaluation on Kitâb-ı Bahriye (Book of Navigation) Copies. International Journal of Geography and Geography Education, (42), 504-526.
- Newton, C.T., & Pullan, R.P. (1862). A History of Discoveries at Halicarnassus, Cnidus & Branchidæ. London: Day & Son.
- Özveren, E. (2017). The Fisherman of Halicarnassus and Fernand Braudel: Less than a Full Mediterranean Crossing. Meltem Izmir Akdeniz Akademisi Dergisi. (1), 9-22.
- Panecki, T. (2015). The evaluation of archival maps in geohistorical research. Miscellanea Geographica, 19(4), 72-77.
- Papachristou, M., & Pazarli, M. (2011). An interactive secondary education history class project using cartographic heritage interfaces: The Ancient Olympia landscape key-study. e-Perimetron, 6(3), 172-186.
- Pedley, M. (2012). Enlightenment Cartography at the Sublime Porte: François Kauffer and the Survey of Constantinople. Osmanli Arastirmalari, (39), 28-53.
- Perreault, A. (2019). Le Liber Insularum Archipelagi: cartographier l'insularité comme outil de légitimation territoriale. Memini. Travaux et documents, (25), 1-19.
- Pîrî Reis (1521). Kitâb-ı Bahriye. Retrieved December 24, 2021, from <https://gallica.bnf.fr/ark:/12148/btv1b60004373.r>
- Pîrî Reis (1526). Kitâb-ı Bahriye. Retrieved December 24, 2021, from <https://gallica.bnf.fr/ark:/12148/btv1b6000438h>; and <https://archive.org/details/pirireismapkitabibahriyeorbookoftheseapirireis/page/n61/mode/2up>
- Podobnikar, T. & Šinkovec, I. (2004) Ljubljana-mutual analyses of the georeferenced old maps. Javno dobro: indentifikacija, upotreba, upravljanje, dizajn: zbornik radova, Centar za planiranje urbanog razvoja, 67-73.
- Podobnikar, T. (2010). Historical maps of Ljubljana for GIS applications. Acta Geodaetica et Geophysica Hungarica, 45(1), 80-88.

- Sır, A.N. (2015). Kitâb-ı Bahriye'nin Dibacesinde Deniz İmgesi. In: C. Yemisçi, T.E. Çakır, M.G. Beydiz, & C. Çoban (Eds.), 2nd International Symposium of Turgut Reis and Turkish Maritime History - Vol. 1 (243-263). Bodrum: Halikarnas Matbaacılık.
- Sonetti, Bartolomeo Da Li (1485). Isolario. Retrieved December 24, 2021, from <https://gallica.bnf.fr/ark:/12148/btv1b55007621n>
- Tolias, G. (2007). Isolarii, fifteenth to seventeenth century. In D. Woodward (Ed.), The History of Cartography - Volume Three (Part 1) - Cartography in the European Renaissance (pp. 263-284). Chicago: The University of Chicago Press. Retrieved December 24, 2021, from https://press.uchicago.edu/books/HOC/HOC_V3_Pt1/Volume3_Part1.html
- Tolias, G. (2012). The politics of the isolario: Maritime cosmography and overseas expansion during the Renaissance. *The Historical Review / La Revue Historique*, 9, 27-52.
- UKHO (1847) Asia Minor, Budrum, the Ancient Halicarnassus surveyed by Commander Thomas Spratt of H.M.S. Volage. Published at the Admiralty April 9th 1851, Engraved by J. & C. Walker. Retrieved December 24, 2021, from <https://collections.lib.uwm.edu/digital/collection/agdm/id/8550/rec/119>
- Vitruvius, & Morgan, M.H. (1914). The ten books on architecture. Cambridge: Harvard University Press.
- Yılmaz, I. (2010). The Kitâb-ı Bahriye (Book of Navigation) of Pîrî Reis. *The Cartographic Journal*, 47(3), 278-283. Cambridge University Press.

BIOGRAPHIES OF THE AUTHORS

Burak BEYHAN (Prof. Dr.)

Burak Beyhan is a Professor at the Department of City and Regional Planning, Muğla Sıtkı Koçman University. He received his degrees (Bachelor of City Planning - B.CP., Master of Regional Planning - M.RP., and Doctor of Philosophy - Ph.D.) in the Department of City and Regional Planning at Middle East Technical University, in Ankara, Turkey. His main research interests are in the areas of urban and regional planning, regional development and innovation systems, geographic information systems (GIS) in planning, and urban and planning history in Turkey.

Feray KOCA (Assoc. Prof. Dr.)

Feray Koca is an Associate Professor at the Department of City and Regional Planning, Muğla Sıtkı Koçman University. She received her Bachelor of Science (B.Sc.) degree in the Department of Landscape Architecture, Ankara University, and her Master of Urban Design - M.UD., and Doctor of Philosophy - Ph.D. degrees in the Department of City and Regional Planning at Middle East Technical University, in Ankara, Turkey. Her main research interests are in the areas of urban design and planning, urban morphology, environmental policies, management and issues, traditional settlements, and settlement pattern in Turkey.



The third formalism: A study on the Arter building in İstanbul

Umut Bora ŞAHİN¹, ORCID: 0000-0001-7388-7640
Esin KÖMEZ DAĞLIOĞLU², ORCID: 0000-0002-8598-6213

Abstract

Two major formal approaches have governed architectural discourse over the last century: formal autonomy and formal engagement. While formal autonomy disengaged architecture from its social, political, cultural, and physical context, formal engagement of current architectural new-pragmatism hardly offered a critical evaluation of these contextual features. Another approach is possible, which we will name here as third formalism alluding to Anthony Vidler's seminal article "The Third Typology" (1998). This third formalism discusses the possibility of an architecture that realizes both the separation from and engagement with the external contextual conditions via the form. Without naming it as such, this alternative approach has been articulated by Pier Vittorio Aureli in his book *The Possibility of an Absolute Architecture* (2011). This paper aims at discussing this third alternative by analyzing the Arter building in İstanbul. Designed by Grimshaw Architects and opened in 2019, Arter's new building is located in Dolapdere, Beyoğlu, which witnesses a rapid urban transformation. Arter is a good example of the third formalism since its finite and definitive form neither directly follows the external forces of its urban surrounding nor disregards its context by solely focusing on the intrinsic formal elements of architecture.

Highlights

- The third typology and the third formalism in architecture
- Architectural autonomy and new architectural pragmatism
- Arter building in İstanbul as an example of absolute architecture

Keywords

Architectural formalism;
Architectural autonomy; New
architectural pragmatism; Absolute
architecture; Arter

Article Information

Received:
10.03.2022
Received in Revised Form:
01.07.2022
Accepted:
07.09.2022
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Middle East
Technical University, Ankara, Türkiye
komez@metu.edu.tr
2. Faculty of Architecture, Middle East
Technical University, Ankara, Türkiye
umutbora94@gmail.com



Üçüncü biçimcilik: İstanbul'daki Arter binası üzerine bir inceleme

Umut Bora ŞAHİN¹, ORCID: 0000-0001-7388-7640
Esin KÖMEZ DAĞLIOĞLU², ORCID: 0000-0002-8598-6213

Öz

Geçtiğimiz yüzyıl boyunca mimari söyleme iki ana biçimsel yaklaşım yön vermiştir: biçimsel özerklik ve biçimsel bağlılık. Biçimsel özerklik, mimarlığı sosyal, politik, kültürel ve fiziksel bağlamından koparıp, mevcut mimari yeni-pragmatizmin biçimsel bağlılığı, bu bağlamsal özelliklerin eleştirel değerlendirmesini nadiren sunabilmiştir. Anthony Vidler'in ufuk açıcı makalesi "Üçüncü Tipoloji"ye (1998) atıfta bulunarak bu makalede üçüncü biçimcilik olarak adlandıracağımız başka bir yaklaşım ise mümkündür. Bu üçüncü biçimcilik, biçim aracılığıyla dış bağlamsal koşullardan hem ayrılmayı hem de bunlarla ilişki kurmayı gerçekleştiren bir mimarinin olasılığını tartışır. Bu alternatif yaklaşım, Pier Vittorio Aureli tarafından *The Possibility of an Absolute Architecture* (2011) adlı kitabında farklı kavramlarla ifade edilmiştir. Bu makale, İstanbul'daki Arter binasını inceleyerek bu üçüncü alternatifi tartışmayı amaçlamaktadır. Grimshaw Architects tarafından tasarlanan ve 2019 yılında açılan Arter'in yeni binası, hızlı bir kentsel dönüşümün yaşandığı Beyoğlu, Dolapdere'de yer almaktadır. Arter, ne kentsel çevrenin dış güçlerini doğrudan takip eden ne de yalnızca mimarinin içkin biçimsel öğelerine odaklanarak bağlamını göz ardı eden sınırları tanımlı ve kati biçimi ile üçüncü biçimciliğe iyi bir örnektir.

Öne Çıkanlar

- Mimarlıkta üçüncü tipoloji ve üçüncü biçimcilik
- Mimari özerklik ve yeni mimari pragmatizm
- Mutlak mimari örneği olarak İstanbul'daki Arter binası

Anahtar Sözcükler

Mimari biçimcilik; Mimari özerklik;
Yeni mimari pragmatizm; Mutlak mimari; Arter

Makale Bilgileri

Alındı:
10.03.2022
Revizyon Kabul Tarihi:
01.07.2022
Kabul Edildi:
07.09.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Mimarlık Fakültesi, Orta Doğu Teknik Üniversitesi, Ankara, Türkiye
komez@metu.edu.tr
2. Mimarlık Fakültesi, Orta Doğu Teknik Üniversitesi, Ankara, Türkiye
umutbora94@gmail.com

INTRODUCTION

Anthony Vidler (1988) in his seminal article “The Third Typology”, which was originally published in 1977, interprets previous modes of architectural production in reference to two recognized typologies: the primitive hut of Abbe Laugier and the mass production of architecture in Modern Movement as highly visible in Le Corbusier’s architecture. Vidler (1988) traces the newly emerging third typology in the works of new Rationalists such as Aldo Rossi and the Krier brothers as a critical response to the first and second typologies. This third typology takes the city as the core of its reference rather than the abstract nature as in the case of Laugier or the technological utopia as exemplified by Le Corbusier (Vidler, 1988). While architecture was legitimized by external conditions in the first two typologies – namely the nature and the machine – the third typology validates itself through its own architectural and urban elements and their geometries (Vidler, 1988). Against the modernist city (or “the city in the park” as Colin Rowe (1978) named it), which is mainly characterized by freestanding objects on vast open grounds, this third typology identifies, selects, and transforms the typical forms of the city to cultivate its public life.

Type has been a significant concept in architecture since the Enlightenment and it “is interrelated with some specific issues such as the origin of architectural form, systematization and conceptualization of architectural knowledge and definition of creativity” (Bingöl, 2007, II). New rationalists identify type as the genetic code of architecture, which persists through time and; therefore, makes it possible to read and uncover the relationship between the individual buildings and the collective making of the cities. Vidler’s text provides new insights into the relation between architecture and the city by identifying this new third position against the two preceding architectural approaches on type and typology. This article aims to make a similar reading by seeking the traces of third formalism since form is another generative concept in architecture, which have the capacity to react to the uneasy relationship between the buildings and the cities, between architecture and urbanization.

Adrian Forty (2004, 149), in his well-known book *Words and Buildings*, claims that “there is in ‘form’ an inherent ambiguity, between its meaning ‘shape’ on the one hand, and on the other ‘idea’ or ‘essence’: one describes the property of things as they are known to the senses, the other as they are known to the mind.” Therefore, form has a critical capacity as long as it is associated not solely with the perceived and experienced material fact but with the idea, the core concern of which can possibly address the social, cultural, and political purpose of architecture. In this framework, we

introduce the third formalism as a critical response to architectural autonomy and new architectural pragmatism, which are identified here as the two governing formalist approaches in contemporary architectural theory and practice. This third formalism, similar to Vidler's third typology, focuses on the relation between architecture and the city to reclaim the public and hence the political character of the city through well-defined architectural form. Without naming it as such, this alternative approach has been articulated by Pier Vittorio Aureli. In his book *The Possibility of an Absolute Architecture*, Aureli (2011) frames the notion of absolute in reference to various examples to show the possibility of an architecture that realizes both the separation from and engagement with the city through a critical formal consciousness.

Today, it is necessary to discuss architectural form again to uncover its potential as an epistemological model and a pedagogical tool (Anay, 2012). Most of the contemporary architectural works oscillate between detached, isolated object-buildings as promoted by the protagonists of the autonomy debate and buildings that only absorb and reflect the external forces as suggested by the new architectural pragmatists. However, a more critical and alternative understanding of form is necessary to readdress a sharpened architectural position towards the city and the public life that it generates. In this regard, this paper first discusses the shortcomings of autonomy and new-pragmatism in architecture as the paradigms of first and second formalism. The paper then introduces Aureli's absolute architecture as an alternative third approach that offers a new critical understanding of form by neither ignoring its context nor being shaped directly by its immediate forces. The paper finally examines the Arter building in İstanbul to unfold the possible design strategies and architectural elements for third formalism.

ON ARCHITECTURAL AUTONOMY

The debates on autonomy in architecture – “the belief that architecture is a self-contained project with its own legible, meaningful forms” (Osman et al., 2002) - can be traced back to the 1930s in the writings of Emil Kaufmann. Kaufmann analyzed the architecture of the late 18th century through the works of Étienne-Louis Boullée and Claude-Nicolas Ledoux and emphasized their formal consciousness as revolutionary (Kaufmann, 1952). Among the two, Boullée aimed to implement the basic geometrical forms in architecture and separate formal elements from the totality of the design (Boullée, 1976). He addressed an architecture that creates a particular character through the use of formal and spatial features with specific ordering strategies, such as repetition, harmony, and symmetry. On the other hand, according to Kaufmann, Ledoux's interpretation of form was different from that of Boullée. Considering Ledoux as the inaugurator of architecture, Kaufmann conveyed that he searched for a new system of relations for architecture; and acknowledged that this new system requires distinct alternative formal approaches (Kaufmann, 1952). While Boullée primarily focused his design on the formal elements of architecture, Ledoux was concerned with the strategies of these formal attributions and their effects on the built environment. In contrast with the differences regarding their perspectives, both Boullée and Ledoux claimed form as an essential aspect of architecture, hence aimed for an autonomous understanding of the discipline that focuses on its intrinsic formal qualities. As Vidler (2002) asserts, Kaufmann's studies on Ledoux's architecture established the foundations of autonomy in architecture. In addition to Kaufmann, Vidler (2008) introduced Colin Rowe, Reyner Banham, and

Manfredo Tafuri as key figures in establishing architectural autonomy through their historical narratives of modernism.

Autonomy discussion has resurfaced in the 1970s with the writings of Peter Eisenman and K. Michael Hays since the notion of form has become a central theme in their works (Corbo, 2014). Eisenman's work excluded the fictions of architecture - such as representation, reason, and history - in the architectural form-finding process (Eisenman, 1984). Separating architecture from these fictions generates an approach towards design that is primarily focused on the grammar in-between architectural elements (Fausch, 1996). This separation of architecture from the outer forces of the social, cultural, political, and physical context results in an "unmotivation" that dismantles previous modes of legitimation and their repetition (Eisenman, 2000). Such an approach towards autonomy enables the discipline to be self-referential and self-critical (Eisenman, 2014). According to Eisenman (2008, viii), autonomous architecture also offers resistant forms since "any internally generated forms that are part of a critical system in one sense could be considered autonomous, independent of social or market forces, while still offering a critique of these forces".

When compared to Eisenman, Hays presented a more nuanced stance by supporting semi-autonomy (Hays, 1984). In his influential article "Critical Architecture: Between Culture and Form", Hays (1984) proposed architecture both as an autonomous entity and a cultural instrument. He introduced a more balanced relationship between culture and form by arguing that semi-autonomous architecture is critical since it resists the "conciliatory operations of a dominant culture" yet being "irreducible to a purely formal structure" (Hays, 1984). According to Hays, critical architecture resists commercial forces while engages with the world culture. To elaborate, Hays (1984) gives the works of Ludwig Mies van der Rohe as epitomes of semi-autonomy since Mies' architecture engages with the worldly situation without submitting itself to the authority of the pre-existing circumstantial forces. Therefore, Hays' semi-autonomy is not solely self-referential and resistant as proposed by Eisenman but also engaged and situated.

In 2002, *Perspecta* journal published a special issue on architectural autonomy titled "Mining Autonomy". Among the contributors of the issue, Stanford Anderson, similar to Hays, proposed a more in-between position by coining the term quasi-autonomy. In his article titled "Quasi-Autonomy in Architecture: The Search for an 'In-between'", Anderson (2002, 30) proposes autonomy as "the only way to avoid submersion in the material conditions of one's time". In discussing his in-between position, Anderson compares two approaches in architecture as "problem-solving" and "problem-worrying". According to Anderson (2002), quasi-autonomous architectural knowledge can grow if it "worries the problem" rather than searching for perfect solutions to well-defined and articulated problems. While most of the authors in the issue unfold the diverse histories and approaches on architectural autonomy (such as Hubert Damisch's article on Ledoux, Anthony Vidler's article on Kaufmann, and Diane Y. Ghirardo's article on Tafuri), Robert Somol and Sarah Whiting's article titled "Notes around the Doppler Effect and Other Moods of Modernism" confers an alternative position, which later will be associated with the new architectural pragmatism.

ON NEW ARCHITECTURAL PRAGMATISM

At the beginning of the 21st century, neo-pragmatist architects attacked autonomy in architecture for isolating the form from extrinsic conditions. The proponents of new architectural pragmatism, such as Robert Somol and Sarah Whiting (2002), questioned K. Michael Hays and Peter Eisenman's "critical project" since "disciplinarity is understood as autonomy (enabling critique, representation, and signification) but not as instrumentality (projection, performativity, and pragmatics)". Against Eisenman, Somol and Whiting (2002) introduced Koolhaas to support their alternative position as a shift from disciplinarity as "autonomy and process" to "force and effect". Somol and Whiting set forth architecture as an instrumental practice by moving away from the criticality of the 1970s and 1980s autonomy discussions. Thus, they framed a projective architectural practice, which is more responsive to its external forces, and it is no surprise that their article was later included in *A Harvard Design Magazine Reader's The New Architectural Pragmatism*, a milestone book on the theme.

Published in 2007, *The New Architectural Pragmatism* positions architecture as a projective practice through the writings of architects and theorists, among others, Alejandro Zaero-Polo, Stan Allen, and Reinhold Martin. As clearly put in the book, proponents of the new architectural pragmatism "assault on something called 'the critical' or 'critical architecture,' usually accompanied by a collateral assault on something called 'theory'" (Reinhold Martin, 2007). In fact, Eisenman's critical project had a great impact on the new architectural pragmatists. As George Baird (2007) states "so many of the protagonists of the currently proffered alternatives to 'criticality' are former protégés of Eisenman, or at least figures at the edge of his circle. Stan Allen, Robert Somol, and Sarah Whiting all fall into one or the other of these categories." Therefore, with the new millennium, the governing autonomy paradigm in architecture is attacked by well-known figures and replaced by an alternative position of pragmatism. It should be noted here that one of the earliest attempts in framing and disseminating the new architectural pragmatism was the pragmatism symposium at MOMA, which was organized by Joan Ockman and Terence Riley in 2000. The outcomes of the symposium were later published in a book titled *The Pragmatist Imagination: Thinking About Things in the Making*.

Among other contributors of the book *The New Architectural Pragmatism*, architectural theorist and educator Roemer van Toorn's (2007) article expands the definition of projective architecture. Toorn (2007) discusses projective architecture in reference to the works of contemporary Dutch architects under three categories: "projective autonomy", "projective mise-en-scène", and "projective naturalization". In Toorn's classification, "projective autonomy" is rather a "conventional or limited projective practice" with its meticulous use of crafted forms and types in combination with economic and functional requirements that can be observed in the works of Claus & Kaan or Neutelings Riedijk (Toorn, 2007). "In the projective mise-en-scène, the city is one huge datascape" and architects such as MVRDV choreograph this data nonjudgmentally in order to create the spectacular décor for the everyday spatial experience of its users (Toorn, 2007). According to Toorn (2007) "Projective naturalization"; on the other hand, "allow matter to be performative" through the use of digital technologies as the works of NOX Architekten exemplifies. What is common for all these projective practices is a dispassionate acceptance and integration of reality in the making and representation of architecture.

The new architectural pragmatists aimed at achieving an engaged practice by accepting the effects of various forces such as multiple actors, technical means, and material conditions. Pauline Lefebvre (2017) argues that new architectural pragmatism offers a unique perspective within the governing post-critical thought of the century since it does not only focus on the “effects” of architecture but also considers the physical, social, cultural, and environmental “consequences” of the buildings. However; while autonomy of form disengaged architecture from its social, cultural, and physical contexts, architectural neo-pragmatism’s engagement of form hardly offered a solid position regarding these external factors. As the new architectural pragmatists guiding figure Koolhaas’ “fuck context” statement and his contested practice in Beijing (i.e., CCTV Headquarters) show, external contextual concerns can easily be overlooked to operate value-freely against the distinct social, cultural, and political situations of diverse contexts (Komez Daglioglu, 2020). Therefore, against these two major formalist approaches that have governed contemporary architectural discourse, namely autonomy and the new pragmatism, a third alternative is necessary to achieve both a critical and engaged architectural practice.

ON ABSOLUTE ARCHITECTURE

The third formalism, as an alternative to the autonomy of critical architecture and the engagement of neo-pragmatism, can be found in Aureli’s theorization of absolute architecture. Aureli (2009) is critical of many contemporary architectural works for transforming Vitruvius’ architectural trilogy of commodity, firmness, and delight into a new millennial understanding, which he associated with structural complexity, formal redundancy, and image. He also directly criticizes Somol, the protagonist of the millennial new pragmatism in architecture. Against Somol’s preference for shape over form, which Aureli referred to as shape-fetishism, he insisted that architects “must concentrate on the idea of form” (Aureli, 2004, 36). Although Aureli (2011) does not clarify the position of absolute architecture directly in opposition to neo-pragmatist theories, the idea of absoluteness refers to a combination of both formal separation from and engagement with the city and its political, social, and cultural aspects while resisting the capitalist economic organization. In this regard, Aureli (2008) revisits the autonomy paradigm in architecture to uncover the potential of architecture within and against capitalism. To do so, Aureli specifically distinguishes the project from the design since the former could engender a generative architectural structure while the latter rather refers to the act of building and producing. In this regard, Aureli supports the autonomy of the project against the autonomy of design. To Aureli (2011), understanding architecture as a project has the potential to identify an alternative idea of the city.

Against this background, in his book *The Possibility of Absolute Architecture*, Aureli (2011) separates the political from the economic and aims to reclaim form in architectural discourse and its political agency. He seeks the idea of absolute architecture within historiographical analyses of different architects, such as Andrea Palladio, Giovanni Battista Piranesi, Étienne-Louis Boullée, and Oswald Mathias Ungers. Each one of these architects provides a series of projects that Aureli frames as absolute architecture. What is common in all these projects is their critical response to the city through well-elaborated and distinguished formal articulation. Douglas Spencer (2016) criticized Aureli’s separation of the political and the economic since they are indistinguishable under the current conditions of neoliberalism and its economic organization. Moreover, Spencer (2016, 289)

states that the examples given by Aureli might well be “mediated by economics, by managerialism, by governmentality.” Although it is not completely possible to distinguish the political from the economic in the current state of capitalism, Aureli’s argument is significant to highlight the political agency of architecture through form by uncovering its definition as an idea instead of shape.

Aureli (2011, 46) argues that “architecture must address the city even when the city has no goal for architecture.” This proposal requires an architecture that responds to the political, social, and cultural conditions of the city not through formal engagement but through formal separation. This separation is not as exquisite as that of autonomous architecture, rather it distinguishes the architectural object from the existing context of the city since Aureli believes that a critical engagement is only possible via separation. Therefore, the third formalism, which we identify here in reference to Aureli, focuses on the notion of form as an instrument for reclaiming the idea of the city and its inherent public and political character. According to Aureli (2011), to achieve such an architecture, a form needs to be defined with certain boundaries and limits. In other words, the cultivation and manifestation of the political and public character of the city can only be achieved through rigorous formal consciousness. Although this position displays similarities with architectural (semi)autonomy, Aureli’s position departs from the former formalist approaches since his preeminent aim is to revive the forgotten architectural project of the city (Aureli, 2013).

Aureli’s analysis throughout the book contains various works in diverse scales by different architects, each creating their perspective on architectural form and the possibilities that it generates. For instance, Palladio’s ideal Renaissance villas are not just enclosed objects but specific interventions that reframe the geopolitical encounter with the city (Aureli, 2011). Piranesi’s cartographic map of Rome Campo Marzio depicts the ruins to generate the city after its demolished architectural fragments; therefore, aims to establish the idea of Rome by using the very architectures that had been part of it throughout history. Boullée, on the other hand, uses the form as a critical element for his projects, such as the National Library. He covered the courtyard of the building in Paris to develop a sufficient space for the books and the public, thus the building is different from the rest of the city while maintaining its rigorous formal affinity. Finally, Ungers’ project for Berlin as a Green Archipelago illustrates the idea of a city that is a collection of its architectural parts. With these works, Aureli emphasizes the idea of a project and a series of architectures that collaborate within the city. Only by establishing such architectures, it is possible for projects to participate in the city and to assert absoluteness via its form.

Aureli (2011, 37) exemplifies limited form through Mies van der Rohe’s articulation of plinth in his architectural works such as the Seagram Building, the Barcelona Pavilion, and the New National Gallery in Berlin. The plinth in Mies’ designs both separates and relates the building to the city. It organizes the relations not only on the plinth but also that are outside of it. Mies’ use of plinth in architecture establishes a finite boundary within the very urban conditions of the city and creates a particular definition between architecture and its physical, social, and cultural environment. As a result, the notion of limit generates both isolation and engagement with the city. Consequently, the idea of limit becomes a precondition for the project through both separation and engagement, which eventually leads to absolute architecture. Mies’ use of plinth is an exemplary case of deliberate elaboration of architectural form, the underlying concern of which is the city at large and its transformation. We argue that Arter in İstanbul could be a significant contemporary example to

discuss what Aureli suggests as absolute architecture and what we define as an alternative new approach to architectural formalism.

ON ARTER



Figure 1 - Arter from the Dolapdere Street (Photographed by the authors).

Arter was opened in 2010 as an art gallery in İstanbul's famous Istiklal Street and moved to its new building recently (Figure 1). Arter's new building is designed by Grimshaw Architects, a London-based studio, and opened in 2019 as the most anticipated contemporary art museum in İstanbul. The museum aims at contributing to the city culture through exhibitions, events, and programs (Özden, 2020). Kirsten Lees, the project's principal architect, defines Arter as a "vibrant cultural hub" that brings together public and contemporary artists (Pintos, 2020). Lees explains that the design and construction of the building was an interdisciplinary process since local specialists and consultants from İstanbul like Turgut Alton Architects were part of the team. The building includes performance halls, exhibition spaces, a library, a bookstore, and a café. Arter's main formal organization aspires to generate accessible public spaces in and around this new cultural hub of the city while offering a distinguished form (Pintos, 2020).

The new Arter building is located in the Dolapdere neighborhood of İstanbul. Dolapdere is part of the Beyoğlu district and very close to the Taksim square. This neighborhood mostly consists of housing units and shops with a small-scale traditional architectural characteristics. However, these houses are in a very poor condition today and the residents are mostly day laborers with low incomes (Akalın, 2003). People from diverse ethnic groups are living in the area and the population profile of the neighborhood is subject to change due to the vast migration to the city (Akalın, 2003). In addition to the poverty, and neglected buildings and infrastructures, residents and visitors find the area unsafe mainly because of the drug sellers (Baltacı & Karataş, 2021). However, Dolapdere has been rapidly transformed in recent years due to its strategic location in the city center. Many new art galleries such as Gaia Gallery, Pilevneli Gallery, and Evliyagil Museum are located in this neighborhood and transforming the area into a new art center. These museums and galleries intensify the process of gentrification which have both negative and positive impacts on the

residents (Ergün, 2022). Arter is located in this very complex site where old and new, public and private, contemporary and traditional meet with each other. Building's front façade faces Irmak Caddesi, the main street of the Dolapdere neighborhood (Figure 2). Irmak Caddesi has faced urban regeneration due to its very central position in the city and became a significant tourist attraction with new galleries, hotels, and shops. Now, each side of this street is occupied by both old and new buildings and creates a distinct heterogeneous urban fabric. While Arter's front façade is facing such a rapidly transforming urban axis in the city, the backside of the building is surrounded by small-scale housing units and shops in poor conditions (Figure 3).

The architecture of Arter can exemplify possible architectural strategies of third formalism. The overall form of the building looks like a detached box that contrasts with its surrounding. However, a detailed analysis of its formal configuration shows that it indeed responds to the various aspects of its context and the city at large while also creating a clear boundary with its finite form. The urban context that surrounds the building becomes the essential aspect of the design, which Arter celebrates through its architectural features and distinguished limits of its form. The building connects to its urban surrounding with a fluid and adaptive continuation of outdoor and indoor public spaces while also separating itself with its definitive boundaries.

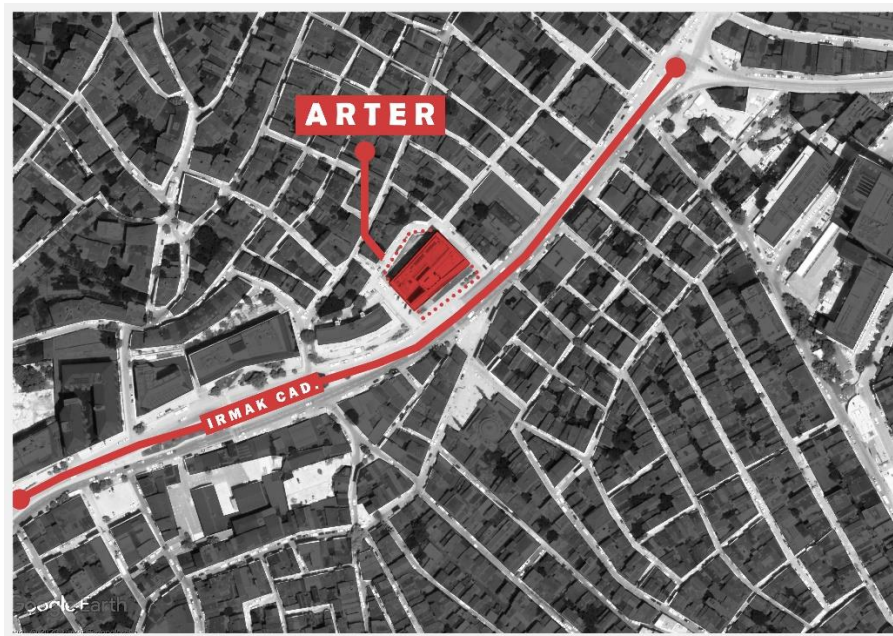


Figure 2 - Map showing Arter and its urban context (Developed by the authors).

The overall form of Arter consists of three interrelated blocks: the base block that allows the physical and visual access between inside and outside, the upper-middle block that consists of the main programmatic elements within its enclosed prismatic volume, and the upper terrace that opens the building to its surrounding urban context (Figure 4). These three blocks are the result of Arter's fragmented form, which deconstructs the perceived "white box" into distinguished parts. While the entrance block is where the building engages with its surrounding through the continuation of the outer public space as an interior street within the building, the definitive closed white upper block contradicts its surrounding. On the top, the terrace block starts to dismantle into smaller

parts; thus, creating new visual and experiential relations with the city. This fragmentation of blocks responds to the external forces of the city and its physical aspects (such as the building sizes, vistas, and access routes) while simultaneously being separated from them. In fact, these blocks do not have clearly marked boundaries in the interior organization of the building. There is rather a continuous flow and movement between the layers and the spaces. However, the destruction of the white box through the fragmentation of the blocks can directly be perceived from the outside and affects the experience of the building volume. The size of the front façade fits its neighboring buildings since the terrace block recedes at the top whereas the building height increases at the back and creates a sharp rupture with the scale of the surrounding fabric.

The distinction between these three blocks is further elaborated by the use of different materials in the façade. The entrance block is covered with glass and solid ceramic cladding to emphasize the institutional character of the building. The upper block is covered with white 3D glass reinforced concrete panels. Parts of these panels in the front façade are permeable in order to provide light and controlled visual access by turning into a filigree-shading screen. Offices at the terrace block are covered with a glass façade. The most distinguished element of the building is its panel claddings since it creates a textured surface in the building's envelope. These panels create almost blank surfaces on the side and rear façades while creating a playful visual experience at the front façade both from the interior and exterior. Therefore, the engagement of the building with its surrounding is well-articulated in the front façade whereas the rear façade creates a clear boundary with its height and degree of enclosure.



Figure 3 - Front façade of Arter and its relation with the surrounding (Photographed by the authors).

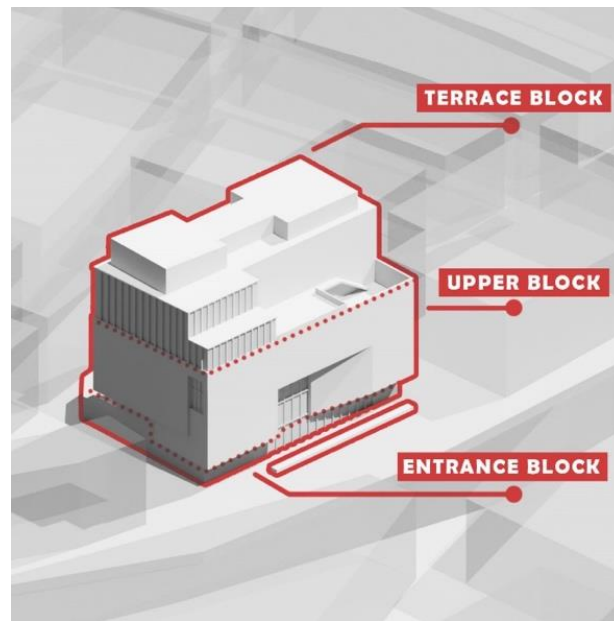


Figure 4 - Analysis showing the blocks of Arter (Developed by the authors).

The podium on the ground level of the building provides both formal engagement and separation of Arter. The building creates a public space in front by receding from the Irmak Street. This wide open space is significant since the surrounding buildings along the Irmak street leave a very narrow space for the sidewalks. Therefore, this open space in front of the building could work as a significant node that can be transformed into a vivid public square. Thus, similar to Mies van der Rohe's articulation of the plinth in his projects, the building of Arter introduces its podium, which consists of the frontal and rear parts of the project, as a single plinth that surrounds the building. With the podium, the building realizes a unity on the ground level between the city and the interior of the building (Figure 5). The limits of the podium also create restrictions that obstruct the accessibility of the building due to the decorative pool that stretches along the front façade (Figure 6). However, the pool also contributes to the vividness of the public space in front since not only the visitors but also the passersby sit and rest on the banks along with the pool (Figure 7). Therefore, the border of the podium, namely the edge of the pool, turns this space into a real public square where diverse people gather and experience the surrounding urban fabric. When the density of the city of İstanbul and the scarcity of the city's public spaces are considered, the articulation of the front podium creates a significant stopping place in this dense neighborhood.

On the other hand, the rear side of the podium, which directly faces the housing units around the building, does not allow physical interaction between the building and its surrounding, and thus alienates Arter from the rest of the existing urban fabric (Figure 8). The bushes and the fences create a clear boundary where both the visual and physical access to the street has been blocked. Therefore, the large open space created at the back of the building as the continuation of the café just turns into an empty space with very limited use. It is necessary here to remind the difference between the border and boundary as the urban sociologist Richard Sennett articulates in his Open City argument. Sennett (2019, p. 127) claims that "the boundary is an edge where things end; the border is an edge where different groups interact." In this regard, the front podium of Arter works

like a border whereas the rear podium is a boundary where there is no possibility for any kind of interaction. To sum, the podium does not equally operate on the front and rear sides of the building. While the front part of the podium both unites and separates the building and the city with a similar strategy to Mies' plinth, which was introduced by Aureli as a prominent example of an absolute architecture, the rear part of the podium separates the building from its surrounding without the intention of integration.

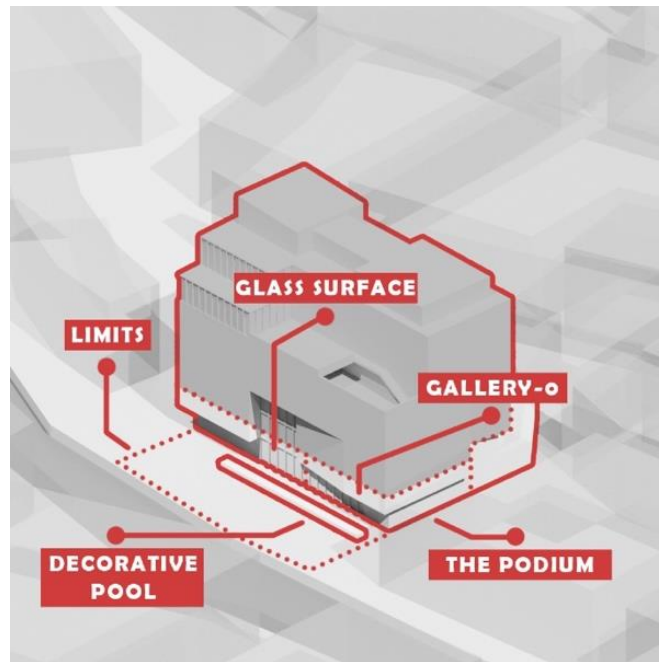


Figure 5 - Analysis showing the podium of Arter and its surrounding elements (Developed by the authors).



Figure 6 - The limits of the podium of Arter (Photographed by the authors).



Figure 7 - The front podium of Arter turned into a public space (Photographed by the authors).



Figure 8 - The limits between the surrounding urban context and the rear part of the podium of Arter (Photographed by the authors).

The idea of an absolute architecture, which seeks integration and engagement with the city through its separation from it, is clearly visible in Arter's use of frames in its form. Arter provides three frames in its envelope in order to create a physical, visual, and perceptual interaction with its urban surrounding (Figure 9). These three primary frames are on the podium, the exhibition spaces, and the terrace. Each one of these frames responds to distinct conditions in the project. For instance, the podium frame and the exhibition frames illustrate how the city infuses into the interior of the building through big transparent surfaces. The roof terrace, on the contrary, presents a different articulation of the idea of the frame (Figure 10). Rather than being shaped horizontally as it does in the podium and the exhibition spaces, it extends vertically towards the exterior. The terrace

becomes an elevated recreation space within the building through this vertical frame. As a result, this terrace frame enables the visitors to observe and experience the city from the top and creates a visual and experiential connection between the city and the building.

The way that Arter develops its formal qualities resonates with the approaches of Boullée and Ledoux as discussed above in reference to Kaufmann. Even though the form of the project does not imitate the approaches of the “revolutionaries” by using symmetry and repetition as the main principle for design, the building creates a formal unity of its distinctly articulated architectural elements. Moreover, the form of Arter simultaneously resists and absorbs external forces and thus contrasts with the paradigms of new architectural pragmatism and architectural autonomy. While the totality of the form of Arter is divided into three blocks and provides fragmentation and connection, the podium creates both separation and continuation between the building and the city. Frames create both a transparent boundary but also enable visual access. In consequence, with these blocks, podium, and frames as its primary formal features, Arter becomes a project in Aureli’s use of the term. As a project, the building provides a generative architectural structure that reclaims the idea of the city and its public life through its well-defined bounded form. With its rigorous formal articulation, Arter shows the aspects of both autonomy and engagement and thence, represents the possibility of a third hybrid alternative approach.

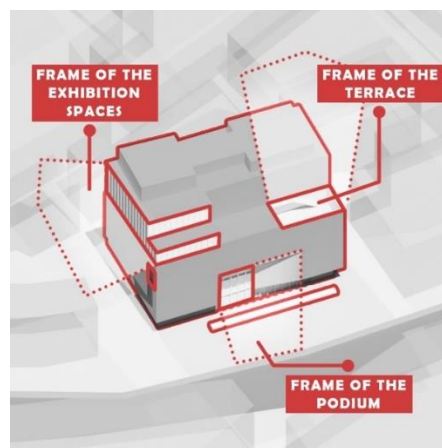


Figure 9 - Analysis showing the frames of the building (Developed by the authors).



Figure 10 - The view from the terrace frame (Photographed by the authors).

CONCLUSION

In conclusion, although Arter's total form is perceived as a "white box" that ignores its urban surrounding by creating a clear contrast, the building, in reality, reinterprets and transforms the external forces acting upon it. It critically responds to its site conditions and to the city at large. Therefore, Arter is an appropriate example of the third formalism since its finite and definitive form neither directly follows the external forces of its urban surrounding nor disregards its context by solely focusing on the intrinsic formal elements of architecture. Its form both separates itself from and engages with the city through the articulation of architectural elements such as the fragmented blocks, the podium that surrounds the building, and the transparent frames. As Aureli suggested, form is a precondition for both separation and integration. Therefore, Arter offers another possibility in architecture to reclaim form without submitting itself to disciplinary autonomy or the neo-pragmatist thought. The building becomes a project for the city with these qualities and represents what we suggest here as the third formalism. In this regard, it supports the possibility of absolute architecture by simultaneously being critical and engaged even though some of its strategies fail such as the inaccessible rear part of the podium.

Third formalism, as discussed through the theories of Pier Vittorio Aureli and analyzed in reference to the architecture of Arter in İstanbul, offers new insights into an architectural form by offering a hybrid position between autonomy and new pragmatism. On the one hand, this third formalism differentiates itself from the formalism of autonomous architecture, which solely focuses on the intrinsic formal relations of architectural elements, and the formalism of new architectural pragmatism, which absorbs external factors in its form without a critical political and social consideration. On the other hand, third formalism is both critical, like autonomous architecture, and engaged, similar to new architectural pragmatism. Moreover, the ultimate significance of the formal consciousness of this third formalism lies in its immanent search for reclaiming the idea of the city and its original political character. In this regard, it is highly analogous to Vidler's categorization of the third typology, proponents of which also aimed at cultivating the political and the public life of the city by reinventing its typical architectural and urban elements. We believe that rearticulating Vidler's ideas on third typology 45 years after with a fresh new discussion on an architectural form would open many novel perspectives on the relation between architecture, its form, and the city.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support has been received for conducting the research and/or for the preparation of the article.

Ethical Statement

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/C/E/F/G/H

AUTHOR 2: A/B/C/D/H/I

REFERENCES

- Akalın, E. Ö. (2003). Kentsel Dönüşümün Uygulanabilirliğine Yönelik Bir Alan Araştırması, Dolapdere Örneği. Yüksek Lisans Tezi, İstanbul Teknik Üniversitesi, İstanbul.
- Anay, H. (2012). *Mimari Biçimcilik*. Eskişehir: Osmangazi Üniversitesi Yayınları.
- Anderson, S. (2002). Quasi-Autonomy in Architecture: The Search for an 'In-between'. *Perspecta* 33, 31-34.
- Aureli, P. V. (2013). Means to an End: The Rise and Fall of the Architectural Project of the City. In P. V. Aureli (Ed.), *The City as a Project* (pp. 14-38). Berlin: Ruby Press.
- Aureli, P. V. (2011). *The Possibility of an Absolute Architecture*. Cambridge, MA: The MIT Press.
- Aureli, P. V. (2009). More and More and Less and Less: Notes Toward a History of Nonfigurative Architecture. *Log* 16, 7-18.
- Aureli, P. V. (2008). *The Project of Autonomy: Politics and Architecture within and against Capitalism*. New York: The Temple Hoyne Buell Center for the Study of American Architecture, with Princeton Architectural Press.
- Aureli, P. V. (2004). Architecture and Content: Who's Afraid of the Form-Object? *Log* 3, 29-36.
- Baird, G. (2007). "Criticality" and Its Discontents. In W. S. Saunders (Ed.), *The New Architectural Pragmatism: A Harvard Design Magazine Reader* (pp. 136-149). Minneapolis: University of Minnesota Press.
- Baltacı, G. & Karataş, B. (2021). Tarlabası-Dolapdere Kadın Odak Grup Görüşmeleri Raporu. Erişim tarihi: 28.06.2022. https://sehirplanlama.ibb.istanbul/wp-content/uploads/2022/01/BeyogluSenin_Tarlabasi-Dolapdere-Kadin-Odak-Grup-Gorusmeleri-Raporu.pdf
- Bingöl, Ö. (2007). Mimarlıkta Tip ve Tipoloji Kavramı. Doktora Tezi, Mimar Sinan Güzel Sanatlar Üniversitesi, İstanbul.
- Boullée, É-L. (1976). Architecture: Essay on Art. In H. Rosenau (Ed.), *Boullée & Visionary Architecture* (pp. 81-116). London: Academy Editions.
- Corbo, S. (2014). *From Formalism to Weak Form: the Architecture and Philosophy of Peter Eisenman*. London: Routledge.
- Deborah, F. (1996). The Oppositions of Postmodern Tectonics. *ANY* 14, 48-57.
- Eisenman, P. (2014). Aspects of Modernism: Maison Dom-ino and the Self-referential Sign. *Log* 30, 139-151.
- Eisenman, P. (2008). Foreword: [Bracket]ing History. In Anthony Vidler, *Histories of the Immediate Present: Inventing Architectural Modernism* (p. viii). Cambridge, MA: The MIT Press.
- Eisenman, P. (2000). Autonomy and the Will to the Critical. *Assemblages* 41, 90-91.
- Eisenman, P. (1984). The End of the Classical: The End of the Beginning, the End of the End.

Perspecta 21, 154-173.

Ergün, S. (2022). Galerilerden Müzelere Mekanlar ve Alanlar: İstanbul Dolapdere Semtinde Sanatsal Soylulaştırma. Yüksek Lisans Tezi, Hacettepe Üniversitesi, Ankara.

Forty, A. (2004). *Words and Buildings: A Vocabulary of Modern Architecture*. London: Thames & Hudson.

Hays, M.K. (1984). Critical Architecture: Between Culture and Form. *Perspecta 21*, 14-29.

Kaufmann, E. (1952). Three Revolutionary Architects, Boullée, Ledoux, and Lequeu. *American Philosophical Society 42*(3), 431-564.

Komez Daglioglu, E. (2020). Reclaiming Context: Between Autonomy and Engagement. In C. J. Burns & A. Kahn (Eds.), *Site Matters: Strategies for Uncertainty Through Planning and Design* (pp. 26-37). New York: Routledge.

Lefebvre, P. (2017). What Difference Could Pragmatism Have Made? From Architectural Effects to Architecture's Consequences. *Footprint 20*, 23-36.

Martin, R. (2007). Critical of What? Toward a Utopian Realism. In W. S. Saunders (Ed.), *The New Architectural Pragmatism: A Harvard Design Magazine Reader* (pp. 150-161). Minneapolis: University of Minnesota Press.

Ockman, J. (2000). *The Pragmatist Imagination: Thinking About "Things in the Making"*. New York: Princeton Architectural Press.

Osman, M., Ruedig, A., Seidel, M. & Tilney, L. (2002). Editors' Statement. *Perspecta 33*, 7.

Pintos, P. (2020). Arter Museum/Grimshaw. *ArchDaily*. Retrieved February 24, 2022, from <https://www.archdaily.com/943460/arter-museum-grimshaw>

Rowe, C. & Koetter, F. (1978). *Collage City*. Cambridge, MA: The MIT Press.

Sennett, R. (2019). The Open City. *Lotus International 168*, 117-129.

Somol, R. & Whiting, S. (2002). Notes Around the Doppler Effect and Other Moods of Modernism. *Perspecta 33*, 72-77.

Spencer, D. (2016). Less than Enough: A Critique of Aureli. *This Thing Called Theory* (pp. 283-291). London and New York: Routledge.

Toorn, R. V. (2007). No More Dreams? The Passion for Reality in Recent Dutch Architecture... and Its Limitations. *The New Architectural Pragmatism: A Harvard Design Magazine Reader* (pp. 54-74). Minneapolis: University of Minnesota Press.

Utkan Özden, H. (2020). Çağdaş Sanat Müzelerinin Kent Kültürüne Etkisi: Tate Modern ve Arter Örneği. *UNIMUSEUM 3* (2), 75-81.

Vidler, A. (2008). *Histories of the Immediate Present: Inventing Architectural Modernism*. Cambridge, MA: The MIT Press.

Vidler, A. (2002). The Ledoux Effect: Emil Kaufmann and the Claims of Kantian Autonomy. *Perspecta 33*, 16-29.

Vidler, A. (1998). The Third Typology. In K. Hays (Ed.), *Oppositions Reader: Selected Readings from a Journal for Ideas and Criticism in Architecture 1973-1984* (pp. 13-16). New York: Princeton Architectural Press.

BIOGRAPHIES OF THE AUTHORS

Umut Bora ŞAHİN

Umut Bora Şahin is an architect who acquired his bachelor's degree from Mimar Sinan Fine Arts University (MSGSU) in 2018. After graduation, he continued his master's studies at Middle East Technical University (METU) and completed his thesis titled "An Inquiry on Absolute Architecture: The Case Study of Arter in İstanbul" in 2021 under the supervision of Assist. Prof. Dr. Esin Kömez Dağlıoğlu. His thesis was focused on the theories of form in architecture and their interrelations in-between the city. He is now working in the video-game industry as an architect. In his professional carrier, Bora's focus continues to be the idea of form in architecture; but it is transferred accordingly to the conditions of the digital environment of computers and mobile devices.

Esin KÖMEZ DAĞLIOĞLU (Assist. Prof.)

Esin Kömez Dağlıoğlu is an assistant professor at the Architecture department at the Middle East Technical University, Turkey. She received her bachelor's and master's degrees magna cum laude from Middle East Technical University (METU) Department of Architecture where she also worked as a research and teaching assistant from 2008 to 2012. She completed her Ph.D. research in 2017 at Delft University of Technology (TU Delft), Department of Architecture where she also taught design and theory courses at the Chair of Architectural Composition and Public Building. Among others, she has published in the Architectural Theory Review, METU JFA, and OASE. Esin's research areas include architectural design education, postwar and postmodern architectural and urban theory.



The effects of physical environment in Ottoman healthcare facilities: 2nd Beyazid Complex in Edirne

Dinçer AYDIN¹, ORCID: 0000-0001-8436-6330
Seyhan YARDIMLI², ORCID: 0000-0001-7186-9000
Esma MIHLAYANLAR³, ORCID: 0000-0002-0020-2839

Abstract

Healthcare facilities have an important place in Ottoman Architecture. Started to be built during the Anatolian Seljuk period and continued into the Ottoman in many cities, they manage to survive. However, it is not possible to use them with their original functions today. Most of them are used by serving as exhibition and museum buildings like Edirne Sultan 2nd Beyazid Health Complex. In the use of such historical buildings, the examination of their response to changing living conditions and needs is important. This study investigates how the physical environment affected the design of the complex, and the impacts of its planning and building envelope on today's IEQ. The physical environmental data were discussed about thermal, daylight, ventilation, and acoustics performances by calculating and evaluating the existing energy consumption of the building. Methods like literature review, direct observation, on-site examination, simulation, and documenting with photographs were used. It was determined that five hundred years ago, the building was compatible with its physical environmental data in terms of its function, planning, and building envelope, and, as being a museum today, it provides all the necessary comfort conditions for its users, and that the energy consumption is at an acceptable level.

Highlights

- It is necessary to examine the suitability of adaptive reused historical buildings with today's comfort conditions.
- The results of the analysis of the compatibility of historical buildings with physical environmental conditions can provide information about the sustainability of buildings to be constructed in the future.
- Sustainable building production depends on the design integrated with the physical environment.

Keywords

2nd Beyazid Health Complex; Healthcare facility; Historical buildings; Indoor environmental quality; Physical environment

Article Information

Received: 14.03.2022
Received in Revised Form: 28.04.2022
Accepted: 16.10.2022
Available Online: 30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Trakya University, Edirne, Türkiye
dinceraydin@trakya.edu.tr
2. Art, Design and Architecture Faculty, İstanbul Okan University, İstanbul, Türkiye
seyhan.yardimli@okan.edu.tr
3. Faculty of Architecture, Trakya University, Edirne, Türkiye
emihlayanlar@trakya.edu.tr

Osmanlı sağlık yapılarında fiziksel çevre koşullarının etkileri: Edirne 2. Beyazıt Külliyesi

Diñcer AYDIN¹, ORCID: 0000-0001-8436-6330
Seyhan YARDIMLI², ORCID: 0000-0001-7186-9000
Esmâ MIHLAYANLAR³, ORCID: 0000-0002-0020-2839

Öz

Anadolu Türk Mimarisinde Darüşşifa/Şifahane gibi isimlerle karşımıza çıkan sağlık yapıları; hem halk sağlığına hizmet eden hem de tıp eğitiminin sürdürüldüğü medreselerle birlikte tasarlanan alanlardır. Anadolu Selçuklular döneminden başlayıp Osmanlı'da da Bursa, İstanbul, Edirne, Manisa gibi birçok şehirde inşa edilmiş bu yapıların çoğu günümüze kadar gelebilmiştir. Edirne Sultan II. Beyazıt Külliyesi Şifahanesi bu yapılardan biridir. Bu çalışmada II. Beyazıt Külliyesi Şifahanesi'nin yerleşim alanı özellikleri ile plan ve yapı kabuğu özellikleri birlikte ele alınarak fiziksel çevre verilerinin Şifahane tasarımına etkisi ve kullanıcılarına sağladığı iç ortam kalitesi analiz edilmiştir. Çalışmada fiziksel çevre verileri; ısı performans, doğal aydınlatma, havalandırma ve akustik açıdan değerlendirilmiştir. Ayrıca mevcut durumun yapının enerji tüketimine etkisi de hesaplanmıştır. Bunun için çalışmada literatür araştırması, doğrudan gözlem, yerinde inceleme, simülasyon, ölçme ve fotoğraflarla belgeleme gibi yöntemler kullanılmıştır. Sonuç olarak Şifahane'nin 530 yıl öncesinde fonksiyon, planlama ve yapı kabuğu özellikleri açısından çevre koşullarıyla uyumlu olduğu, kullanıcılar açısından gerekli konfor şartını sağlarken enerji tüketiminin de kabul edilebilir olduğu tespit edilmiştir.

Öne Çıkanlar

- Yeniden işlevlendirilen tarihi yapıların günümüz konfor koşullarına uygunluğunun incelenmesi gerekmektedir.
- Tarihi yapıların fiziksel çevre koşullarına uygunluğuna yönelik yapılan analiz sonuçları gelecekte inşa edilecek yapıların sürdürülebilir üretimlerine ışık tutabilir.
- Sürdürülebilir yapı üretimi fiziksel çevreyle entegre tasarıma bağlıdır.

Anahtar Sözcükler

II. Beyazıt Külliyesi Şifahanesi;
Sağlık yapıları; Tarihi binalar; İç ortam kalitesi; Fiziksel çevre koşulları

Makale Bilgileri

Alındı:
14.03.2022
Revizyon Kabul Tarihi:
28.04.2022
Kabul Edildi:
16.10.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

- Mimarlık Fakültesi, Trakya Üniversitesi, Edirne, Türkiye
dinceraydin@trakya.edu.tr
- Sanat, Tasarım ve Mimarlık Fakültesi, İstanbul Okan Üniversitesi, İstanbul, Türkiye
seyhan.yardimli@okan.edu.tr
- Mimarlık Fakültesi, Trakya Üniversitesi, Edirne, Türkiye
emihlayanlar@trakya.edu.tr

INTRODUCTION

The comfort and health of the users in a built environment depend on the indoor environmental quality (IEQ) of the building (Horr et al., 2016). During the design and planning for a comfortable and healthy indoor environment in a building, all the parameters and functions of the building such as the location of the building, and physical outdoor environmental conditions which determines the quality of the indoor environment, user profile, and preferences, materials used in the interior, thermal comfort, indoor air quality (IAQ), acoustics, and lighting comfort should be considered. Thus, this provides a sustainable approach in the architecture. In fact, it is seen that historical buildings, foremost the traditional structures, are designed by paying attention to these parameters. From this perspective, the expected and widely used concept of sustainability for today's buildings is not too far for these buildings. Even more, despite being built hundreds of years ago, they can be exemplary for today's sustainable building design within the context of user comfort and health, and vernacular architecture (Roura, 1998; Philokyrou & Michael, 2021). Although these buildings are not constructed with an awareness of sustainability, with some improvements, they have a high potential for it (Magrini & Franco, 2016).

Although the historical buildings were constructed to meet the needs of the period they were built, the use of such buildings continues today. However, studies show that these buildings have some comfort condition problems and are even responsible for large amounts of energy consumption and CO₂ emissions (Colla et al., 2016). Therefore, it is important to evaluate the existing conditions of these buildings before and after used (Akande et al., 2016; Benchekroun et al., 2020). As such, creating an indoor environment suitable for the comfort conditions of the users means the creation of a suitable type of microclimate for the specific structure (Silva & Henriques, 2014; Timothy et al., 2016). In addition to regulating the IEQ of a building, the creation of a microclimate is essential for the life and survival of a historical building (Kramer et al., 2016). It is possible to regulate the quality of the indoor environment of historical buildings by creating a suitable microclimate for both the users and the building itself (Corgnati et al., 2009; Andretta et al., 2016). However, it should be noted that the created microclimate affects the health of the building as well as determines its energy consumption.

In recent years, following the growing importance of energy efficiency, the number of studies on the thermal behavior and energy efficiency of traditional buildings has been increasing in the literature (Mueller, 2013; Rota et al., 2015; Flores, 2016; Khledj and Bencheikh, 2021). Because

many of historical buildings cannot be survived by remaining their original functions today. This makes re-functionalization or adaptive reuse of some historical buildings a current issue due to original function is not proper in today's living conditions (Bullen & Love, 2011; Çakır et al., 2020). Although it is possible to use historical buildings with many different functions, this re-functioning is commonly in the form of an example of presentation of the original function of the building itself as a museum or an artefact from the past to the present by hosting historical or contemporary artefacts. In any event, it is needed to assess the existing conditions under the current demands and today's comfort conditions by analyzing their IEQ. Thus, improvements for the buildings and the gains from these improvements could be determined and evaluated (Kim, 2018).

This study aims to examine the IEQ and energy consumption of a historical building depending on their physical environmental data. For this purpose, health complexes, which are one of the important building types in Ottoman Architecture, have been chosen as a case study. Because it is more important to provide the thermal, visual and acoustic comfort conditions in health buildings than in other buildings. It must be noted today many of these buildings are used as a museum where the buildings present themselves with their architectural features of their time and an experience on living their original function. In this scope, 2nd Beyazid Health Complex has been investigated to set a good example in examining all IEQ parameters and their effects on energy consumption after using as a museum. The building is a unique example due to (i) the existence of summer and winter spaces in the same building and their effects on thermal comfort of the building, (ii) the effect of the landscape elements, both in courtyards and the outside of the building itself, used for the treatment of the patients with the scent and the natural ventilation conditions on the IAQ, (iii) the effects of the building's gradual structure and various windows openings on the façade on the lighting comfort, and (iv) the effects of the one of the important mission of the building for treatment with music to the acoustic comfort. As a result of the examination of the building, it will be determined how these four features of the 2nd Beyazid Health Complex affect the IEQ of its museum usage. Besides, the energy consumption of the building will be calculated and it will be decided whether there is a need for improvement in accordance with today's energy efficiency policies.

HEALTH COMPLEXES IN OTTOMAN ARCHITECTURE

Healthcare facilities have an important place in Ottoman Architecture. Ottoman Empire, which was one of the important great states of its period, hosted health facilities belonging to civilizations with many different cultures. There was no need to build new health facilities in the places where Seljuk and Mameluke health facilities were located, and they continued their operations through foundations (Terzioğlu, 1998). Ottomans built new healthcare buildings or complexes in cities conquered during their periods such as Bursa, Edirne, Istanbul, Thessaloniki, Belgrade, and Budapest (Terzioğlu, 1998).

These buildings which are named either as a 'Darussifa' or 'Sifahane' in Ottoman Architecture were planned together with madrasas that aim to serve the public health and, were also place where medical education is carried out, as such, these buildings became exemplary healthcare facilities for many societies in their period. The most distinctive architectural feature of the Ottoman health


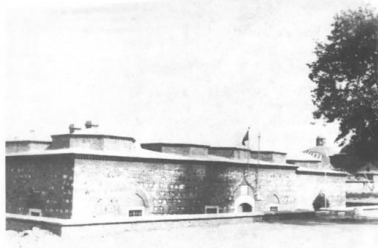

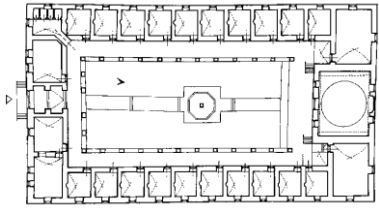
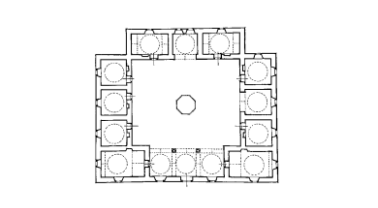
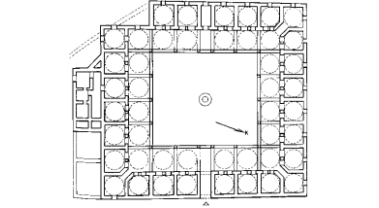
buildings is that they are planned as a part of the complexes consisting of mosques, madrasahs, imaret, tabhane, caravanserais, hammam (Turkish bath), bazaar, fountain, etc. (Terzioğlu, 1998; Cantay, 2014). These complexes create small cities within the city and meet all socio-cultural and health-related needs of the people like a social center. Besides, it is seen that psychological disorders are treated in these centers as well as physiological diseases. It is seen that elements such as water, fragrance, light, and music are used to heal patients, especially in the planning of the buildings for psychological treatment.

Darussifas have a certain architectural style. Most of them are built in the shape of four iwans around a courtyard (Şengül, 2014). However, Edirne Sultan 2nd Beyazid Health Building is architecturally different from this planning. It is seen that the Seljuk traditions were continued in the Ottoman health buildings, but new architectural ideas were also applied during and after the Renaissance period (Terzioğlu, 1998; Cantay, 2014). Although not all of these buildings are survived today, darüssifas in Manisa and Edirne are restored and used as museums now.

During the Ottoman period, the construction of the healthcare buildings continued from the 15th to the 17th century. There are 8 known health complexes in this period. 15th-century examples are the Darussifa of Yıldırım Beyazid in Bursa, Mehmet the Conqueror in Istanbul, and Sultan Beyazid II in Edirne. While the Haseki Hurrem Sultan, Atik Valide and Nurbanu Valide Sultan darussifas in Istanbul and the Hafsa Sultan Darussifa in Manisa are examples of the 16th century, the only building in the 17th century is the Sultan Ahmet II Darussifa in Istanbul (Terzioğlu, 1998; Cantay 2014). In this study, a sample of darussifas representing from 15th to 17th century has been comparatively analyzed. For this, buildings in different locations were chosen (Table 1). Accordingly, only the Hafsa Sultan Darussifa, among the buildings in Table 1, has survived today. It is must be noted that there is no study to give the original plan of Sultan Ahmed Darussifa, the only health complex built in the 17th century (Cantay, 2014).

According to the Ottoman culture, it is seen that all darussifas are located in a health complex. They are generally independent buildings within the complex. It is seen that the most basic difference in terms of plan scheme is in Yıldırım Beyazid Darussifa, which is one of the 15th-century examples. While other schemes have a squarer central plan, this is rectangular in Yıldırım Beyazid. In fact, this darussifa is different from the usual madrasa plan. While the classroom in the madrasah can be chosen as a unit dominating the building in the plan of the Yıldırım Complex, the classroom is in the integrity of the monoblock structure in the darussifa (Cantay, 2014). Moreover, in the planning, the buildings were built with courtyards. This is a common practice seen in the health buildings of the period. This water element is used for cleaning and hygiene in treatment. Considering the importance of water in health, the location of these buildings is decided to be located either on or near a water source. Among the buildings shaped around a courtyard, in Hafsa Sultan Darussifa, unlike the other two hospitals, the spaces open directly to the courtyard. However, in Yıldırım Beyazid and Sultan Ahmed II darussifas, there is a row of porticoes in front of the spaces. Here, the spatial organization is arranged as open, half-open, and closed in a hierarchy. Accordingly, it can be said that the plan scheme and spatial organizations aim to provide patients with an appropriate IEQ.

Table 1 - Comparison of the health complexes in different periods (created by authors over Cantay, 2014).

15 th Century	16 th Century	17 th Century
Darussifa of Yıldırım Beyazid <i>Bursa</i> - H. 802 / C.E. 1400	Darussifa of Hafsa Sultan <i>Manisa</i> - H. 946 / C.E. 1539	Darussifa of Sultan II. Ahmed <i>Istanbul</i> - H. 1018 / C.E. 1609
		
<i>Other Units in the Complex</i> Mosque, Madrasah, Tomb, Turkish Bath, Imaret	<i>Other Units in the Complex</i> Mosque, Madrasah, Infants' School, Imaret, Hankah	<i>Other Units in the Complex</i> Mosque, Madrasah, Infants' School, Tomb, Public Fountain, Turkish Bath, Imaret, Stores, Houses, Crypt
		
<i>Plan Scheme</i> It has a rectangular form (53x30 m) in the north-south direction. The entrance to the building is provided by the door on the north. The entrance area opens to the courtyard surrounded by a pillared and arched portico system in three directions. The rooms (10 + 10) with a barrel vault top cover are located in the east and west direction. The classroom is directly connected to the south and expands towards the courtyard.	<i>Plan Scheme</i> Located in the north of the complex, the building is accessed through a three-part entrance. It has an almost square (17x10 m) courtyard. There is an octagonal pool in the center of the courtyard. Rows of spaces surround the three sides of the courtyard. There are 9 closed rooms in this area. There are two iwans in the east and north direction.	<i>Plan Scheme</i> The square planned building is shaped around a courtyard with portico. There is a fountain pool in the middle of the courtyard. 18 closed independent units (rooms) to treatment of the patients. North, east and west corner of the building has semi-open spaces. It is covered with lead-covered domes. There is a hammam (Turkish bath) near to the south-east wall.
<i>Architectural Features</i> <i>Construction Material and System</i> Masonry Structure constructed with Brick, Stone and Rubble Stone <i>Wall Order</i> Exterior wall consists of one-line stone and two lines brick – a mixture of rubble stone wall bond	<i>Architectural Features</i> <i>Construction Material and System</i> Masonry Structure constructed with Brick and Rubble Stone <i>Wall Order</i> Exterior wall consists of one-line rubble stone and two lines brick	<i>Architectural Features</i> <i>Construction Material and System</i> Masonry Structure constructed with Cut Stone <i>Wall Order</i> Not available data (n/a)
<i>Current Use and Condition</i> Only some parts of wall exist Demolished	<i>Current Use and Condition</i> Re-functioned as Museum Restored	<i>Current Use and Condition</i> Entrance Gate & Turkish Bath exist Demolished

The buildings were built on masonry, the traditional construction system of the period. Apart from Yıldırım Beyazid, which was an early period example among the Ottoman period darussifas, domes were used as top cover. In the walls, cut or rubble stone was used together with brick, considering the materials available in the surrounding of the building. Domes or vaults were covered with lead. It is mentioned that Bursa tiles were used inside of the building in Yıldırım Beyazid (Cantay, 2014). Hafsa Sultan is an important building that shows the characteristics of the 16th century Classical Ottoman architecture. The building has a balanced decoration with building materials (Cantay, 2014).

Brief History of 2nd Beyazid Health Complex

After the Fatih Complex in Bursa and Istanbul, the Beyazid Complex was to be the third widely comprehensive complex in the Ottoman Empire (Tuna, 2015). The Sultan 2nd Beyazid ordered the preparation of the construction materials and the complex was decided to be built close to the Tunca River in Edirne (Figure 1). Deep moats were dug to realize the construction and prepare the foundations of the building (Kazancıgil & Gökçe, 2012).



Figure 1 - Old photographs of 2nd Beyazid Health Complex from Tunca River (Trakya University, 2013).

2nd Beyazid Complex is a group of buildings, which consist of important health, education, worship, and social service structures of the 15th century (Figure 2). The darussifa, which is located in the complex, together with the sifahane, is the building that gives this complex its most distinctive feature. Although there are definitive records for the architect of the complex, two different names are mentioned. Some records mention the name Yakub-Şah Bin Sultan; however, it is well accepted that Mimar Hayrettin was the main architect of the complex, as he was the chief architect of II. Beyazid period. The complex was constructed between 1484 and 1488 (Tuna, 2015). The complex includes 8 independent structures; a mosque as a worship unit, a madrasah and a primary school as educational units, darussifa as a health unit, and two imaret structures, a hammam (Turkish bath), and a mill as social service units. However, the bath, mill and the primary school did not survive to the present day.

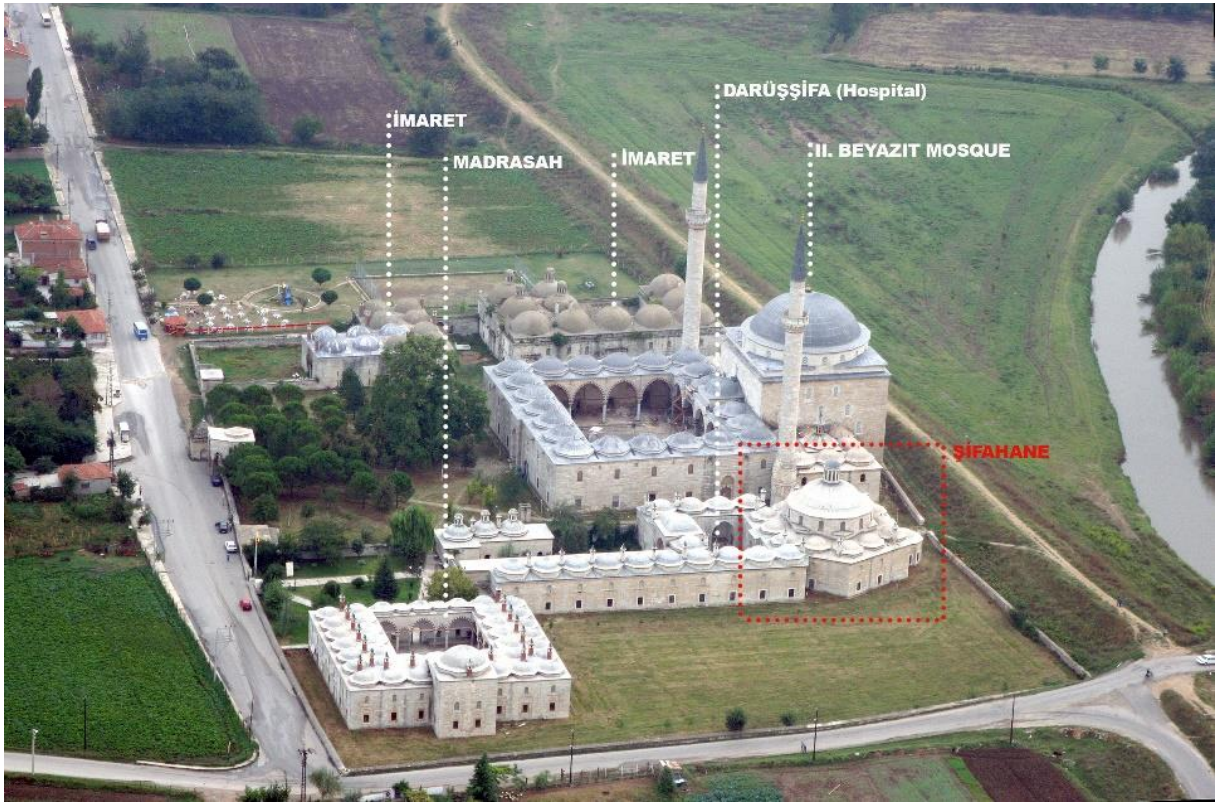


Figure 2 - Sifahane and other units in the 2nd Beyazid Health Complex (created by authors over Edirne Regional Directorate of Foundations, 2005).

The darussifa that gives its characteristics to the complex is located at the right side of the mosque in the center, along the northwest-southeast axis (Figure 2). The building is formed with courtyards, which are connected to the unique hexagon-centered domed space. As one of the earlier examples of today's hospital structures, the darussifa is composed of 3 main sections (Cantay, 2014). These sections include, (i) the service section with polyclinics opening to the first courtyard in the front section, and units such as a pantry, kitchen, and laundry, (ii) the section with 4 rooms and 2 sofas used as pharmacy and senior staff room located around the second courtyard (inner courtyard) and (iii) the sifahane section with beds where the summer and winter treatment areas are located. There are 6 rooms and 5 open sofas in the sifahane section. One of the sofas, which was built towards the river, is used as a musical stage while others are used during the summer. The features of the darussifa settlement and the properties of its spatial usage are shown in Figure 3.

The building was built with a stone masonry system, one of the traditional construction techniques of the period. Cut limestone was used as the main building material (Cantay, 2014) (Figure 4). The carbonated limestone (called as kufeki), which is composed of calcium carbonate (CaCO_3) composition, has a soft, workable, and hollow structure. This material contains dolomite, calcite, and quartz (Yıldız, 2012). In addition, brick was used in the hearth of the rooms; wood in the window and door frames and in the eaves; and, also metal materials as window railing and covering material. Elements, such as interior walls, ceiling (dome), etc. were finished with plaster (Figure 4).

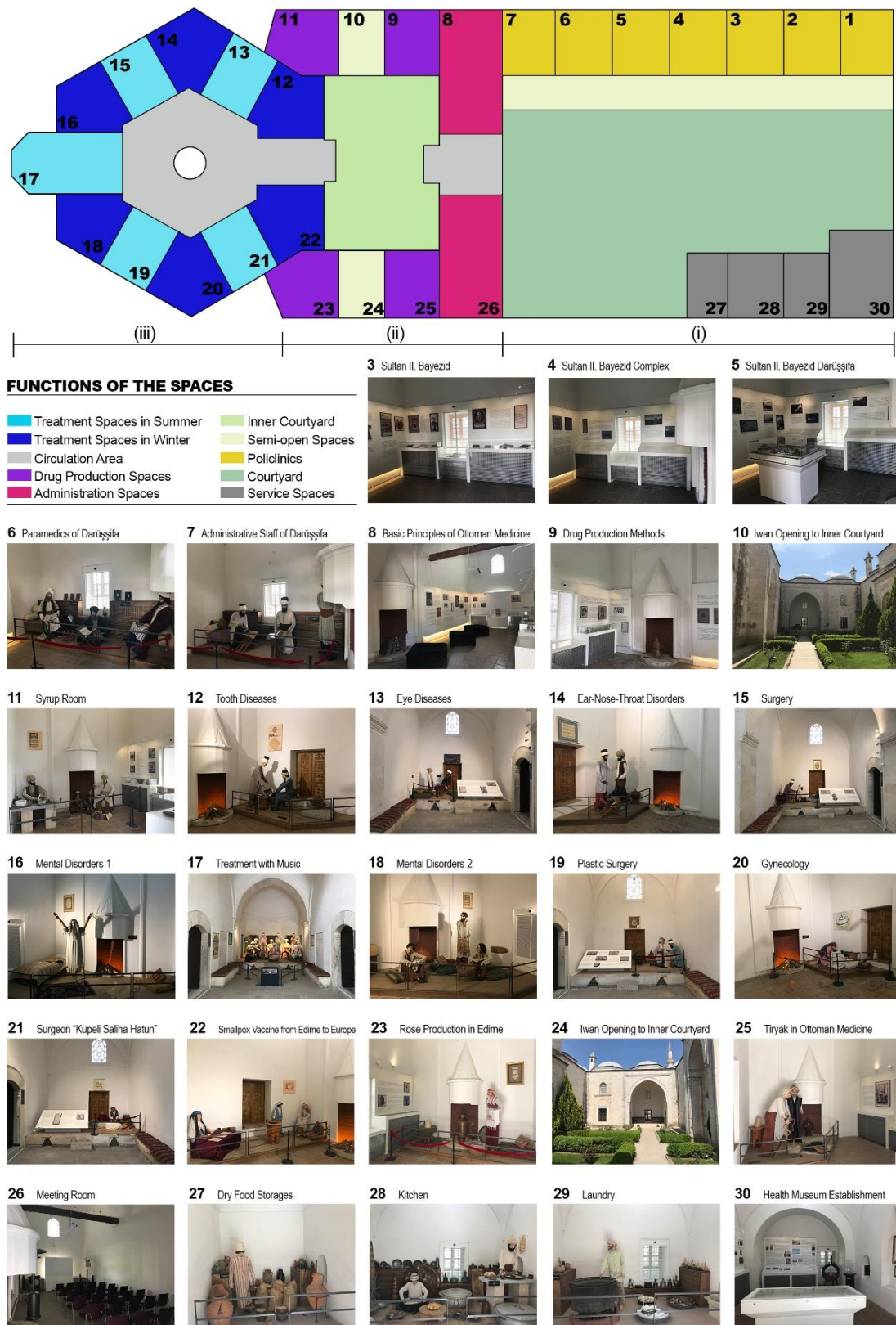


Figure 3 - Functions of the spaces in the Darussifa of 2nd Beyazid.



Figure 4 - Building masonry wall (a), plastered interior walls and dome (b).

Darüşşifa, which was used until the end of the 19th century, was abandoned after the 1876-1877 Ottoman-Russian war. As a 530-year-old building, Darüşşifa has gone through different restoration and maintenance processes at various times. It was reopened after the restoration in 1894-1896, the oldest known, and was used for a while in the isolation and treatment of mental patients. In 1910, another restoration was carried out by the German architect Cornalius (Trakya University, 2013). The building, which was closed again during the Balkan War (1912-1913), was in a hulk, although it was restored during this period (Kahya Erdemir and Demirhan, 2000). The General Directorate of Foundations restored the hulk sections in 1964 and prevented the building from being demolished (Şengül, 2014). According to the sources of the Edirne Cultural Heritage Preservation Regional Board, there are no detailed documents regarding the restoration works of this period. Figure 5 shows the condition of the building before the restoration works. It is stated that during this restoration process, the stone works, imitation screed works, and the oven and soup kitchen parts of the building were preserved against external effects. Again, the collapsed domes and arches of the madrasah were repaired in this period (Edirne Cultural Heritage Preservation Regional Board Archive, 2022). The building, which was later transformed into a Health Museum in 1977, was transferred to Trakya University in 1984 by the General Directorate of Foundations. The building was renovated by Trakya University with a comprehensive restoration in the same year (Trakya University, 2013).



Figure 5 - Before restoration in 1964; Darüşşifa (a), courtyard (b) and interior of Şifahane (c) (Edirne Cultural Heritage Preservation Regional Board Archive, 2022).

In 1993, some conservation works were carried out on the building within the scope of transforming the Darüşşifa into a Health Museum within the body of Trakya University. After the restorations were completed by the university, some parts of the Darüşşifa and its madrasah were used as educational spaces for a while. After the approval of the Ministry of Culture, General Directorate of Monuments and Museums, the “T.Ü. Sultan II. Beyazid Complex Health Museum” was put into service. In this process, the heating system was included in the building. During its use as a museum, simple repairs were carried out at various times in line with the needs of the building. While the lead coatings of the domes were renewed in 2002, the muqarnas of the kitchen area and the furnaces and ovens were restored in 2006. In 2008, the facade of the complex was cleaned (Figure 6), and then a restoration project was prepared for the facades in 2009. In the same year, garden and landscaping arrangements were made (Edirne Cultural Heritage Preservation Regional Board Archive, 2022).



Figure 6 - Before (2008) and after (2018) facade cleaning.

In 2011 and 2015, the restoration of the building was carried out in the museum for the compositions of medical education and practices (Radikal, 2015). The most recent restoration of the building was made for the garden and landscaping of the complex (Karakaya Aytin et al., 2021).

Significance of the 2nd Beyazid Health Complex

The significance of the building can be classified under two topics. One of them is the central plan of the building and the other is the treatment methods used in the complex. The central plan was often used in many buildings like baths, religious buildings (basilica, churches, and mosques), etc. from Roman to Ottoman. It is seen that the planning of health buildings or facilities emerges in different ways in the history (Miller, 1997). With its central plan, 2nd Beyazid Health Complex differs from previously constructed health facilities. The building was centrally planned to emphasize the provided services and social benefits to the patients (İnci, 2004; Cantay, 2014). In this way, the building was affected by the previous health buildings while it became an example for the buildings

after it. Thirty years after the Ospedale Maggiore in Milan, which was considered as a turning point of hospital architecture in the Renaissance period and planned by Antonio Filarete in the form of a cross to provide a central system in 1457, the 2nd Beyazid Complex has a superior position because it provides acoustics for music therapy and it is the first hospital known to be built in the central system (Terzioğlu, 1985). Furthermore, in his work published by L. Ch. Sturm in Augsburg in 1720, the fact that the centrally planned hospital project with the ventilation lantern placed on the central dome is similar to that of the Beyazid Darussifa, is an indication that the building is a guide to the next period (Figure 7). In fact, 400 years after it, there are many hospitals designed with a similar approach in Europe and America. It can be said that in 19th-century hospital buildings such as Stuivenberg Hospital in Antwerpen (1855), Presbyterian Hospital in Philadelphia (1885), Bradford Children's Hospital (1890), and Seaford Military Hospital in Liverpool (1884) were used similar central plan (Kuhn, 1897; Şengül, 2014; Tunca, 2014; Duymaz and Topaloğlu, 2015).

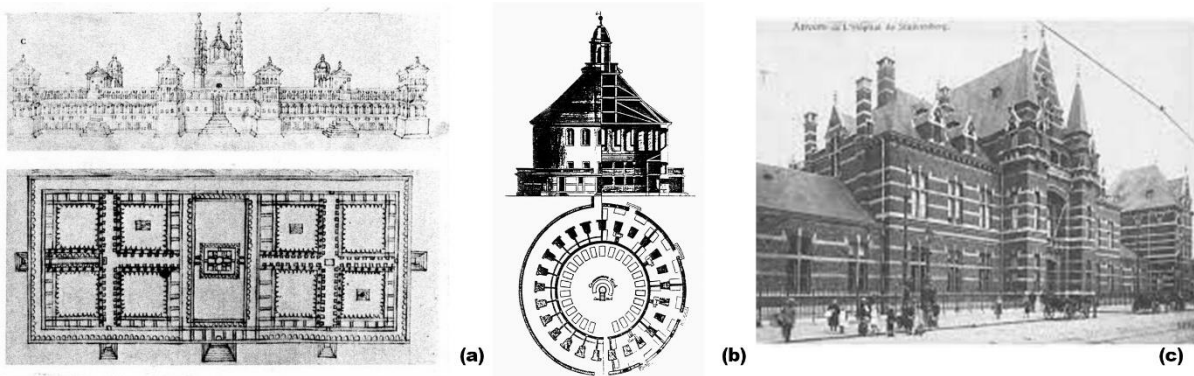


Figure 7 - Ospedale Maggiore in Milan (a), L. Ch. Sturm Hospital Drawing in Augsburg (b) and Stuivenberg Hospital in Antwerpen (Terzioğlu, 1998).

The second significance of building depends on the treatment approaches and methods used in the complex. Previously all patients were cured in the health complex, however, in the following years mostly mental patients were treated. Fragrances, water sounds and music were used together in the treatment of patients. It is stated that fragrant plants grown in the garden of the darussifa are good for the mental health of the patients. Located on the banks of the Tunca River, water was taken from the river with water cabinets and cycled to the fountain in the Health Complex. The sound made by the water and the coolness it provided were also used in the treatment of patients. In addition, patients were employed in hand craftsmanship and small jobs within the hospital to be kept engaged. The treatment with music, which is the most important feature of the hospital, was scientifically introduced for the first time in BC. 580-500 by Pythagoras. Moreover, Farabi and İbn-i Sina also studied music treatment methods for mental patients (İnci, 2004). Figure 8 which is a miniature, shows the treatment with music in the complex (Erke, 2002). This makes the building unique and creates its character.

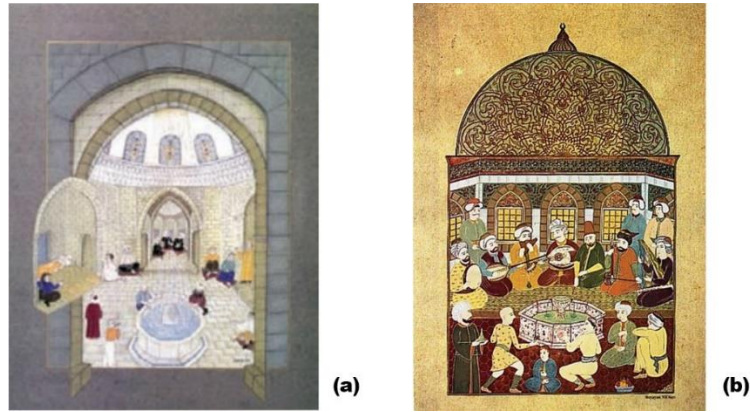


Figure 8 - Mental patients in the darussifa (a), an insane patient during a musical therapy session at the complex (b) (Erke, 2002).

In his 'Book of Travels' or *Seyahatname*, Evliya Çelebi calls the complex "Beyazid Khan Hospital" and describes it briefly in terms of its location and its spatial features. He describes the complex as a "Healing Dormitory" inside an Eden, which is located at the right of the large outer courtyard of the Beyazid Mosque. He mentions the Stone Dome is a bright space and has a hammam-like dome with glass clerestory windows. It was mentioned that there was a flag on top of this dome and it blew according to the wind direction. It is stated that there are fragrant flowers in its garden and has a musical delegation who comes three times a week for a performance and that the patients were healed in this way. The importance given to the nourishment of the patients was also stated by providing examples as to meals were given three times a day, and in which various game animals were cooked according to the wishes of the physicians (Kazancıgil & Gökçe, 2013).

Built five centuries ago with a human-oriented approach, the structure with its grand physicians and staff render service for a long time. It is seen that during the said period patients are left to die without treatment in other countries (Kazancıgil & Gökçe, 2013). In this context, the Darussifa of 2nd Beyazid has many aspects worthy of study.

As being a museum the building, which won the Council of Europe Museum Prize in 2004, was also accepted to the "Excellence Club" by the European Heritage Association (Trakya University, 2013). Today, the building is among the most visited places by local and foreign tourists in Edirne. Moreover, the complex, approved candidate for UNESCO World Heritage List, is in the tentative list (UNESCO, 2016).

RESEARCH PROCESS AND METHODS

The healthcare facilities are one of the important structures of Ottoman Architecture. Edirne, which was the capital city of the Ottoman Empire for 92 years, houses one such complex called 2nd Beyazid Complex. It is seen that 2nd Beyazid Complex settlement and/or its structures are evaluated in various ways in many national studies (Kazancıgil & Gökçe, 2012; Şengül, 2014; Tuna, 2015; Ergüven & Yılmaz, 2020). However, unlike previous studies, this study analyses how physical environmental data guides the planning and design of a traditional building and their effect on IEQ and energy consumption of the building.

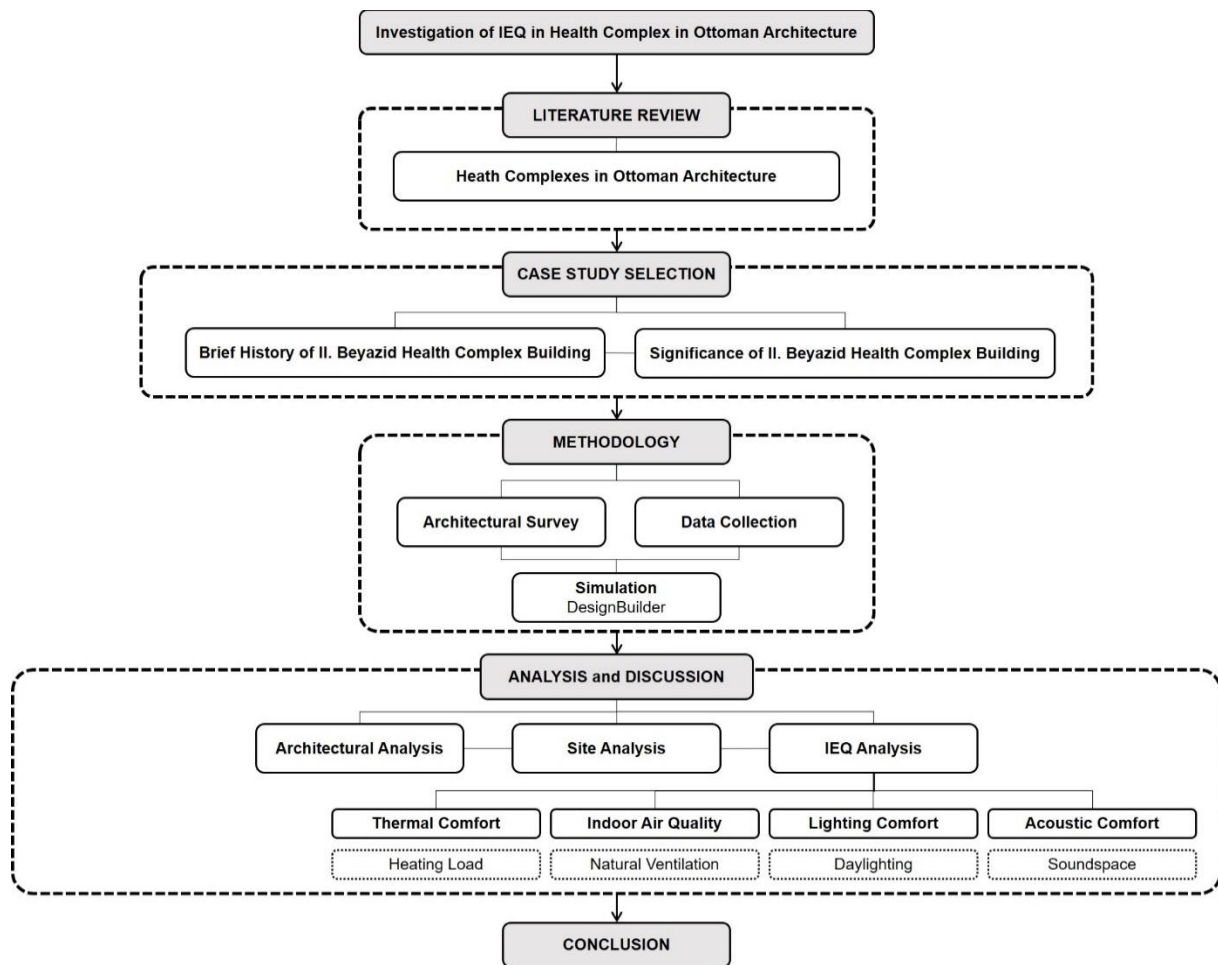


Figure 9 - Research process diagram.

To evaluate historical buildings concerning the physical environmental data, many different analysis techniques and methods, such as simulation, monitoring, CFD analysis, are used separately or in combination with each other in the literature (Matinez-Molina et al., 2016; Ide et al., 2022). This study was carried out in four main steps. Figure 9 summarizes the all steps within including their scopes and conducting methods to obtain data. The process, which begins with a literature review, provides the research background within a historical way and shows the importance of healthcare complexes in the Ottoman Architecture. Thus, the similarities and the differences in the health complexes were presented in a comparative way. This also helps to show the uniqueness of the 2nd Beyazid Health Complex. After the historical examination, the data were collected to analyze the building for IEQ and energy consumption. For this, architectural documents were used to determine the architectural features of the building and meteorological documents were used to determine the outdoor conditions. In the analysis step, while the physical outdoor environmental conditions are evaluated according to the effects of the building on the site plan, the indoor conditions are addressed in terms of thermal comfort, IAQ, lighting, and acoustics. Analyses were made on the heating load of the building for thermal comfort conditions, natural ventilation conditions of the building for IAQ, natural lighting conditions for lighting, and soundspace for acoustic comfort. In this context, while the analysis of IAQ and acoustic comfort were carried out by using qualitative methods such as direct observation, on-site examination, and documented with

photographs, thermal and lighting comfort were examined by using quantitative methods such as simulation and measurement with DesignBuilder. Consequently, the results of the analysis were evaluated and interpreted based on the results obtained in the literature.

ANALYSIS OF THE 2ND BEYAZID HEALTH COMPLEX

The analysis of the 2nd Beyazid Health Complex is discussed under 3 headings as indicated in Figure 9. These are the architectural analysis (survey), site (environmental) analysis and IEQ analysis of the darussifa, respectively. The analysis of the building is primarily examined in terms of architectural history in comparison with other buildings of its period. Thus, it is aimed to reveal the similarities and differences of the building with other buildings in terms of architectural planning, construction technique, materials and technologies, which affect and determine the comfort condition of the building. Under the site analysis, the effects of outdoor environment on the planning of the building and its indoor environment conditions are evaluated. Finally, how both architectural and outdoor impacts of the building affect the building's IEQ and energy consumption is discussed.

Architectural Analysis

As it is stated in the previous sections of the study, 2nd Beyazid Health Complex especially the Darussifa was influenced by some buildings in its period or before while it was a pioneer for the next generations. In this section architectural features of the building are discussed with others in its time and later examples to present the similarities and differences of the darussifas comparatively. In Figure 10, plan schemes of the 2nd Beyazid Darussifa and some other buildings are shown. 2nd Beyazid Darussifa is different in terms of its plan scheme, both according to its own period and the buildings after it. Although the general form of the building is similar to Sultan Beyazid, it is different in terms of spatial organization. It is seen that the building was planned in connection with the madrasa and has a structure with more than one courtyard. This planning follows a hierarchical order from general use and access to more specific treatment areas according to the functions of the spaces (Figure 4). Another important difference is that the sifahane section has central hexagonal planning and this area is covered with a single dome in the center. Thus, the building can offer an IEQ according to summer and winter conditions. Again, as in other buildings, water is located at the center of this area as an important treatment element.

Another difference in the building is the materials used. Although it was built with the masonry system, it is seen that kufeki stone with high thermal performance was used as a basic construction material. Considering that the selection of material used in the building has a crucial impact on the IEQ of the building, especially thermal comfort (Chandel et al., 2016), this leads to differing from other buildings.

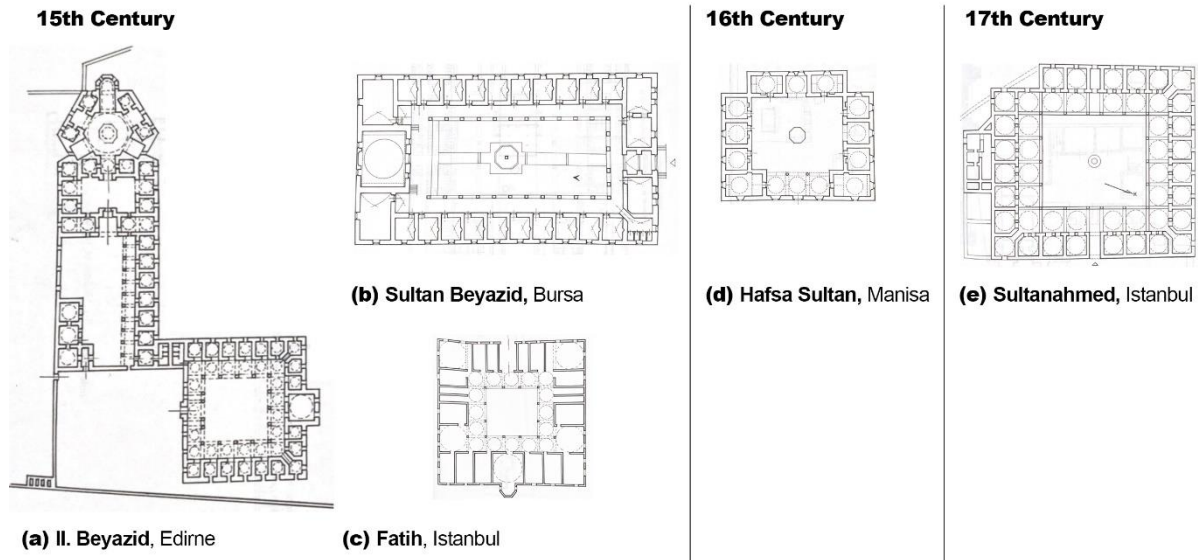


Figure 10 - Comparison of the plan schemes of darussifas (Cantay, 2014).

In summary, in many respects like building planning, space organization, material, location selection, etc. 2nd Beyazid Darussifa is in a unique position as a different structure of both its period and its aftermath. Therefore, it is very important to investigate the suitability of the existing conditions of use to today's needs.

Site Analysis

One of the most important design inputs concerning buildings from all eras is the climatic properties. The data about the site also play a critical role in terms of settlement decisions. Because the physical environmental data of the settlement determines the architectural design and the building envelope. In Table 2, the physical environmental data of the building is summarized. The building is located at the edge of the Tunca River which is a river sourced in Bulgaria and that enters Turkey from Edirne. In terms of climatic conditions of Edirne, the building is located in a temperate humid climate zone; however, it is also exposed to a humid environment due to its closeness to the river. It can be argued that for a city where there is a relative humidity of 70% on average, the building faces a higher rate of relative humidity.

The direction of the sun path and the prevailing wind is shown on the building's site plan and presented in Figure 11. Although the darussifa is located around its own courtyards, it is also connected to the courtyard in front of the mosque in the center of the settlement (Figure 3-4). However, the fact that the courtyard in front of the mosque is intensely planted provides control of the negative effects of the prevailing cold wind.

Table 2 - Physical environmental data of the settlement.

Settlement	<i>Location</i>	Yeni İmaret District
	<i>Topography</i>	Lowland topography near the river
	<i>Access</i>	With historical bridges from the city center to the settlement
Climate	<i>Climate Zone</i>	Temperate humid climate
	<i>Temperature</i>	18 °C with 70% relative humidity
	<i>Prevailing Wind</i>	North and Northeast directed with 7,4 km/h mean speed
Vegetation & Landscape		Dense trees in the inside of the settlement, Landscape of various odorous plants
Water Element		Outside the settlement: River (Tunca River); Inside the settlement: Pool, well

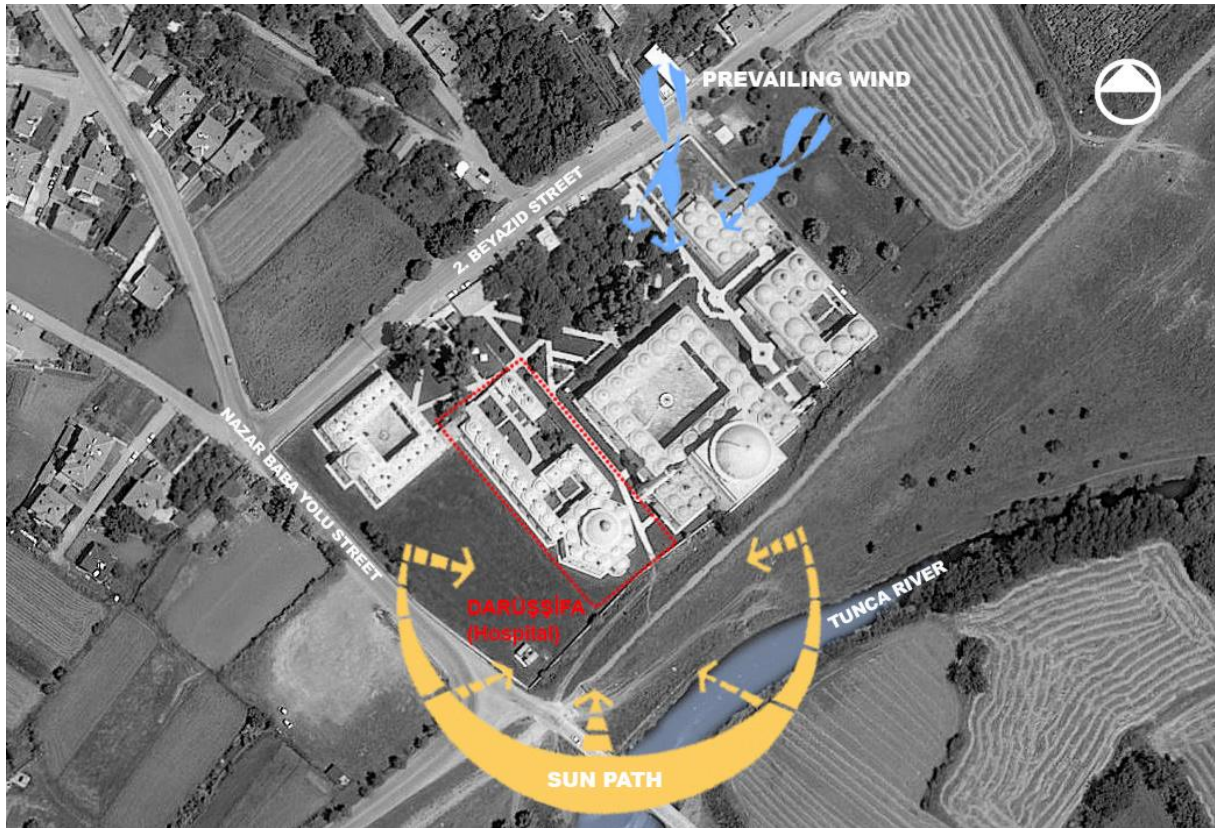


Figure 11 - Site analysis of the settlement.

When it is evaluated in terms of vegetation and landscape design, it can be observed that the courtyard in front of the mosque is intensely afforested, at the same time; there are plenty of pleasant and aromatic plants, which is one of the treatment methods of the sifahane. Due to the location of these plants and along with the prevailing wind, the fragrances are able to reach to the darussifa.

By considering the sun path and the daylight, the darussifa was placed in the south and south-west part of the site. In fact, the polyclinics being located to the south specifically contributes positively both to the comfort conditions of the building and the health of the patients (Figure 11).

IEQ Analysis

IEQ includes air quality inside the building, thermal, lighting, and acoustic comfort conditions, other ergonomic conditions such as odor and ambient vibrations and the effects of these on the user. However, thermal comfort, IAQ, lighting, and acoustic comfort parameters constitute the most basic components for IEQ for all types of buildings. Therefore, the IEQ of the sifahane of 2nd Beyazid Complex is examined according to these four parameters. As indicated in Figure 9 in the study, while DesignBuilder, a simulation program, was used for thermal and lighting comfort analyses, architectural plans and sections and photographs of the building were examined for IAQ and acoustic comfort. For the analysis, the modeling has been carried out in DesignBuilder by using the plan and material properties of the building (Figure 12). Since the study only examines the sifahane section of the complex, the areas outside of this building were created as a solid model (purple and green areas) and included as such in the simulation.

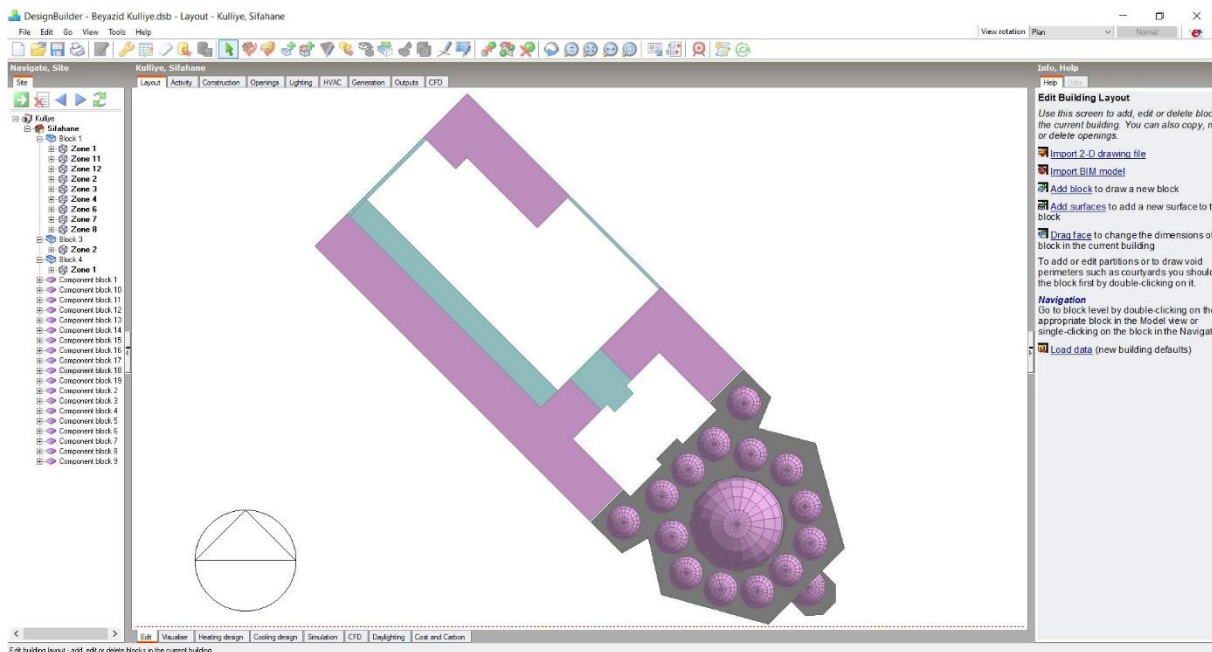


Figure 12 - DesignBuilder model of the sifahane.

Thermal Comfort

Considering the restoration processes of the Şifahane in the historical process, the entire building envelope, especially the body walls of the building, has survived to the present day with minor interventions. In this process, the interventions made on the walls were simple maintenance and repair operations, and the wall surface cleaning and joint finishing operations were carried out (Edirne Cultural Heritage Preservation Regional Board Archive, 2022). Built with a masonry system, the thickness of the stone walls reaches from 120 cm to 160 cm in the sifahane. Regarding

the thermal performance, walls with high thermal resistance and thermal mass properties contribute positively to the building’s winter and summer comfort. The thermal performance of the building was analyzed with the help of the DesignBuilder simulation program. In the simulation program, properties of the building envelope materials were assigned considering the originality of the building and its interventions during its mentioned restorations. In Figure 13, the thermal transmittance value (U-value) calculated for the sifahane and the condensation verification results on the wall section of the building are shown. Accordingly, the U-value of the building envelope was calculated as 0.857 W/m²K. This value can rise to 3.00 W/m²K in reinforced concrete structures of today. The maximum U-value expected from a building envelope also varies according to the user comfort limit values determined specific to the geography of the buildings. Due to the location of the case building, this limit was determined to be 0.50 W/m²K in the TS825 Thermal Insulation Requirements for Buildings which is a national standard to regulate building envelope in Turkey (TS825, 2013). It must be noted that although the U-value of the building envelope is over the limit, the low U-value that could be obtained without the use of insulation was achieved with the construction techniques of that period. However, it has been determined that there is no condensation on the walls in terms of water vapor transmission. This is an important point to obtain a healthy indoor with thermal comfort. In addition, the thermal mass feature of the masonry stone material also contributes to the comfort of the indoor.

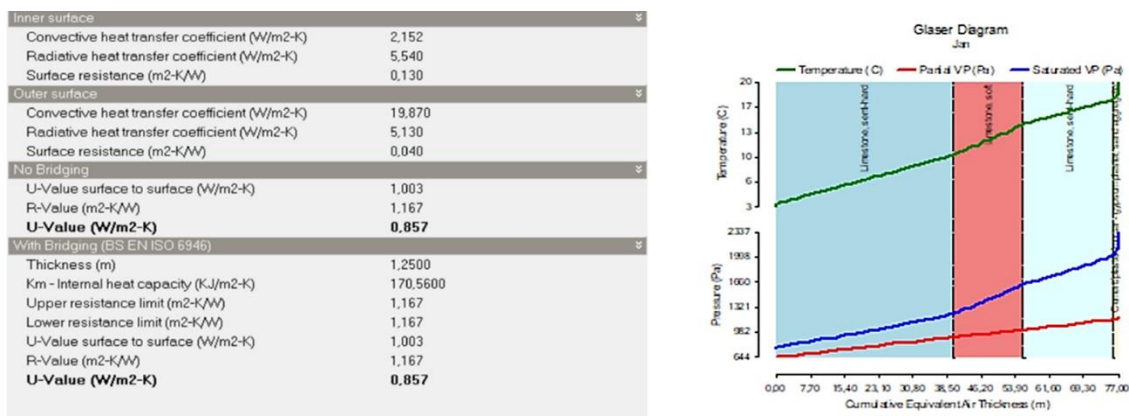


Figure 13 - Thermophysical properties of the building envelope and the condensation analysis.

Figure 14 shows the calculated amount of annual energy consumption, temperature and relative humidity values for the building. In the figure, while the limit values of different standards and regulations was used to compared with obtained data of indoor temperature and relative humidity, for the comparison of energy consumption, this was made with the help of previous studies’ results in the literature.

According to the simulation prepared by the current conditions of the building, the annual heating energy consumption is 213.08 kWh/m². Considering that this consumption is between 118-294 kWh/m² in similar historical buildings in different geographies, these values are at an acceptable level for this building (Lo Faro et al., 2013; Murgul, 2014; Salata et al., 2014; Mancini et al., 2016). Moreover, with this consumption, the building consumes as much energy as the existing buildings in the 20th century building stock (EUMEPS, 2011).

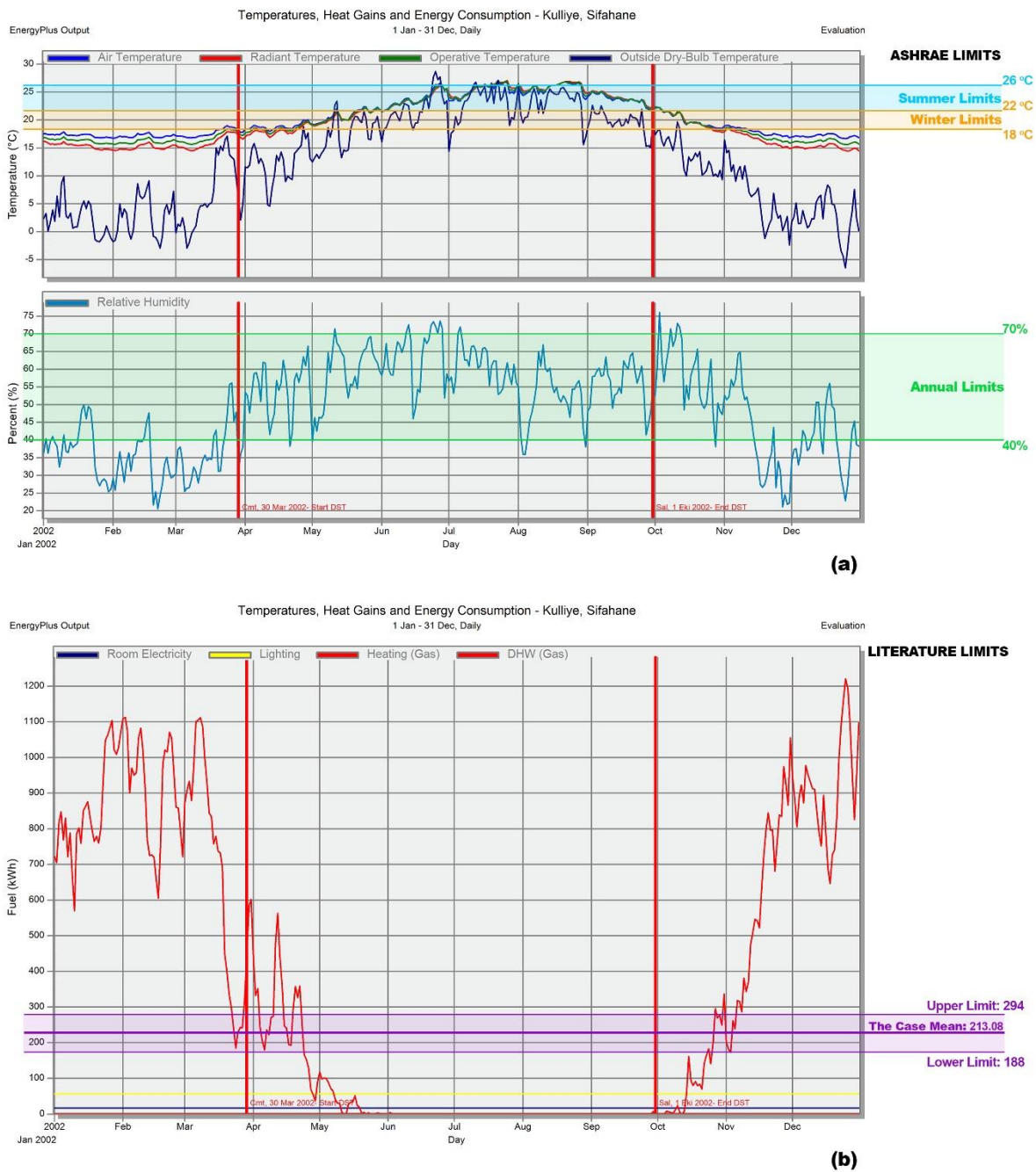


Figure 14 - (a) Comfort condition of the Şifahane, (b) annual energy consumption results.

Indoor Air Quality (IAQ)

In traditional buildings, ventilation is provided naturally. The element that will affect the IAQ of the space is the openable windows that will bring fresh air from outside to the indoor. In the sifahane, there are 15 windows on the hexagonal central dome. The lighthouse at the top of the dome, together with other windows, contributes to the ventilation and lighting of the large central space. The sofa (treatment space), which is located right opposite the entrance and used as a musical stage, has 5 windows in a single file, while, in other 4 summer sofas which are located around the center, each one has double row single windows (Figure 4). Again, in 4 winter rooms located next

to their summer sofas, there are double row single windows, and on two of the rooms that open up to the musical stage there are double windows (Figure 15). In addition to these windows, which are used for ventilation of the rooms, the furnaces in the rooms also contribute in terms of heating and air circulation. After cleaning the indoor air of the spaces, furnaces help to remove polluted air from indoor as being a smokestack. Window organizations, together with the air circulation of the building, are shown respectively in the plan and section (Figure 15). Accordingly, it has been determined that the plan scheme and the central dome of the building has a positive effect on the IAQ. Besides, the absence of windows opening directly to the prevailing wind direction has an effect on increasing the thermal comfort of the building.

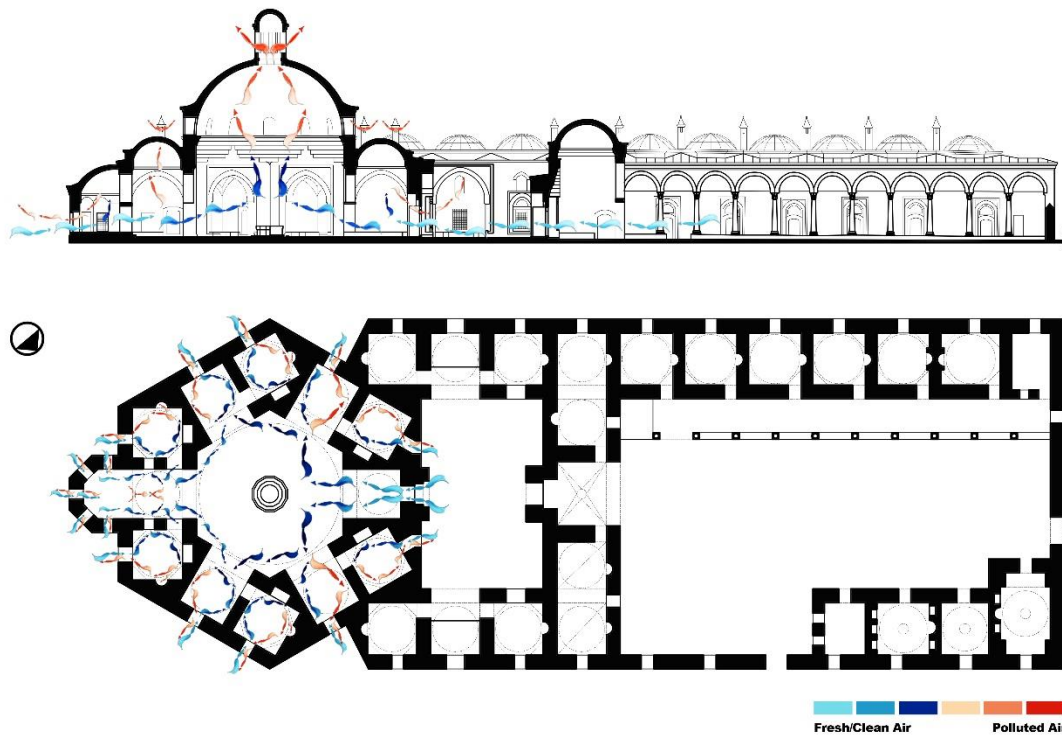


Figure 15 - Ventilation analysis of the Şifahane from the façade openings.

After refunctioning process, natural ventilation features of the buildings help to improve IAQ. If the ventilation of the building had not been provided naturally, air conditioning units would be needed. However, this is not an issue that can be solved very easily due to conservation rules. Also, natural ventilation of the building has the advantage on the humidity control which helps to prevent the weathering of the materials displayed in the spaces. It is very important to provide natural ventilation in the use of such buildings as museums (Yang & Celements-Croome, 2012; Dzulkifli et al., 2016). It also contributes to improving the thermal comfort of the şifahane without consuming energy (Zhang & Guan, 2006).

Lighting Comfort

Sunlight, which is an important component of the physical environment and climatic factors, has a great role in architectural design. Effective use of daylight is possible when considered with other

physical environmental values. Daylight is a critical parameter that ensures people’s integration with nature and provides comfort. The relationship between architecture and daylight was of great importance for architects in the past when there was no electrical lighting inside the spaces. Therefore, the sifahane has been analyzed according to natural lighting conditions in terms of lighting comfort. Wide window openings are realized in the rooms to allow daylight to enter the spaces. The bottom window dimensions are 100/160 cm and the top windows are 85/150 cm. The daylight effect of the transparent window sections in summer and winter conditions is shown in Figure 16 together with the location-related sun path diagram. The natural lighting analysis of the sifahane has been simulated in DesignBuilder for two different seasons, 21 December for winter and 21 June for summer. It is seen that in winter the daylight, which has a lower light intensity and reaches the earth at a narrower angle, is utilized in the building (Figure 16). While during the summer, as shown in Figure 17, the moldings on the windows provide solar control for the building and prevent overheating.

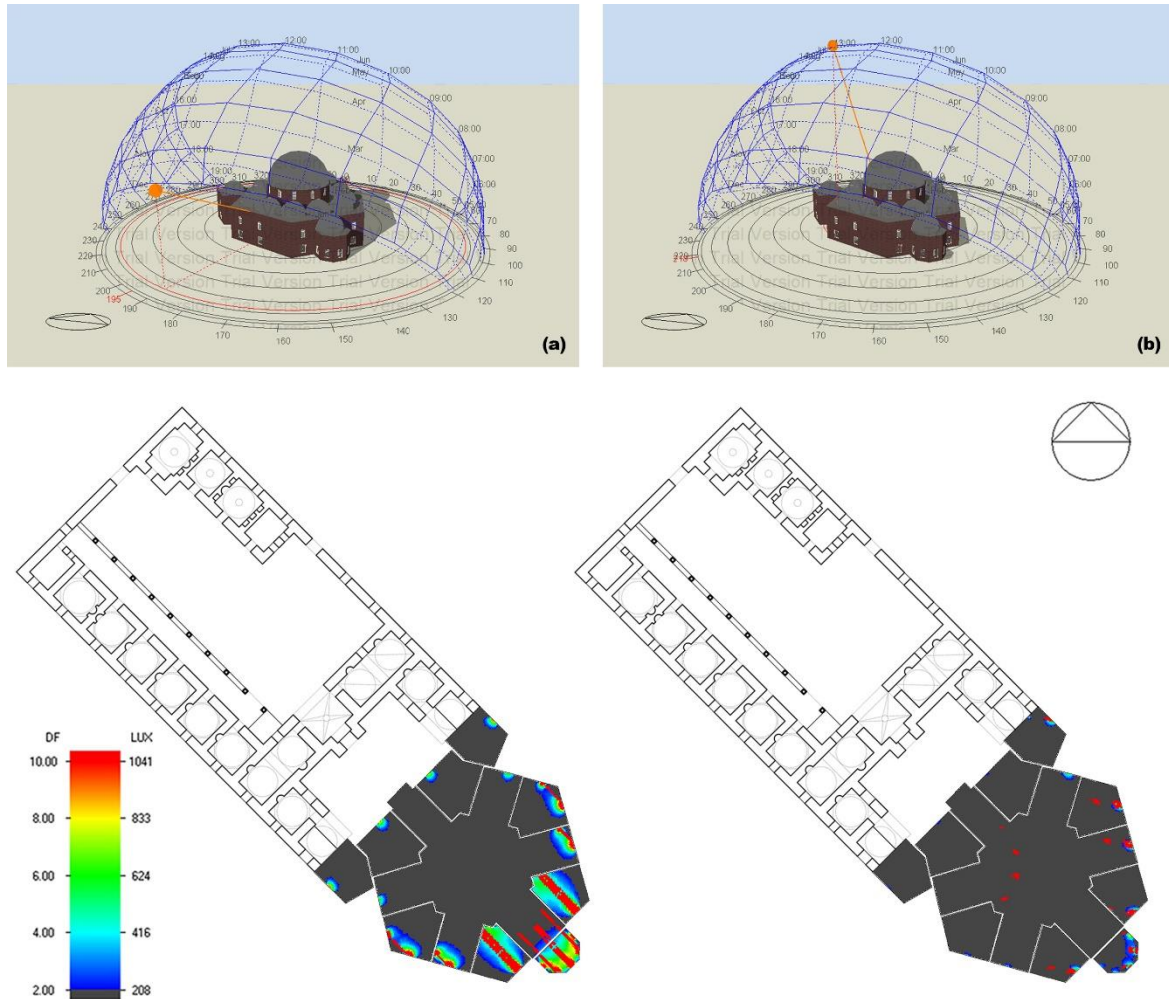


Figure 16 - Daylighting analysis of the sifahane (a) Dec. 21, 9 am and (b) Jun. 21, 9 am.



Figure 17 - Daylighting in winter and summer seasons.

There are many studies on the effects of daylight on energy gain and thermal load reduction, comfort, productivity and health (Codinhoto et al., 2009; Huisman et al., 2012). It has been stated in the related studies that the recovery rate of patients close to the window in hospitals is much higher than those who are far from it (Ulrich, 1984; Park et al., 2018). However, it is seen that the transparency ratio of the building envelope is not very high considering the fact that with some diseases light may cause sensitivity and discomfort for the patient. It should be noted that the construction system of the building also affects this. Masonry allows for limited openings on the façade. In this context, it has been determined that the lighting comfort of the building is at an acceptable level, although not very high.

Today, the building is used as a museum and instead of the treatment of the patients, some models or documents are presented to demonstrate that time in each space as shown in Figure 3. Therefore, to protect the materials on display, direct access to sunlight should be controlled. While the existing building envelope provides this, there is no glare indoors. Thus, the lighting comfort of the building in its museum usage is maintained.

Acoustics Comfort

Since the Sifahane was used especially for music therapy, attention has been paid to its acoustic properties. Limestone, which is used as a wall material, contributes to preventing the reverberation of sound waves with its porous structure. In terms of soundspace, muqarnas were used in the transition parts of the walls in order to prevent sound reverberation inside the dome (Figure 18). Muqarnas are important engineering inventions formed by employing knowledge and art together. Muqarnas are used in buildings as acoustic balancing elements in addition to their structural properties (Doğanay, 2007). The acoustic comfort offered by the building stems from its architectural shape and structure.

Located directly below the dome in a centrally planned building, the 12-sided fountain pool with its sprinkler is intended for the use of water sounds in treatments (Figure 19). It is considered that this water sound is to be distributed equally to all partitions and sections in the building. In addition, with the sloping floor of the pool, the flow of the water was regulated and the ground was kept clean.



Figure 18 - Muqarnas used in spaces with their acoustic properties.



Figure 19 - Placement of the water element used in treatment.

Today, in the use of the building as a museum, visitors are offered the opportunity to experience the effects of music therapy. A comfortable concert is provided to visitors without the need for today's technological sound systems. Even today in some special events, the building is used with this feature (Figure 20).



Figure 20 - (a) Musical therapy display and projected miniatures, (b) concerts in 2000s.

CONCLUSION

Physical environmental parameters are an important to affect the quality of life in spaces. That's why it should be considered primarily at the design stage, such that this is a common attitude in traditional architecture so far. However, managing all the physical environmental data is a difficult issue in architecture. Tackling with the physical environmental data in a well-rounded manner is critical to offer a comfortable indoor environment for the users. While even new buildings today fail to deliver the ideal IEQ, it is even more difficult to provide this by a historical building. Therefore, the historical buildings, which are included in today's building stock and are actively used, should be used with arrangements that can meet the needs of the age, and if improvement is necessary, these should be determined and the buildings should be innovated.

Belonging to the 15th century, the 2nd Beyazid Health Complex has become an exemplary building in planning healthcare facilities not only in its own period, but also in later periods. It is widely acknowledged that the building is a very successful example with its health services which it provided half a century ago with musical tunes, sounds of water in the fountain, sounds of birds in its natural environment, the smell of plants in its vicinity and its connection with the river (İnci, 2004). Today, the use of the building as a museum offers its visitors the opportunity to experience this environment. This means that while showing the historical atmosphere of the building, IEQ of the building is provided to respond to today's comfort conditions. Examined in regard to its site properties, daylight (lighting), ventilation, and acoustic aspects, it was observed that the sifahane is compatible with its physical environmental data in terms of function, planning, and building envelope features, all necessary comfort conditions are provided for users and its energy consumption is at an acceptable level. However, this is a temporary situation and the building will need energy efficient improvements in time. Because, after each energy-efficient renovations in the existing building stock, the current consumption of these historical buildings will not be acceptable in the future. Even so the building draws attention to and bears traces of the fundamentals of the passive design concept in today's architecture in terms of its natural ventilation, solar control and natural lighting. The complex has important features in terms of environmental and urban aesthetics with its general setting and it reflects these to the present day. It is important to emphasize that with its acquired sustainability features; by its integration with water (river), efficiently making use of natural resources, creating a healthy built environment, which provides all the comfort conditions for its function and users, the building has the role of providing a livable world to the next generations.

In summary, modern architecture, which aims to present the ideal IEQ in a sustainable way, today provides this with location-specific solutions by accurately analyzing physical environmental data. However, this study shows that as an approach adopted in historical buildings for centuries, these buildings can adapt to the sustainable understanding of the modern world. In future studies, the comfort perceived by the users can be determined by visitor survey. This will help to develop the renovation solutions for the building by evaluating the situation between perceived and calculated comfort conditions.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support has been received for conducting the research and/or for the preparation of the article.

Ethical Statement

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/D/E/F/G/H/I

AUTHOR 2: A/B/C/D/E/F/G/H/I

AUTHOR 3: A/B/C/D/E/F/G/H/I

REFERENCES

- Akande, O.K., Odeleye, D., Coday, A., & Jimenezbescos, C. (2016). Performance evaluation of operational energy use in refurbishment, reuse, and conservation of heritage buildings for optimum sustainability. *Frontiers of Architectural Research*, 5(3), 371-382. doi: 10.1016/j.foar.2016.06.002
- Andretta, M., Coppola, F., & Seccia, L. (2016). Investigation on the interaction between the outdoor environment and the indoor microclimate of a historical library. *Journal of Cultural Heritage*, 17, 75-86. doi: 10.1016/j.culher.2015.07.002
- Benchekroun, M., Chergui, S., Ruggiero, F., & Di Turi, S. (2019). Indoor microclimate conditions and the impact of transformations on hygrothermal comfort in the old Ottoman houses in Algiers. *International Journal of Architectural Heritage*, 14(9), 1296-1319. doi: 10.1080/15583058.2019.1606362
- Bullen, P.A., & Love, P.E.D. (2011). Adaptive reuse of heritage buildings. *Structural Survey*, 29(5), 411-421. doi: 10.1108/02630801111182439
- Çakir, H.K., Aydın, D., & Arabulan, S. (2020). Adaptive reuse of open spaces in historical buildings. *International Journal of Building Pathology and Adaptation*, 38(5), 703-719. doi: 10.1108/IJBPA-04-2019-0034
- Cantay, G. (2014). *Anadolu Selçuklu ve Osmanlı Darişşifaları*. Atatürk Kültür Merkezi Yayınları: Ankara.
- Chandel, S.S., Sharma, V., & Marwah, B.M. (2016). Review of energy efficient features in vernacular architecture for improving indoor thermal comfort conditions. *Renewable and Sustainable Energy Reviews*, 65, 459-477. doi: 10.1016/j.rser.2016.07.038
- Codinhoto, R., Tzortzopoulos, P., Kagioglou, M., Aouad, G., & Cooper, R. (2009). The impacts of the built environment on health outcomes. *Facilities*, 27(3-4), 138-151. doi: 10.1108/02632770910933152
- Colla, C., Garcia-Fuentes, M.A., Hernandez, J.L., & Meiss, A. (2016). Thermal behaviour and comfort of a building pre- and post-intervention: The case of the engineering school of Bejar. *The Proceedings of 2nd International Conference on EECHB*, Brussels, 241-247.
- Corgnati, S.P., Fabi, V., & Filippi, M. (2009). A Methodology for microclimatic quality evaluation in museums: Application to a temporary exhibit. *Building and Environment*, 44(6), 1253-1260. doi: 10.1016/j.buildenv.2008.09.012
- Doğanay, A. (2007). Taş İşçiliği ve Profiller, Bir Şaheser Süleymaniye Külliyesi. In S. Mülayim (Ed.), *Bir Şaheser Süleymaniye Külliyesi* (p. 176). Ankara: Kültür ve Turizm Bakanlığı Yayınları.
- Duymaz, R., & Topaloğlu, Y. (2015). *Tosyavişade Osman Rifat, Milli Mecmuadaki Edirne Abideleri Yazıları*. İstanbul: Trakya Üniversitesi Matbaası.

- Ergüven, M., & Yılmaz, A. (2017). Development of Turkish wellness philosophy and reconsideration of sifahane concept: The case of the Darussifa of Beyazid II. Nevşehir Hacı Bektaş Veli Üniversitesi SBE Dergisi, 7(1), 27-37. Retrieved from <https://dergipark.org.tr/tr/pub/nevsosbilen/issue/29962/309585>
- Erke, Ü. (2002). *Turkish Medical History Through Miniature Pictures*. In the Exhibition of 38th International Congress on History of Medicine, Ankara: Türk Tarih Kurumu.
- EUMEPS (2011). *Low and Net Zero Energy Buildings with EPS Insulation*. Maaseik: European Manufacturers of Expanded Polystyrene. Retrieved from <https://www.epsder.org.tr/files/eps/doc/Low-and-net-zero-energy-building-with-EPS-%C4%B0nsulation.pdf>
- Flores, J. (2016). An Investigation of the energy efficiency of traditional buildings in the Oporto world heritage site. *The Proceedings of 2nd International Conference on EECHB*, Brussels, 83-92.
- Horr, Y.A, Arif, M., Katafygiotou, M., Mazroei, A., Kaushik, A., & Elsarrag, E. (2016). Impact of indoor environmental quality on occupant well-being and comfort: A review of the literature. *International Journal of Sustainable Built Environment*, 5(1), 1-11. doi: 10.1016/j.ijbsbe.2016.03.006
- Huisman, E., Morales, E., Hoof, J., & Kort, H.S.M. (2012). Healing environment: A review of the impact of physical environmental factors on users. *Building and Environment*, 58, 70-80. doi: 10.1016/j.buildenv.2012.06.016
- Ide, L., Gutland, M., Bucking, S., & Santana Quintero, M. (2022). Balancing trade-offs between deep energy retrofits and heritage conservation: A methodology and case Study. *International Journal of Architectural Heritage*, 16(1), 97-116. doi: 10.1080/15583058.2020.1753261
- İnci, O. (2004). *Yaşayan Müze*. İstanbul: Trakya Üniversitesi Yayınları.
- Kahya Erdemir, E., & Demirhan, A. (2000). *Bilimin Işığında Osmanlıdan Cumhuriyete Tıp ve Sağlık Kurumları*. Ankara: Türkiye Diyanet Vakfı Yayınları.
- Karakaya Aytin B., Ertin Tezgör D.G., & Çay R.D. (2021). Osmanlı bahçe sanatı yansımaları ve II. Bayezid Külliyesi peyzaj tasarım projesi. *Mimarlık ve Yaşam Dergisi*, 6(3), 983-1002. doi: 10.26835/my.983645
- Kazancıgil, R., & Gökçe, N. (2012). Edirne Sultan II. Bayezid Darüşşifası, Edirne Sultan II. Bayezid Darüşşifası. In A. Kılıç (Ed.), *Anadolu Selçuklu ve Osmanlı Şefkat Abideleri Şifahaneler*. İstanbul: Medialpark.
- Kazancıgil, R., & Gökçe, N. (2013). *Tosyavişade Dr. Rıfat Osman'ın Kaleminden Edirne*. Edirne: Edirne Belediye Başkanlığı Yayınları.
- Khledj, S., & Bencheikh, H. (2021). Impact of a retrofitting project on thermal comfort and energy efficiency of a historic school in Miliana, Algeria. *International Journal of Architectural Heritage*, 15(3), 407-425. doi: 10.1080/15583058.2019.1621960

- Kim, S.K. (2018). Indoor environmental quality assessment of historic buildings in the State Park: A case study in Michigan. *Journal of Sustainable Development*, 11(5), 263-276. doi: 10.5539/jsd.v11n5p263
- Kramer, R., Schellen, H., & Schijndel, J.V. (2016). Energy impact of ASHRAE's Museum climate classes: Full scale measurements in Museum Hermitage Amsterdam. *The Proceedings of 2nd International Conference on EECHB*, Brussels, 151-157.
- Kuhn, O. (1897.) Krankenhäuser, In Durm, J. (Ed.), *Handbuch der Architektur* (pp. 519-884). Stuttgart.
- Lo Faro, A., Moschella, A., Giulia, S., & Azzurra, P. (2013). Historic buildings in Mediterranean area and solar thermal technologies: Architectural integration vs preservation criteria. *Energy Procedia*, 42, 416-25. doi: 10.1016/j.egypro.2013.11.042
- Magrini, A., & Franco, G. (2016). The energy performance improvement of historic buildings and their environmental sustainability assessment. *Journal of Cultural Heritage*, 21, 834-41. doi: 10.1016/j.culher.2016.03.012
- Mancini, F., Cecconi, M., De Sanctis, F., & Beltotto, A. (2016). Energy retrofit of a historic building using simplified dynamic energy modeling. *Energy Procedia*, 101, 1119-1126. doi: 10.1016/j.egypro.2016.11.152
- Martínez-Molina, A., Tort-Ausina, I., Cho, S., & Vivancos, J.L. (2016). Energy efficiency and thermal comfort in historic buildings: A review. *Renewable and Sustainable Energy Reviews*, 61, 70-85. doi: 10.1016/j.rser.2016.03.018
- Miller, T.S. (1985). *The birth of the hospital in the Byzantine Empire*. Baltimore: The Johns Hopkins University Press.
- Mueller, H.F. (2013). Energy efficient museum buildings. *Renewable Energy*, 49, 232-236. doi: 10.1016/j.renene.2012.01.025
- Murgul, V. (2014). Features of energy efficient upgrade of historic buildings: Illustrated with the example of Saint-Petersburg. *Journal of Applied Engineering Science*, 12(1), 1-10. doi: 10.5937/jaes12-5609
- Park, M.Y., Chai, C.G., Lee, H.K., Moon, H., & Noh, J.S. (2018). The effects of natural daylight on length of hospital stay. *Environmental Health Insights*, 12, 1-7. doi: 10.1177/1178630218812817
- Philokyrou, M., & Michael, A. (2021). Environmental sustainability in the conservation of vernacular architecture. The case of rural and urban traditional settlements in Cyprus. *International Journal of Architectural Heritage*, 15(11), 1741-1763. doi: 10.1080/15583058.2020.1719235
- Radikal (2015). *Osmanlı'nın Darüşşifası Restore Edildi*. Retrieved from <http://www.radikal.com.tr/edirne-haber/osmanlinin-darussifasi-restore-edildi-1355337/>

- Rota, M., Paolo Corgnati, S., & Di Corato, L. (2015). The museum in historical buildings: Energy and systems. The project of the Fondazione Musei Senesi. *Energy and Buildings*, 95, 138-143. doi: 10.1016/J.ENBUILD.2014.11.008
- Salata, F., Vollaro, A.L., & Vollaro, R.L. (2014). A case study of technical and economic comparison among energy production systems in a complex of historic buildings in Rome. *Energy Procedia*, 45, 482-491. doi: 10.1016/j.egypro.2014.01.052
- Şengül, E. (2014). *Müzikle Tedavinin Merkezi, Edirne Sultan II. Beyazıt Darüüşşifası*. Edirne: Edirne Valiliği Kültür Yayınları.
- Silva, H.E., & Henriques, F.M. (2014). Microclimatic analysis of historic buildings: A new methodology for temperate climates. *Building and Environment*, 82, 381-387. doi: 10.1016/J.BUILDENV.2014.09.005
- Terzioğlu, A. (1985). Temel atılışının 500. yıldönümü münasebeti ile Edirne'deki II. Bayezid Hastanesi ve tıp tarihi açısından önemi. *Bifaskop*, 15(6) 16-24.
- Terzioğlu, A. (1998). *Bimaristan*. TDV İslam Ansiklopedisi. Retrieved from <https://islamansiklopedisi.org.tr/bimaristan>
- Trakya University (2013). *Sağlık Müzesi*. Retrieved from <https://saglikmuzesi-en.trakya.edu.tr/pages/history>
- TS825 (2013). *Thermal Insulation Requirements for Buildings*. Ankara: Turkish Standard Institute.
- Tuna, S. (2015). *Küllüye*. Edirne: Trakya Üniversitesi Matbaası.
- Tınca, A. (2014). *Edirne Şehir Tarihi Notları, Nahid Sırrı Örik ve Bir Edirne Seyahatnamesi'ne Güncelleme*. İstanbul: Gülmat Matbaacılık.
- Ulrich, R.S. (1984). View through a window may influence recovery from surgery. *Science*, 224(4647), 420-421. doi: 10.1126/science.6143402
- UNESCO (2016). *Sultan Bayezid II Complex: A Center of Medical Treatment*. Retrieved from <https://whc.unesco.org/en/tentativelists/6117/>
- Yang, T., & Clements-Croome, D.J. (2012). Natural ventilation in built environment. In R.A. Meyers (Ed.), *Encyclopedia of Sustainability Science and Technology*. New York: Springer.
- Yıldız, A. (2012). *Kalker esaslı yapı taşlarında kireli kabuk oluşumu ve özelliklerinin incelenmesi*. Yayınlanmamış Doktora Tezi, Mimarlık Bölümü, Trakya Üniversitesi, Edirne.
- Zhang, Y., & Guan, W. (2006). Maximize comfort: Design of a natural ventilation system in the Dunhuang Museum. *Proceedings of the Sixth International Conference for Enhanced Building Operations*, Shenzhen, 1-4.

BIOGRAPHIES OF THE AUTHORS

Dinçer AYDIN (Res. Asst.)

He works as a research assistant in Trakya University, Department of Architecture. He got his master's degree with his thesis "Effects of Indoor Environmental Quality on Energy Efficiency and Occupant Comfort in High-Rise Residential Buildings" in Architecture Program from Trakya University in 2017 and his PhD is still ongoing. He studies at issues about energy simulation, indoor environmental quality (IEQ) and sustainable construction management.

Seyhan YARDIMLI (Assoc. Prof.)

She graduated from Mimar Sinan Fine Arts University, Faculty of Architecture. She completed her Master of Science in Department of Building Constructions; and Doctorate in Department of Building Materials. Her professional interests are building materials and building constructions. She has got 3 Post Graduate Students, 36 publications, 1 book, 2 patents. Patens are about the recycling device of vegetable waste in the buildings. She has NZEB project designers certificate. She attended in some workshop and conference organizations. She was referee for 21 papers. She completed 53 projects in her architectural office after graduation.

Esma MIHLAYANLAR (Assoc. Prof.)

She graduated from Trakya University, Faculty of Architecture in 1992, started to work as a Research Assistant in the Building Science Department in 1993, and got a title as an Associate professor in 2018 and still works in the same department. Her professional interests are building materials and building physics. She studies on energy-efficient and sustainable buildings, building renovation, heat and vapour transmission, thermal insulation and its working practices. She has certificate the identification of energy experts (given by Administration, Ministry of Environment and Urban Planning in Turkey).



Spatial transformation of remote working spaces of university students receiving studio education during the pandemic

Gözde ZENGİN¹, ORCID: 0000-0002-6136-6001
Bengi YURTSEVER², ORCID: 0000-0003-2220-6133

Abstract

The problem of interacting in the distance learning education process comes to the forefront, especially in applied and in-studio courses such as design education. To increase this, a unilateral effort is not enough; a different mutual effort is required compared to face-to-face education. One of these efforts is the construction of the learning environment. Based on this, this study focuses on how studio education students organize their physical learning environments during their distance education process. In this study, it is aimed to observe transformations caused by the learning process in the home components. The study was held with students who received design studio course at Muğla Sıtkı Koçman University, Department of Architecture and Karabük University, Industrial Design and Graphic Design departments. The search in the process of creating a personal learning space, the relationships between old-new positions or situations, and the reasons for which these transformations are needed are examined. The ability to establish this interaction even in different environments will carry the perception and awareness of learning to a different point and enable the discovery of unique processes in a personal sense. The current position can be considered an intertwined 'breaking' moment when everything becomes complicated and seems unresolved. In this study, which is a search for spatial arrangements made by students within their possibilities, the primary research question is 'how does spatial transformation take place during the pandemic?'. This study reveals how students create learning codes for the physical space in which they will perform creative thinking and how these codes are reflected in the transformation of physical space. It is thought that codes related to personal learning can be developed with the hypothesis stating that efficient production stages can be realized by solving location-related problems with experience.

Highlights

- The scope of the study will remain in the context of 'creating a workspace.'
- The fact that the individual cannot find another escape from home has led to an increase in both spatial and personal burdens.
- It seems that the concern of 'creating a place' is formed, unlike a pure learning space and being physically present there.

Keywords

Remote learning; Design education; Belonging; Aura; Studio culture

Article Information

Received:
29.03.2022
Received in Revised Form:
01.09.2022
Accepted:
10.10.2022
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Faculty of Fine Arts and Design,
Karabük University, Karabük, Türkiye
cakrgozde@gmail.com
2. Faculty of Architecture, Muğla Sıtkı
Koçman University, Muğla, Türkiye
bengiyurtsever@mu.edu.tr



Pandemi döneminde stüdyo eğitimi alan üniversite öğrencilerinin uzaktan çalışma alanlarının mekânsal dönüşümü

Gözde ZENGİN¹, ORCID: 0000-0002-6136-6001
Bengi YURTSEVER², ORCID: 0000-0003-2220-6133

Öz

Uzaktan öğrenme sürecinde etkileşim kurabilme sorunsalı, özellikle uygulamalı ve tasarım eğitimi gibi stüdyolarda geçen derslerde kendini ön plana çıkarmaktadır. Bunu arttırabilmek adına tek taraflı bir çabanın yeterli olmadığı; karşılıklı olarak, yüz yüze eğitim sürecine göre daha farklı bir emek gerektiği açıktır. Bu bağlamda çalışmada ev içindeki bileşenlerin öğrenme sürecindeki dönüşümlerini gözlemlemek amaçlanmıştır. Kişisel öğrenme ortamı oluşturma sürecindeki arayışlar, bunların eski-yeni konumları ya da durumları arasındaki ilişkiler, hangi gerekçelerle bu dönüşümlerin yapılmasına gereksinim duyulduğu konuları irdelenmiştir. Farklı ortamlarda dahi bu etkileşimi kurabilme becerisi, öğrenme algısını ve bilincini farklı bir noktaya taşıyacak; kişisel anlamda özgün süreçlerin keşfedilmesine olanak sağlayabilecektir. Güncel konum her şeyin karmaşılaştığı, çözümsüz görüldüğü, iç içe geçen bir 'kırılma' anı olarak değerlendirilebilir. Öğrencilerin olanakları dahilinde yaptıkları mekânsal düzenlemelere yönelik bir arayış olan bu çalışmada öncül araştırma sorusu 'pandemide mekânsal dönüşümün nasıl gerçekleşmekte olduğu' üzerinedir. Konuma ilişkin sorunların deneyimlenerek çözümlenmesi ile verimli üretim aşamalarının gerçekleştirilebileceği hipotezi ile kişisel öğrenmeye ilişkin kodların da geliştirilebileceği düşünülmektedir.

Öne Çıkanlar

- Çalışmanın kapsamı 'çalışma alanı oluşturma' bağlamında sınırlandırılmıştır.
- Bireyin evden başka kaçış yolu bulamaması hem mekansal hem de kişisel sorumlulukların artmasına neden olmuştur.
- Saf bir öğrenme alanı ve fiziksel olarak orada bulunma eyleminden farklı olarak, 'bir yer yaratma' kaygısının ortaya çıktığı görülmüştür.

Anahtar Sözcükler

Uzaktan eğitim; Tasarım eğitimi;
Aidiyet; Aura; Stüdyo kültürü

Makale Bilgileri

Alındı:
29.03.2022
Revizyon Kabul Tarihi:
01.09.2022
Kabul Edildi:
10.10.2022
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

1. Güzel Sanatlar ve Tasarım Fakültesi, Karabük Üniversitesi, Karabük, Türkiye
cakrgozde@gmail.com
2. Mimarlık Fakültesi, Muğla Sıtkı Koçman Üniversitesi, Muğla, Türkiye
benjiyurtsever@mu.edu.tr

INTRODUCTION

There are some invisible and visible components in creating the space. While adding movable furniture to visible components during the design process, including the room's heat, light and acoustics, a set of psychological boundaries, competencies, and experience-based components also plays a major role. The resemblance between places manifests itself concerning the codes created as a result of experiences. Personal codes concerning the suitability for work, sleep, and eating may come to the forefront in this context.

In the remote education environment, more personal components play an active role in the learning process. Many codes for learning in the classroom or studio environment emerge naturally as soon as they are included in that environment. However, the codes inside the home are different. While the home is stationary due to a much higher level of belonging, the studio takes a dynamic position. The home is the place to rest, and the studio is the place to work. One of the most challenging situations in the physical, psychological, and sociological sense during the pandemic is the attempt to re-create these codes. When a troubled period within itself is combined with the efforts to create these codes, sometimes gains and sometimes losses can occur.

A design studio is an environment with its unique language, understanding, and, therefore, culture. Time, communication, and interaction are established in a unique environment. The complete decontextualization of the course processes mentioned here has brought about the adaptation to this environment and the focus on the courses themselves. Therefore, the search for wide-ranging harmonization has manifested itself. The state of 'belonging to a place, to a function' in the studio environment brings about the obligations of being directly present in that environment when included in that space. The mission defined for the place shows itself at that point. The fact that the studio, which is a holistic environment where all participants learn from each other, suddenly manifests itself as a situation that is tried to be realized in front of the screen at home has created additional difficulties in the adaptation process. The fact that this process has come true has directly led to significant distinctions between those who can/cannot continue this adaptation process within various possibilities and those who catch/do not catch this process simultaneously. When many common situations in the studio environment suddenly turn into a situation where everyone is included from their place, the number of contexts suddenly becomes uncontrollable. This mutual

ambiguity of context has led to a studio partnership necessitating the participation of the student and the lecturer from a different environment almost every time. The inability to focus due to this variability causes the participant to try to create his/her own learning environment in order to capture a constant component in the study area.

While the purpose of users in the studio is to share something in common, the fact that each individual shares their own process in the home environment comes into play as a compelling component in the adaptation process. At this point, many distracting, demotivating, and obstructive factors are actively involved in the learning process.

Concerning this learning process, it is observed that studies have intensified after the Covid-19 pandemic. The subject of research has become experiences during the Covid-19 pandemic, and transformations after these experiences have started to be included in the literature as a new research area. It has become inevitable that this type of research would increase in applied studio courses such as design education, which are mostly held in a face-to-face and desk environment. While the themes of 'contact, dialogue, and future' have come to the fore, their meaning transformations have begun to be questioned. It is possible that the studio environment, which has been waiting for this research for a long time, has found itself in transformation due to necessity.

A comprehensive study of student returns during the first quarantine period in the Spring Semester of the 2019-2020 Academic Year was conducted at the University of Granada by Torres Martin et al. (2021). It has been pointed out that the said technological possibilities continued to exist before the pandemic but were not used unless it was necessary. It was emphasized that the first period required an urgent strategic plan, however, the necessity of conducting a more comprehensive content and method study in the following periods. Again, in the Spring Semester of 2020, Akış et al. (2020) at İzmir Institute of Technology, Faculty of Architecture, provide a comprehensive study on which platforms, applications, spaces and materials students use in this period. Türkkan's (2020) opinion letter, on the other hand, emphasizes that nothing will be the same as before and that a radical transformation in terms of architectural education is inevitable, both in terms of space and method, and states that this break has ultimately revealed itself with the COVID Pandemic.

In this context, the study by Acar et al. (2021) offers an alternative creativity area for the learning environment after the COVID Pandemic. While focusing on students' actions such as making decisions on their own, taking responsibility, approaching the design problem, thinking and acting, it is emphasized that the content of learning and the methods and tools that educators have used for many years become dysfunctional. It is thought that Acar's (2020) online experiences and opinions in TOBB Architecture Department are considered to be one of the pioneering steps for the first year of architectural design education in Turkey. The experience of augmented reality in architecture and construction, studied by Hajirasouli and Banihashemi (2022), also indicates that developments in this context are manifested in many places and also applied sciences.

Within the scope of increasing studies in the literature, learning pursuits such as remote, distance, virtual and online learning, which seem similar but focus on different approaches, came to the fore in this period. During the social distance period of the process, especially in the pandemic event, collective face-to-face productions were replaced by research for a new experience environment to

be carried out in the environments we call interface. Uncertainties about how to use interfaces efficiently at the beginning enabled social media to be actively involved in the learning process. "Interaction", which is a natural part of the education process in a face-to-face environment, has become more active in many areas in virtual environments. Actions such as interaction, sharing and discussion, which are an integral part of design-oriented schools, have tried to adapt to their different environment over time. Accordingly, in addition to these learning approaches, studies on learning through social media have been frequently included in the recent period.

Many experiences in this process have taken place in the literature, especially within the scope of "remote learning". Within the scope of design education, how the studio lessons, which are mostly one-to-one and with intense discussions, can be "online" or "remote" has become a research topic in itself. Most of the studies have focused on the education process and learning methodology. Within the scope of this research, the multi-component, latent area of the process was focused and the transformations in the home environment in the learning process were studied. Therefore, these invisible components constitute the original aspect of the study.

Due to the pandemic, many studies on remote studio education focus on the distance education model, the efficiency of education, or the learning difficulties experienced by students in the process. Undoubtedly, the studio environment may seem like a classroom with tables and chairs, but in essence, it is much more than that. The student takes an active role in the studio. According to the needs of the project subject, the studio is the place for active learning, sometimes evaluating, sometimes designing, and sometimes producing. The physical deprivation of this environment has caused each student to establish this area for himself in his home environment physically. Based on the idea that the learning environment cannot be considered independently of learning, this work aims to reveal how students organize their learning and production environments in home conditions. In this sense, this research, which differs from other studies, reveals the learning codes of the students who receive studio education and how they associate these codes with the space. In this context, this study, 'what are the spatial components in the process of creating a learning environment, how suitable can the home be for this situation, how can it be transformed,' focuses on seeking answers to questions. With the answers to these questions, the student's learning codes were revealed and examined how they used these codes to construct the physical space. This research is located at the home-studio intersection in a spatial context. When studio gains and expectations are integrated with experiences in the home environment, it can be regarded as research for a student who is constantly involved in the home learning environment to have an active learning process. In line with this, student-lecturer and student-student learning relations are at the forefront. When the current themes and research are examined through the literature review, the study differs in the following aspects:

- Bilateral examination of the process: While most studies address the process through the learning environment on a single side, the present study tried to highlight the part where this subject is two-sided in particular. Although this component is sometimes overlooked in the face-to-face learning process, it contributes to learning on a large scale that cannot be ignored in the remote learning process. The question of how to intervene in this unfamiliar component with limited visibility, in a sense, is a very sensitive issue.

- Avoiding template propositions: The study highlights possible situations tried to be shared instead of suggesting a template learning environment as elements that must be evaluated in these multifaceted situations. The study especially avoids making a stereotypical suggestion. While improvements can be made regarding the process, students satisfied with their situation should not be ignored.
- Being a study at the intersection of industrial products - architecture – furniture: Design research, which is always open to different disciplines, has been addressed together with the furnishings or products in which it is actively involved in the remote learning process.

LEARNING ENVIRONMENT PERCEPTIONS

Learning is defined as a holistic process of self-discovery rather than memorizing pure knowledge. In the process of self-discovery, learning and maturation develop interrelatedly for the individual. While some core resources such as previous experiences, motivation and attention play an effective role in this development, they also differentiate simultaneously (Miller, 2009; Senemoğlu, 2020). Ellis-Ormrud (2013) defines learning as the long-term changes that occur in our mental symbols and connections as a result of experience. The emphasis here is on the fact that change should have a certain permanence rather than being instantaneous. Similarly, instead of an involuntary action like any reflex, it must have been consciously acquired as a result of experience.

The acceleration of the pace of daily life affects the learning method, approach and environment. The fact that the process of internalizing and becoming permanent knowledge takes place in shorter and shorter time intervals is a necessary outcome of life. Therefore, as Özden (2003) emphasizes, one of the most fundamental features of the 21st century is the introduction of new and different approaches to how individuals can access increasing information and how their needs can be met within this time period. New approaches should be sought to bring new skills to the fore. These skills are discussed in the literature under the headings of creativity and innovation, critical thinking, problem-solving, decision making, learning to learn, metacognitive awareness, communication, and collaboration (Binkley et al., 2012). Again, for an active learning environment, participation and collaborative work come to the fore (Colomer et al., 2020).

The process of acquiring these skills also creates a culture in itself. A unique learning culture develops in environments such as design education that operate on a project-based structuring model. Project-based learning provides individuals with a series of vital skills that integrate with lifelong learning, such as co-working skills, meeting, making plans, setting goals, arranging tasks, and time management (Yurtluk, 2005; Bilen 2002). Therefore, it is not possible to separate the learning culture in the design studio from the vital achievements. When interpreted in the context of design education, especially the way of information production in the studio environment is integrated with the discussion, experience and transfer of the information produced in this environment and is intertwined with design information (Acar, 2021). It seems clear that the quality of knowledge and skill acquisition in environments that do not provide continuity in this direction will not be valid in the long term in the 21st century.

Capturing current debates in education depends on being able to realize transformations together with digitalization (Torres Martin et al., 2021). Emphasizing the quality of education can be realized by being involved in this process. Distance learning approaches used as a transition and emergency solution should be included in careful, careful, and non-random planning (Portillo et al., 2020). The paradigm on learning to learn is now turning into a problematic of creating an environment (Aydınlı & Kürtüncü, 2014). Thus, the environment itself is a direct component of learning. In fact, with the COVID Pandemic, the learning environment with all its definitions has tried to recreate itself. The interactive, shared and controversial nature of the studio environment seeks itself in different environments through alternative approaches.

Studio environments involving the act of design contribute to this discovery process. The transformation of this contributing environment or the production of alternatives creates a potential for the future. In addition to this whole learning process, it is regarded important to discover one's spatial learning tools and experience more efficient production in which the environment is an important part of this process in a personal context. This process has the potential to be built on destroying the one-sided learning environment. While this potential can close itself if the computer is perceived as a uniform screen and a didactic transfer is made, it will be possible to encounter another learning environment by using the situation efficiently and conducting research.

Loris Malaguzzi (1996), the founder of the Reggio Emilia approach, stated that there are three kinds of teachers during the education process of children. The first one is their interactions between parents and teachers. Then the second one is their peers and friends. And the last one is the environment around them (Biermeier, 2015). Correspondingly, the environment can be called the third teacher. According to this approach, the social surroundings are as important as the physical components. So, an expanse area is designed for the children to provide them with a space where social interaction can occur in it. Although this approach is for preschool children, it can also be thought for undergrads. A thesis study by Tam (2022) from MIT, focuses on this pedagogical methodology and alternative learning environment for architecture students. An interaction space which is established outdoors instead of indoors is emphasized in this thesis.

Except for a defined studio space, all around can be named as a learning space. It can be also a digital platform or an interface. Interaction and space components play an important role in this process. According to Katz (1987), the learning process is in communication with four categories on the environment: Knowledge, skills, dispositions, and feelings. These categories also feature the relation between environment-space and senses-aura.

When the space is evaluated as a volume with boundaries within itself, some additional components support the need for limitation, despite time-dependent and even main dependent variables triggering the formation of this space. At some points, a partnership is established in spaces with common experiences and subconscious codes. In a sense, this commonality is among the data that are somewhat 'ready' or 'fixed'. Subconscious codes take them as a common component in creating boundaries for space. However, creating this limit in cases when it is not in the same place at the same time requires activating some other additional parameters. Moreover, the issue of trying to

revive another function in a place without a function is also effective in limiting the space as a separate problem.

Actions are the biggest component that defines the space. These actions, which can be observed in an infinite, unlimited number, may depend on quantitative situations such as the number of people in a place. They also depend on qualitative situations that may develop in relation to the emotional state. Within this endless catalog of actions, space organization is made according to the basic requirements. From the relations of spaces with each other, the whole arrangement of the furniture in that space is included in this organization. Additionally, many components (heat, light, sound, acoustics, etc.), called immaterial, also affect this order.

The inclusion of all spatial components in this experience unlimits the parameters, as mentioned before. At this point, the questions to be asked are 'how long will the definition of "border" remain in the search for a future-oriented learning environment, is there a need to redefine the boundaries, what is the design studio, how and in what direction can its new meaning be transformed.' When considered on this axis, there are concrete and abstract components related to the border theme. In the survey conducted within the scope of this study, questions were prepared based on identifying the components in both directions. At the next stages of the study, which can be gradually examined, it is aimed to investigate the findings obtained here. Therefore, while performing a due diligence study, such as revealing the general situation and highlighting the main topics that can be addressed, at another level that can be developed accordingly, a solution search will be carried out by focusing on one of these situations. However, the first step has been taken, based on the situation that a studio environment can be transformed in time-space limitlessness, which is felt primarily due to the proliferation of components.

Staying away from the design studio during the pandemic has necessitated making various changes in terms of method and then space. Accordingly, although a learning environment that can be constructed does not create a 'studio' perception with its current definitions, it is extremely important in adapting to a contemporary learning environment where the definition of this space is transformed and re-interpreted by pushing the boundaries. It is also possible to obtain new data on the transformation of these spaces with the codes in the background thrown into the collective self. As stated by Aldoy and Evans (2021, 300), it is important to develop awareness of digital tools, which are among the components of the environment, and make discoveries in this direction in a pedagogical sense. At this point, it is required that habits related to motivation renew themselves. This situation, which requires mutual renewal, is valid for both the student and the lecturer.

Space can be considered a real situation created in the consciousness of a person who experiences it (Öksüz, 2016). This perception of reality may differ from person to person. When generalization is made, working in a quiet environment may be regarded a situation increasing focus. According to another person's opinion, productivity in the aura of a crowded place is more efficient. In some cases, the home environment is more suitable for work, while the opposite may occur in other cases. This can also emerge as a process occurring at different times of the day for the same person. In the active learning process, the person should be able to create this special area for themselves. It is thought that determining how to internalize information efficiently, rather than a process like

memorizing it directly, is important in self-realization. Therefore, asking the question of 'in what environment, in what aura can I learn information' is important for a student.

AURA AS THE COMPONENT OF LEARNING ENVIRONMENT

When Norberg-Schulz coined the concept of genius loci in the 1970s, he added an area of research to himself with Zeitgeist. While the disconnection of modernism from location connected it to time, it was claimed that the place itself said something and had a soul as if it were a living being. While the place-context-environment was important, it suddenly changed its dimension and started to be discussed as a direct component of life. The spirit of this place paved the way for the idea that even if not tangible, some spiritual situations and feelings about the place could also limit an environment and create a space. Therefore, while the separation of the two concepts after modernism is observed, during the critical periods starting from the 1960s, the concept of the spirit of place was attached importance, especially by architects (Auge, 2016). Another limiting space component of this spirit is regarded to be the aura.

The concept of aura was brought to the forefront with Walter Benjamin's texts on art. Benjamin (2020) defines the aura as a light that surrounds the original work of art, adding the difference to it and making it unique - a halo. The aura gives the object the effect of being present momentarily. Instant existence is the indicator of its reality and the emphasis on its originality and uniqueness. This spiritual wall is located in the specific area of each work of art. Therefore, the so-called culture industry has a different position from many products that have entered mass production. In an age when everything is produced in mass and works of art are reproducible, this periphery gradually loses its meaning and disappears. Attributing this disappearance to society after a point, Benjamin believes that this will lead to social depression. One of the most significant reasons for this is being taken out of context. Beings removed from the context are doomed to experience this loss after a point. Even if the disappearance in question cannot be observed on the mass in the beginning, it manifests itself in a more internal area in terms of meaning. Its meaning changes over time. After a certain point, it may try to produce its new meanings to survive. The handling of the concept of aura on a spatial scale within the scope of the study was firstly matched with the theme of disconnection from the context.

Aura is defined as a subspace area limiting the existence of an object, surrounding it, and facilitating potential interaction (Fahlen and Brown, 1992). The presence of the aura in a subconscious cycle shapes the habits of the place according to that experience. In a new place, traces of the old are searched and coded there. As life continues in the new space, it continues to create its unique codes. It is possible to follow and define it even from childhood traces. Especially at this point, 'home' can be defined as a place where both external codes and personal codes are loaded. The home is a haven in the theme of shelter, protected from external impacts. It would be extremely limiting to interpret this as a protected instinct only against external physical conditions. Under today's conditions, it is a place where all kinds of behavioral reflections regarding daily life are avoided. The home is a protector against many spiritual feelings desired to be avoided in daily life. In some cases, although this may not find its exact equivalent, it is a private nature in itself.

Since the aura creates its reactive state, an environment without the aura can create a desire to distance itself (Öksüz, 2016). To get used to a place, an individual first starts to worry about creating an aura by themselves by making use of his/her personal experiences. This is one of the subconscious codes made to feel belonging to a place rather than a situation that the person can define. A place without an aura does not make you feel the belonging. It creates a feeling of being away from there. A place with an aura is a place to stay, a place with a high sense of belonging, a place to visit and choose. An individual has to feel the belonging to survive in a place. Accordingly, it creates an aura that has continuity in its daily life. As much as the individual contributes to this, they also receive support from their environment with some natural and artificial arrangements. Therefore, in the process of transforming a place into a productive one, the effort to create an aura is of great importance.

Along with the pandemic, the definitions of the distinction between 'public/private' area have changed, and many special situations or places have included themselves in the sharing area. Publicity is no longer just coming in contact; it has become integrity that can be realized with simultaneous online connections. Apart from its special meaning, each home has become a place that everyone can see and, in some cases, internalize as if they were there. The transformation process starts with the search for a place in the house for all work-related actions. Then, when the education and learning process is added to this, the home finds many missions more burdensome. The fact that the individual cannot find another escape at this point has led to an increase in both spatial and personal burdens. The aura of the home has evolved from being a sheltered escape to a closed and inescapable place where all life passes. Although different features of various home types emerge as a component here, homes that are disconnected from the environment and have no relation with the outside experience these loading problems much more in the long term.

While the aura is in transformation in this process, the individual who tries to create and live it encounters various difficulties. When the pandemic condition in the cycle of transience and permanence is integrated with the psychology of the process, this transformation manifests itself as a process that includes concern beyond a curious design process. Accordingly, creating a semi-permanent working/production space inside houses becomes necessary. A workspace layout, which can be affected by the number of people living in the house, their occupations, and even their daily routines, shows itself as a situation with too many components and, therefore, problems in cooperation. Depending on this, disruptions may occur in the realization of interaction. Alcocer and Martella (2020) emphasize that homes will probably need to be designed, built, and arranged to include spaces where it is possible to configure work devices and where they can be used efficiently together, probably with the possibility of teleworking in mind from now on. In the process of transforming this temporary situation into a potential, all the components related to the space - the house - should be re-questioned on a large scale.

Within the scope of all these mentioned, a need for a widespread redefinition in many fields is quite evident. Since the permanence or transience of these definitions is questioned, making this construction on a flexible platform will ensure that internalization will be much more articulated in the future. In the survey questions made with students within the scope of the study, a transformation story was interpreted through both the components under the effect of this aura and the furniture, which are the concrete elements in the arrangement process.

METHODOLOGY

The main research question of this study, which is a search for spatial arrangements made by students within their possibilities, is 'how spatial transformation takes place during the pandemic.' In the sub-headings of this question, the 'how' stage was opened and tried to be understood. Instead of producing point and temporary solutions for problems, it seems more appropriate to conduct research on the background with a systematic search for the process. All research and findings were evaluated in line with this view.

Karabük University Industrial Design, Graphic Design Department, and Muğla Sıtkı Koçman University Architecture Department, where the research was conducted, started the transition process to distance education synchronously and continued with this method. Karabük University provided studio training in Adobe Connect and Microsoft Teams sessions, which only relevant university students can enter in synchronous education. At Muğla Sıtkı Koçman University, on the other hand, he carried out studio training with Course Management System Automation and Zoom videoconference sessions, which only relevant university students can enter in synchronous education. Studio education is organized in such a way that one class hour is half an hour, which is determined by the distance education lesson plan of the universities. In this studio training, it was tried to ensure that all students presented their projects and that the evaluations they receive are listened to by other students. In the distance education of the 1st year studios, which require intensive work primarily in terms of the number of projects, course hours are used for evaluation, study, and production.

The data in the study were collected by employing a survey method. Survey research is a research method used to collect data about people's preferences, thoughts, and attitudes. This method can be used for descriptive, exploratory, and explanatory research (Bhattacharjee, 2012, p. 73; Thomas, 1998). This study focused on how students who took the studio course through remote education transformed their existing spaces for the studio course and tried to learn their preferences, thoughts, and attitudes regarding this transformation.

The researchers created the data collection tool used in the study. There are 36 questions in total in the prepared questionnaire. The survey questions were prepared as yes/no, multiple choice and open-ended and arranged in three parts. The first part focuses on the demographic characteristics of the participants, the second part focuses on the current situation analysis, and the third part focuses on spatial transformation preferences. The questions in the first part focus on age, gender, department, and class information. The participants' living space information and stakeholders were learned in depth in the first part. The second part focuses on the current study areas of the participants. In this section, the indoor location of the study area, the furniture used in this area, the distance education access devices, and the changes made in case the area is moved or shared with another person are learned in depth with open-ended and multiple-choice questions. In the last part, which focuses on spatial transformation preferences, what the participants paid attention to when creating their current study areas, the expectations of the study area, and the relationship of the current study areas with these expectations were learned in depth through open-ended questions.

According to Büyüköztürk (2005), one of the methods used in survey application is data collection on the internet. The remote data collection method is preferred in samples that cannot be observed directly (Bhattacharjee, 2012). Since the study was conducted under pandemic conditions and the students lived in different countries and cities, the questions were prepared on the digital survey platform. The survey link was sent through closed online communication groups that department students use to communicate. After the survey link remained open for 48 hours, the system was closed, and no new responses were accepted. Filling out the questionnaire takes approximately 15 minutes. The data were collected in the spring semester of the 2020-2021 academic year. For this reason, all students who received distance studio education in the fall term and therefore had to organize a study area at home to be used in distance education were included in the study.

While the clustering method was used for open-ended questions in data analysis, central distribution measures (mean) were calculated for numerical data. The clustering method was used for open-ended questions in data analysis. Cluster analysis is used to classify multivariate, unknown, and ungrouped data. Clustering is a reductionist technique enabling data collection in different clusters in line with similarities according to units or variables (Çakmak, 1999, p. 188). Clustering is performed by classifying variables according to the measure of closeness (Çakmak et al., 2015). This study created codes by gathering similar answers in a group, and group frequencies were calculated and analysed.

The scope of the study will remain in the context of 'creating a workspace.' However, since there is no doubt about an active relationship with other spaces in the house, other spaces can also be mentioned based on the relationship at this point.

THE PROCESS OF EXPERIENCE: PARTICIPANTS

The study was carried out with 136 students from Karabük University and 40 students from Muğla Sıtkı Koçman University. One hundred seventy-six students in total participated in the study. Participation in the survey was voluntary. One hundred fourteen students from Karabük University Department of Industrial Design, 22 students from the Department of Graphic Design, and 40 students from Muğla Sıtkı Koçman University Department of Architecture answered the questionnaire. The participants' mean age was 21.7, and the age range varied between 18-27. Sixty-one percent of the participants were male, and 39 percent were female. Thirty-six percent of the participants were first-year, 35 percent were second-year, 25 percent were third-year, and 4 percent were fourth-year students. Ninety-two percent of the participants stated that they shared their living space with their family, 5 percent with their friends, 2 percent lived alone, and 1 percent with their relatives.

As seen from Table 1, most students stated that their living space stakeholders also conducted remote work or distance education. A significant part of the students indicated that they had their rooms and carried out their studies in these rooms.

Table 1 - Living area information of the participants.

Living area information of the participants	Yes	No
Do the people you live with conduct distance education or work distantly?	123	53
Do you have your own room?	124	52
Do you have your own workspace?	133	43
Do you share your workspace with others at home?	96	80
Do you have to move your workspace to different places according to the internal dynamics of the house?	103	73
Has the pandemic caused you to make changes in your workspace?	124	52

Although most students stated that they had a defined workspace at home, most of them indicated that they shared this space with people who worked or studied remotely at home. Accordingly, they said that they had to change the working place according to the internal dynamics of the house. According to Figure 1, the most used space in this context is the living room/sitting room, followed by the kitchen and balcony. The preference for open and semi-open spaces in additional space preferences is associated with model-making. It is noteworthy that the kitchen is preferred as a working area and is in a position ahead of other places.

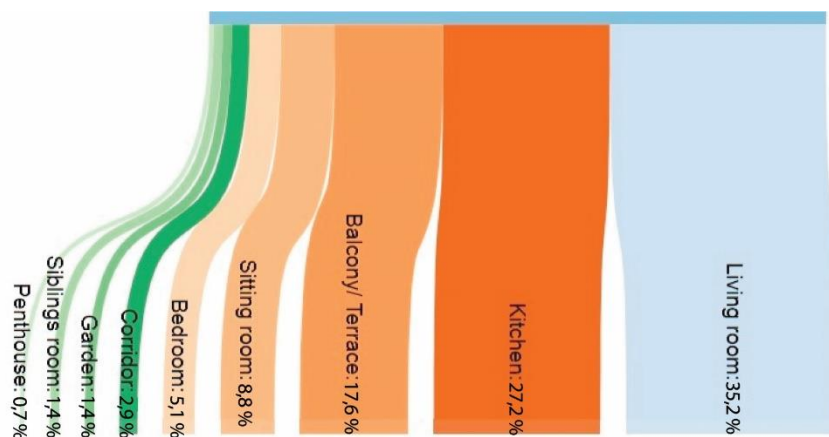


Figure 1 - Other areas where remote education is carried out.

FINDINGS

As a result of the data analysis obtained from the students participating in the research by clustering, the answers given were grouped, and themes were formed. After the themes were determined, the codes included in these themes were revealed. All the codes that come to the fore within the scope of the study can be examined in Figure 2. In this direction, the research was evaluated over five main themes. These themes are expectations of the workspace aura, spatial factors determining the order of the workspace setup, the effect of distance education tools on workspace setup,

expectations of the workspace environment, and difficulties related to the distance education environment.

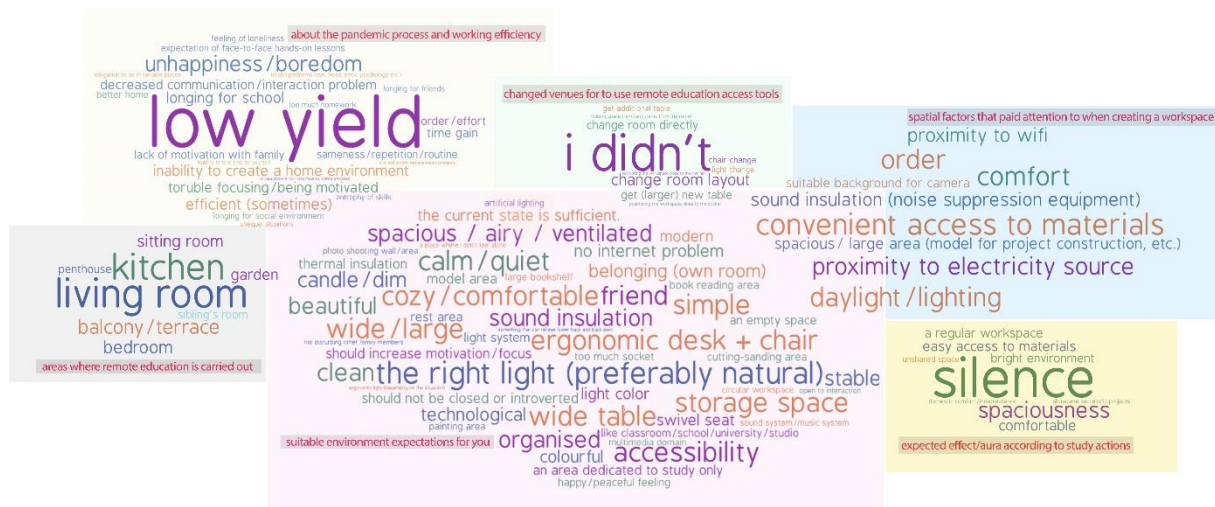


Figure 2 - All the codes that come to the fore within the scope of the study.

Expectations of the Workspace Aura

Within the scope of the study, it was tried to learn what kind of aura students wanted to create according to their working actions. Students had to transform the study area into a learning and production environment. In what environment students can gain knowledge and in what environment they can produce more efficiently has been a guide in determining the needs of the transformation. The first need we encountered was the order to reinforce the sense of belonging to the area and continue their production efficiently in this area. The need of students to place lecture materials and mock-up materials close to the workspace has led to the need for order. For this reason, 34.5% of students need order in their study area. Students only have the materials they will use that day in the study area they use in-studio lessons. However, in the working area located in the house, all materials should be stored, and technological devices should also be located there. In parallel, it is thought that the students' need for order is reinforced. Students stated that they designed the order to easily access the materials they used during the lecture and study. It is observed that this arrangement also plays a decisive role in selecting furniture to be used in the space.

Another variable needed to create the aura of the workspace is silence with 20.5%. Unlike the studio environment, the difficulty of meeting this need in the home environment caused students to search for alternative solutions. Students experiencing more efficient production in a quiet environment stated that they tried to get away from ambient sounds by employing methods such as moving the workspace to the most silent part of the house, using sound insulation materials in the workspace, using headphones, or listening to the music they preferred. The need for silence in the learning and production environment is followed by spaciousness with 20%. It is observed that students are to create a spacious workspace. Since the smallest rooms of the house are usually given to children, students who have narrow spaces compared to the studio workspace started to perform activities such as working, listening to lectures, storing course materials, and sleeping and resting

in this little space with remote education. Therefore, spaciousness appears as a variable that is needed to create an aura for most students but cannot be realized.

It is determined that the items in the house are used to fulfill different functions in the production and learning process. Placing a work desk in front of the bed in the room, using the bed for sitting, arranging the kitchen table or the dining table as a worktable, and using the chairs designed for eating as office chairs caused a decrease in the satisfaction levels with all the furniture mentioned above. This dissatisfaction led to the emergence of comfort as another variable needed to create an aura. 20% of the students stated that they needed comfort. For the situations mentioned above, feeling psychologically and physically comfortable comes to the forefront in the study. The home environment, which is one's own safe and comfortable environment, has suddenly become a place that everyone can see with the use of cameras in online classes. It is observed that students try to create an area where they will feel psychologically comfortable when they encounter such situations. While defining this comfort zone, foci such as hiding in-room clutter and not entering the camera angle if someone enters the room during the class play a decisive role.

The expectation of a bright environment with 11% emerges as a variable that students pay attention to while creating an aura. It is observed that they take care to provide this with natural lighting. Students are in search of a studio environment as much as they search for a bright environment. 11% of the students stated that they tried to make the environment look like a studio environment to create a workspace aura. What is tried to be simulated here is not only the physical work area but also the provision of actions such as cooperation and communication, which can be done in the studio environment through online applications. It is thought that the search for a studio environment remains in the background compared to other codes due to the intense participation of first and second graders in the research. While the second-year students participating in the study received face-to-face studio training for more than half a semester before the pandemic, the first-year students consisted of students who had never received face-to-face education. It is thought that these students do not see this as a need since their in-class relations are not as intense as in other classes, and there is relatively little or no face-to-face studio experience. These preferences are summarized in Figure 3.

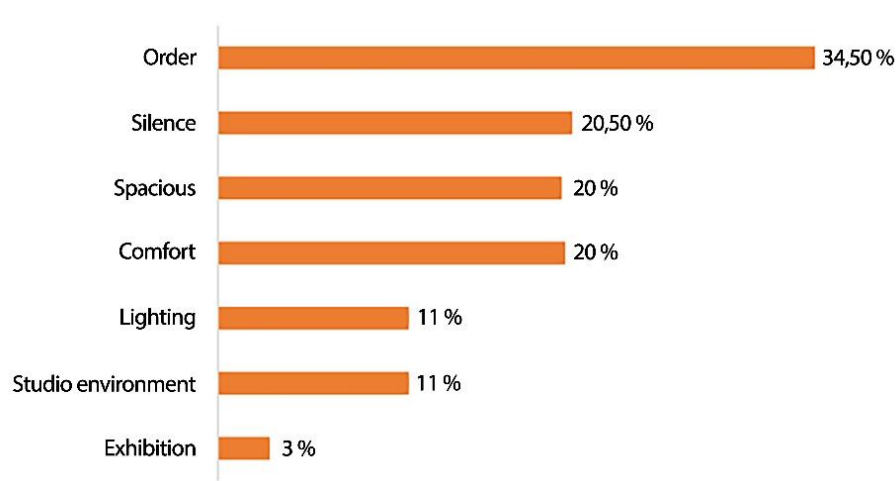


Figure 3 - Ambient expectations for workspace aura.

Exhibiting the works in a place is a variable that 4% of students pay attention to when creating an aura. It is thought that exhibiting works in a space is caused by the desire to strengthen the sense of belonging to the space and make the workspace look like a studio environment.

Spatial Factors Determining the Order of the Workspace

One of the research focuses was on what kind of spatial factors students paid attention to while creating a workspace. When the answers given were analysed, six clusters of spatial aspects were obtained. Easy access to materials is one of these clusters with %38,9. Students stated that they took care to ensure that the distance between the study area and the area where study materials were stored was both spacious enough for them to move freely and close enough to ensure easy access to materials.

In the studio environment, all physical components are arranged for use in design, technical drawing, and model production. This situation may not remain so pure in working areas organized in a home environment. Therefore, interventions may be required for all actions in question. While it is clear where the student will work most of the time in the studio environment, the disruption of spatial continuity in the home environment causes the order to be reconstructed with a new setup. This situation reveals the need for space for model making with 31.6%. If this area is not wide enough, it turns out that the area is redesigned by considering all the processes of action. They emphasized that they took care to keep the workspace wide and spacious to position tools such as tablets, laptops, and phones they used to connect to the lesson and the model materials, drawing materials, tools, and equipment required during the study.

25% of the students stated that they defined an area in the room to create a workspace. Emphasizing the importance of order in this area designated for the study, students indicated that they cleaned the site from all items they thought would disrupt the order.

The internet has been added to studio courses as a new component in the distance education process. Students indicating situations such as disconnection of the internet and insufficient internet quality during the lesson said that they preferred places close to the internet source when creating a workspace. In the long-lasting studio lessons, the charging needs of the lesson access tools led to the search for proximity to the electricity source while preparing the working environment. Students stated that they located their workspace close to electricity sources. For this reason, 15% of the students stated that they considered these components when organizing their study areas. Again, due to the long duration of studio lessons, students said that they prioritized comfort with 9,5% in creating a workspace. While some students changed their chairs to ensure comfort, some changed their desks by stating that they worked more comfortably at tables with large surface areas.

The last element that is paid attention to while creating a workspace is lighting with 9,5%. In particular, students who wanted to take advantage of daylight stated that they placed their workspace in places receiving the most daylight in the room. These preferences are summarized in Figure 4.

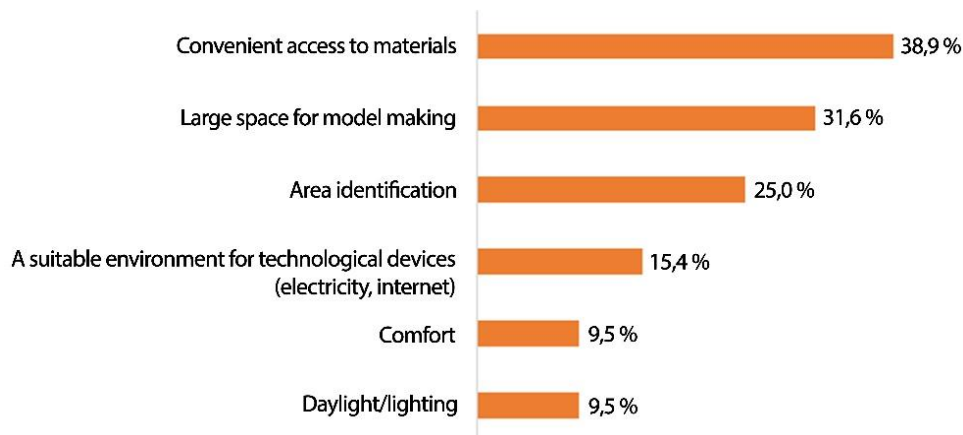


Figure 4 - Spatial factors that determine the workspace editing.

The Effect of Remote Education Tools on Workspace Setup

It is found that students use laptops, phones, tablets, and desktop computers to access remote education, respectively. Integrating these devices into the working environment is seen as a new design component in the construction of the environment. Due to the lack of such a component in the studio environment, these components cannot become a natural part of the environment. A dual situation arises here. Students who continue to work manually need to position these components in their work areas and define a space for work. In parallel, students who continue their studies via computers use separate devices for work and participating in the educational environment, so it is necessary to design the area for two separate functions. For the comfortable and long-term use of these devices, 50% of the students stated that they changed their existing rooms or changed the layout of their rooms while establishing a study area. Students stated that they chose places close to sockets when repositioning their workspace. Since training is conducted over the internet, the workspace location close to the internet resource is another element paid attention to when creating a study area.

The positioning of remote learning tools in learning and production areas has also caused insufficient space for study. 36.7% of the students stated that they changed/arranged the workspace furniture to solve this problem. To provide a large working area, a different desk is placed in the area, or the existing desk is replaced with another desk of a larger size. For these changes to be made, students stated that they removed unnecessary items from the room.

For access to remote education, some students with 35,2% said that they did not make changes to the workspace. Some students indicated they could not make changes because they were using the existing items, while others stated they did not need to make changes. Some students said that they wanted to make changes, but they could not do it due to the unsuitability of the space. These preferences are summarized in Figure 5.

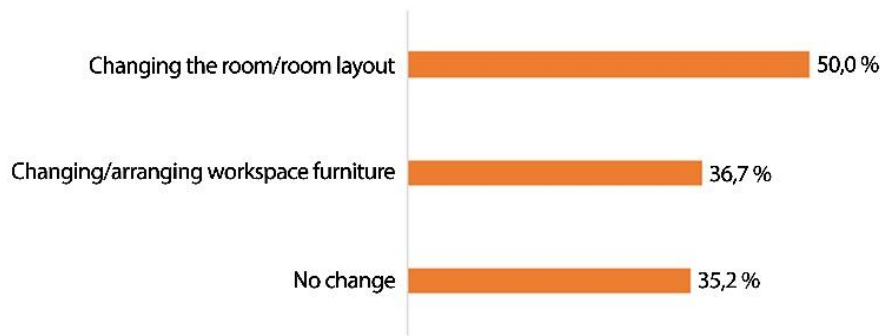


Figure 5 - Changes made to be able to use remote education tools.

Expectations of the Workspace Environment

It is noteworthy that the priority in the expectations of an appropriate environment is the need for a large area with 55%. Another element that completes this environment is silence with 33%. The aura created by non-physical items and furniture also clearly shows the search for a studio environment in this case. The past codes direct students to a requirement for efficient production. The narrowness of the working area increases the need for a room with large tables.

Following this group of codes, responses on ergonomics with 26,4% and simplicity with 22% are in the second place. The aura created by non-physical items and furniture clearly shows the search for a studio environment with 19.1%. Past codes lead students to a requirement for efficient production. The narrowness of the workspace increases the need for a room with large desks. Accessibility to many different materials simultaneously and furniture placement become essential at this point. While width and simplicity are expected, especially due to the space requirement related to model construction, 11,7% of students have an airy space expectation to avoid being affected by the smell of glue.

In the third code group, the issue of open-semi-open space relations and the need for storage space for materials come to the forefront. Furthermore, the search for a personalized space that integrates with the feeling of 'belonging' in its essence draws attention with %11. Although it is a critical component, it is expressed too little and highlights the priority status of the boundaries of the students' definitions belonging to them. All these expectations are summarized in Figure 6.

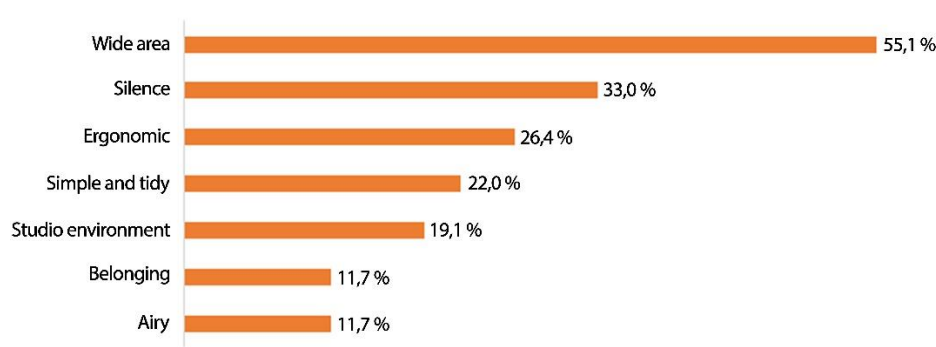


Figure 6 - Students' workspace expectations.

The past studio experiences of the students constitute a reference in determining the working environment expectations. Spacious and quiet spaces that students wish to have at home and airy spaces suitable for drawing and modelling are, in essence, nothing more than the qualities of a studio. On the other hand, students who did not have a face-to-face studio experience designed the space in line with the needs they felt in the studio lessons they conducted remotely in the fall semester. While this area is designed in the home environment, different expectations are placed for actions such as model production, drawing requirements, and positioning access devices to attend the lesson. It is thought that many activities that can be done quickly in the studio environment cannot be done in the home environment, reinforcing the need for the studio environment.

Difficulties Related to the Remote Education Environment

It seems that the biggest common problem during the pandemic is low productivity. There are many subcomponents of low efficiency. Some of these subcomponents appear as one of the most significant problems of the pandemic period, the out-of-routine communication, and the decrease in interaction. This subject, undoubtedly, constitutes a research base that needs to be spread over the long term, although there are various attempts to search for exchange. The same problem is experienced mutually, and awareness will also enrich the search for solutions to the problem. Codes for creating a personal space, which is intertwined with the topic of 'interaction' and forms the main focus of the study, are also encountered in this question. This condition, referred to as the 'inability to create an environment at home,' causes problems such as the inability to focus and low motivation, but it can also show the effects of boredom and depression from a psychological perspective. In addition to these negative situations, there is also a group of students who find the new order productive, although not at a very high rate, and can increase their studies in this direction. The condition of not being together has made students lonely and alienated them from a standard social life order. Hence, second-degree codes also usually consist of themes of sociability, longing, and loneliness. Statements that the motivation to work has been lost due to the 'home' aura caused by life with the family also draw attention. The fact that everything happens routinely in the same order after a while causes all the problems to be experienced every day, sometimes equally, sometimes increasingly. Figure 7 shows these problems.

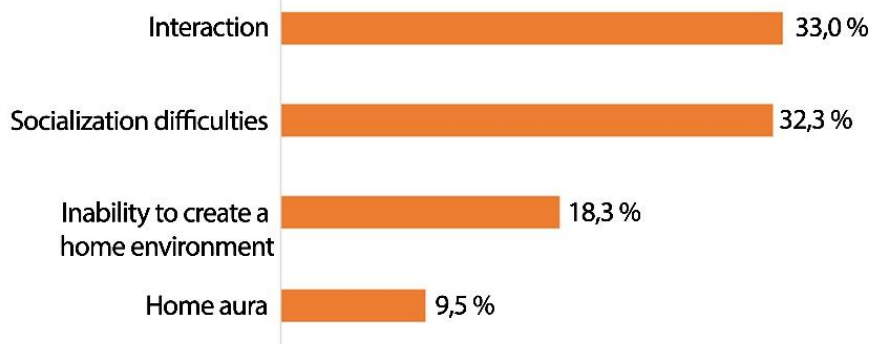


Figure 7 - Problems related to the remote education environment.

CONCLUSION

Since trying to re-create the codes can be regarded as breaking in a sense, it is one of the most challenging and most resistant periods. While going out of the ordinary leads to a profitable period for those who produce their spatial reality, it has caused those who could not do this to experience a problematic working period. Therefore, the abstract-concrete meaning cycle of objects has played an essential role in defining the workspace at this point. It is possible to see the reflections of this dual situation with certainty in the survey results.

In this context, the scope of the research was limited to the home environment of the student. The experiences that can be included in this home environment and their reflections in the physical setup of the space are directly included in the content of the work. Research such as the effect of studio space on the education process and how it should be are also excluded from the subject of the study.

While the physical changes and transformations in the home environment are taken into account within the scope of the study, a potential reference is made to the future working environments. The background of physical quests, resembling or searching for a place, should be dragged towards a direction that can realize the said contact in virtual environments. A new space setup, in which the symbols of the real thing come to the fore, can completely transform the habits of the learning environment. Therefore, while constructing different learning environments, interfaces that can create that effect and capture that aura can be created instead of looking for physical objects in a classroom or studio. It is thought that instead of interpreting both methods separately in order to create a potential for future studies, new definitions should be introduced in an integrated manner. For this reason, in the study, first of all, preliminary research and evaluation were made about what the physical components are, how they feel and why they are adopted.

When today's learning environment is evaluated holistically, it seems that the concern of 'creating a place' is formed, unlike a pure learning space and being physically present there. In this context, it is impossible to think of the current searches done to create the working aura away from technology. Therefore, more than just furnishing and furniture arrangement, technological components should be included in this arrangement with all their aspects as an active component. The effects of the pandemic do not continue strictly enough to lock all participants in homes as they did in the beginning. In the education model applying remote education and face-to-face education together, students should know themselves, explore their unique working and producing environments, and realize their boundaries. If these happen, it is thought that students will be able to create effective learning environments within the educational process that needs transformation.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support has been received for conducting the research and/or for the preparation of the article.

Ethical Statement

Ethics committee approval (Decision no: 2021/05-08) was obtained from Karabük University. All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/F/G/H/I

AUTHOR 2: A/B/C/F/G/H/I

REFERENCES

- Acar, A. (2020). Birinci sınıf mimarlık eğitimi için çevrimiçi izdüşümler. *XXI*. Retrieved August 28, 2022, from <https://xxi.com.tr/i/birinci-sinif-mimarlik-egitimi-icin-cevrimici>
- Acar, A., Soysal Acar, A. Ş. & Ünver, E. (2021). Mimarlık bölümü birinci sınıf öğrencilerinin kendi problem çözme becerilerine dair algılarının dikkat ve görsel-mekansal becerileriyle ilişkisi üzerine bir araştırma. *Megaron*. 16(2), 212-222. doi:10.14744/MEGARON.2021.98623
- Akış, T., Traunmüller, I. C., Kasalı, A., Tunç, A., Kul Özdemir, N., Emgin Şavk, B., Duran, H. E. & Doğan, F. (2020). İYTE Mimarlık fakültesi uzaktan eğitime geçiş anketi. *Midekon*. Retrieved August 28, 2022, from http://midekon.mo.org.tr/wp-content/uploads/2020/04/Uzaktan_Egitim_Anketi.pdf
- Alcocer, A. & Martella, F. (2020). Public house: the city folds into the space of the home. *The Architectural Review*. Retrieved March 12, 2022, from <https://www.architectural-review.com/essays/public-house-the-city-folds-into-the-space-of-the-home>
- Aldoy, N. & Andrew Evans, M. (2021). An investigation into a digital strategy for industrial design education. *International Journal of Art and Design Education*. 40(1), 283-302. doi:10.1111/jade.12334
- Auge, M. (2016). *Yok-yerler: üstmodernliğin antropolojisine giriş*. (T. Ilgaz, Trans.). İstanbul: Daimon.
- Aydınlı, S. & Kürtüncü, B. (2014). *Paralaks oda: "öğrenmeyi öğrenme" ortamı olarak stüdyo*. İstanbul: YEM Yayınları.
- Benjamin, W. (2020). *Teknik olarak yeniden üretilebilirlik çağında sanat yapıtı*. (G. Sarı, Trans.). İstanbul: Zeplin.
- Bhattacharjee, A. (2012). Social science research: principles, methods, and practice. *Textbooks Collection*. 3. Retrieved March 12, 2022, from https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=1002&context=oa_textbooks
- Biermeier, M. A. (2015). Inspired by reggio emilia: emergent curriculum in relationship-driven learning environments. *Young Children*. 70(5). Retrieved August 28, 2022, from <https://www.naeyc.org/resources/pubs/yc/nov2015/emergent-curriculum#:~:text=The%20third%20teacher%20is%20the,and%20environment%20that%20ignites%20learning.>
- Bilen, M. (2002). *Plandan uygulamaya öğretim*. Ankara: Anı Yayıncılık.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Miller-Ricci, M. & Rumble (2012). Defining twenty-first century skills. Griffin, P., McGaw, B., Care, E. (Eds.). In *Assessment and teaching of 21st century skills*. pp. 17-66. New York: Springer.
- Büyükoztürk, Ş. (2005). Anket geliştirme. *Türk Eğitim Bilimleri Dergisi*. 3(2), 133-151.
- Colomer, J., Serra, T., Canabate, D. & Bubnys, R. (2020). Reflective learning in higher education: active methodologies for transformative practices. *Sustainability*. 12(9), 1-8. doi:10.3390/su12093827

- Çakmak, Z. (1999). Kümelenme analizinde geçerlilik problem ve kümelenme sonuçlarının değerlendirilmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*. 3, 187-205.
- Çakmak, Z., Uzgören, N. & Keçek, G. (2015). Kümelenme analizi teknikleri ile illerin kültürel yapılarına göre sınıflandırılması ve değişimlerinin incelenmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*. 12.
- Ellis-Ormand, J. (2013). *Öğrenme psikolojisi*. (M. Baloğlu, Trans.). Ankara: Nobel.
- Fahlen, L. E. & Brown, C. G. (1992). The use of a 3D aura metaphor for computer-based conferencing and teleworking. *Proceedings of the 4th Multi-G Workshop*. Stockholm, Sweden. 69-74.
- Hajirasouli, A. & Banihashemi, S. (2022). Augmented reality in architecture and construction education: state of the field and opportunities. *International Journal of Educational Technology in Higher Education*. 19(39), 1-28. doi:10.1186/s41239-022-00343-9
- Katz, L. G. (1987). What should young children be learning?. *ERIC Digest*. Retrieved August 29, 2022, from <https://files.eric.ed.gov/fulltext/ED290554.pdf>
- Malaguzzi, L. (1996). *The hundred languages of children: the reggio emilia approach to early childhood education*. New Jersey: Ablex Publishing Corporation.
- Miller, P. H. (2009). *Theories of developmental psychology*. New York: Worth Publishers.
- Norberg-Schulz, C. (1991). *Genius Loci: towards a phenomenology of architecture*. New York: Rizzoli.
- Öksüz, E. E. (2016). *Mekânın özjü: maddesel gerçeklik ötesi, mekansal aura*. Unpublished M.D. Thesis. Istanbul Technical University.
- Özden, Y. (2003). *Öğrenme ve öğretme*. Ankara: Pegem A Yayıncılık.
- Portillo, J., Garay, U., Tejada, E. & Bilbao, N. (2020). Self-perception of the digital competence of educators during the COVID-19 pandemic: a cross-analysis of different educational stages. *Sustainability*. 12(23), 1-13. doi:10.3390/su122310128
- Senemoğlu, N. (2020). *Gelişim, öğrenme ve öğretim: kuramdan uygulamaya*. Ankara: Anı Yayıncılık.
- Tam, C. (2022). *The third teacher: architecture as enabler of active learning*. Unpublished M.A. Thesis. Massachusetts Institute of Technology.
- Thomas, R. M. (1998). *Conducting educational research: a comparative view*. Bergin & Garvey.
- Torres Martin, C. T., Acal, C., El Homrani, M. & Mingorance Estrada, A. C. (2021). Impact on the virtual learning environment due to COVID-19. *Sustainability*. 13(582), 1-16. doi:10.3390/su13020582
- Türkkan, S. (2020). Mimarlık eğitimini mimarlık eğitimi yapan bazı şeyler. *XXI*. Retrieved August 28, 2022, from <https://xxi.com.tr/i/mimarlik-egitimini-mimarlik-egitimi-yapan-bagzi-seyler>
- Yurtluk, M. (2005). Proje tabanlı öğrenme. Ö. Demirel (Ed.). In *Eğitimde yeni yönelimler*. pp. 39-65. Ankara: Pegem A Yayıncılık.

BIOGRAPHIES OF THE AUTHORS

Gözde ZENGİN (Asst. Prof.)

In 2008, she graduated from Dumlupınar University, Simav Faculty of Technical Education, Department of Furniture and Decoration Education. In 2012, she completed her master's degree at Muğla Sıtkı Koçman University on 'Determination the Effect of Vine Pruning Stalks Impregnated with Olive Black Water Containing Boron were Manufactured Particleboard on Mechanical, Physical and Decay Resistance.' She worked as a research assistant at Karabük University Department of Industrial Design between 2010-2018. In 2018, she completed her Ph.D. on 'Determination of Teenage Bedroom Design Criteria in the Direction of User Expectations' at Karabük University. Now she is working as an assistant professor in Karabük University, Faculty of Fine Arts and Design. Since 2014, she has been giving Basic Design Education and Design Management courses in the Departments of Industrial Design and Graphic Design.

Bengi YURTSEVER (Asst. Prof.)

In 2008, she graduated from Karabük University Safranbolu Fethi Toker Fine Arts and Design Faculty Department of Architecture. In 2011, she completed her master's degree at Istanbul Technical University (ITU) on 'The Role of Critical Thinking in Architectural Education: First Year Design Education'. She worked as a research assistant at Karabük University between 2009-2012, as an architect at Ankara Çankaya Municipality Directorate of Cultural and Social Affairs at 2013, and as a research assistant at Architecture Department of Yıldız Technical University (YTU) Faculty of Architecture between 2014-2017, in İstanbul. In 2017, she completed her PhD on 'Active Studio Experiences in Architectural Design Education' at Yıldız Technical University. Now she is working as an assistant professor in Mugla Sıtkı Kocman University, Faculty and Department of Architecture.



Effects of plaster choice on conservation of the original acoustical character of historical mosques

Fatma YELKENCI SERT¹, ORCID: 0000-0001-7683-7163
Özgül YILMAZ KARAMAN², ORCID: 0000-0002-9083-0766

Abstract

The study aims to contribute acoustic characteristics of two monumental mosques in Western Anatolia: focusing on the change of material properties of the prayer hall and its effects on the perceived acoustical environment during history. Preserving the authentic auditory environments of historical mosques has great importance. Because the acoustical perception of the prayer hall affects users as much as their visual perception. Field measurements and acoustical simulations were held in two historical mosques with similar room volumes but different dome combinations to compare the present and probable original acoustical environments. The values of T30, EDT and STI are investigated by focusing on the change of plaster properties during restoration works. It is found that the original mortars could be differentiated for both cases and they might sound very different when the time they were first built. Acoustic documentation of such important historical monuments of Anatolia is quite a good contribution to the field of archaeoacoustics and historical conservation. However, the study focused on the change of material properties. The findings of the paper can raise the question; of whether it is possible to comment on the originality of materials of a historical space by measuring its current acoustical character.

Highlights

- The acoustic perception of historical mosques affects users as much as their visual perceptions.
- It is found that the absorption coefficients of the plasters in the current state of the mosques are similar to today's cement-based contemporary mortars.
- The distributions of acoustical objective parameters become more uniform with historical plasters.

Keywords

Historical plaster types; Mosque acoustics; Acoustic simulations

Article Information

Received:
12.03.2022
Received in Revised Form:
15.12.2023
Accepted:
16.01.2023
Available Online:
30.01.2023

Article Category

Research Article

Contact

1. Faculty of Architecture, Dokuz Eylül University, Buca, İzmir, Türkiye
fatma.yelkenci@deu.edu.tr
2. Faculty of Architecture, Dokuz Eylül University, Buca, İzmir, Türkiye
ozgul.yilmaz@deu.edu.tr

Sıva türünün tarihi camilerin özgün akustik karakterlerinin korunmasına etkileri

Fatma YELKENCI SERT¹, ORCID: 0000-0001-7683-7163
Özgül YILMAZ KARAMAN², ORCID: 0000-0002-9083-0766

Öz

Çalışma, tarih boyunca camilerin malzeme özelliklerinin değişimi ve algılanan akustik çevre üzerindeki etkilerine odaklanarak Batı Anadolu'daki iki tarihi caminin akustik özelliklerine katkıda bulunmayı amaçlamaktadır. Tarihi camilerin özgün işitsel ortamlarının korunması büyük önem taşımaktadır. Çünkü ibadethanenin akustik algısı, kullanıcıları görsel algıları kadar etkilemektedir. Bu çalışmada, camilerin mevcut ve özgün akustik ortamlarını karşılaştırmak amacıyla benzer hacim boyutlarında, farklı kubbe kombinasyonlarına sahip iki tarihi camide saha ölçümleri ve akustik simülasyonlar yapılmıştır. Nesnel akustik parametreler olarak T30 (yansıma süresi), EDT ve STI değerleri, camilerin restorasyon çalışmalarında uygulanan sıvaların özelliklerinin değişimine odaklanılarak incelenmiştir. Çalışmanın her iki durumu için de özgün harçların ortamı farklılaştırılabileceği ve ilk yapıldıkları zaman ortamın kulağa çok farklı gelebileceği tespit edilmiştir. Anadolu'nun bu kadar önemli tarihi eserlerinin akustik belgeleme çalışmaları, arkeoakustik ve tarihi koruma alanlarına katkı sağlayacağı düşünülmektedir. Bununla birlikte, çalışma malzeme özelliklerinin değişimine odaklanmıştır. Makalenin bulguları “mevcut akustik karakterini ölçerek tarihi bir mekânın malzemelerinin özgünlüğü hakkında yorum yapmak mümkün müdür?” sorusunu ortaya koymaktadır.

Öne Çıkanlar

- Tarihi camilerin akustik algısı, kullanıcıları görsel algıları kadar etkilemektedir.
- Tarihi camilerin mevcut durumundaki sıvaların yutuculuk katsayılarının günümüz çimento esaslı harçların yutuculuk değerlerine benzer olduğu tespit edilmiştir.
- Tarihi sıvaların kullanıldığı hacimlerde nesnel akustik parametrelerin dağılımları daha düzgün olduğu görülmektedir.

Anahtar Sözcükler

Tarihi sıva türleri; Cami akustiği;
Akustik simülasyon

Makale Bilgileri

Alındı:
12.03.2022
Revizyon Kabul Tarihi:
15.12.2023
Kabul Edildi:
16.01.2023
Erişilebilir:
30.01.2023

Makale Kategorisi

Araştırma Makalesi

İletişim

- Mimarlık Fakültesi, Dokuz Eylül Üniversitesi, Buca, İzmir, Türkiye
fatma.yelkenci@deu.edu.tr
- Mimarlık Fakültesi, Dokuz Eylül Üniversitesi, Buca, İzmir, Türkiye
ozgul.yilmaz@deu.edu.tr

ACOUSTICS IN HISTORICAL MOSQUES

Mosques are sacred spaces and most of the time prayer halls are built with high attention and use of the most innovative techniques of the era and place where the mosques were constructed. They have been built not only to meet the needs of prayer but also they are expected to have an impressive effect on the people. Dome, which is covering the main prayer hall with various combinations, is one of the most recognizable elements of mosque architecture of the Ottoman era and many examples that differ in size built throughout the history of Anatolia. Most of these historical mosques are still in use and they are also important elements of the history of architecture.

Islam religion accepts that some rituals are appropriate to do with the congregation. For this reason, large volumes are needed to accommodate large groups of people. Most mosques were covered with a combination of concave surfaces such as dome, half-dome, dome-vault or many domes to obtain the volume needed. Large volumes and concave surfaces are expected to cause long reverberation time that may negatively affect prayer hall acoustical conditions. However, the materials used in mosques, such as carpets, have some roles to reduce reverberation compared to churches. Materials of the large wall surfaces also are expected to affect the acoustical characteristics (Kleiner, et al., 2010; Sü Gül, 2019).

The acoustical perception of the prayer hall affects users even more than their visual perception to feel the volume and the divine feeling during religious rituals (Abdelazeez, et al., 1991; Grabar, 1983). In this context, mosques are important subjects of literature on acoustics (Abdou, 2003; Carvalho and Monterio, 2009, Kayılı, 1988). Some studies on mosques focused on acoustic evaluations and comparisons in mosques (Elkhateeb and Ismail, 2007; Elkhateeb, et al., 2015; Ismail, 2013). Most of the studies investigate mosques through historical and modern examples by measurements and acoustical simulations (Sü and Yilmazer, 2008; Sü Gül, et al., 2014; Topaktaş, 2003) Some studies focus on the comparison between the acoustical environment of different sacred spaces (Kleiner, et al., 2010, Wetiz, et al., 2002). Some studies describe the importance of sound in religious buildings as a part of intangible cultural heritage (Grabar, 1983; Ergin, 2008; Suarez, et al., 2015). Ergin emphasizes the importance of the acoustical environment and underlines the lack of studies in her paper. According to Ergin (2016); *“In spite of the significance of sound in Islamic cultures—whether in the form of Qur’an recital, the call to prayer, or poetry recital—historians of Islamic architecture*

generally have neglected acoustic qualities of the built environment, probably because even in the visual realm so much basic historical research remains to be done? (Ergin, 2016). Some experts are interested in acoustic renovation/improvement and acoustic design studies of mosques (Abdelazeez, et al., 1991; Hamadah and Hamouda, 1998; Sü Gül and Çalışkan, 2013).

Evaluation of the acoustical environments of sacred spaces is one of the important issues in acoustic studies. Most studies on mosque acoustics use optimum ranges of objective acoustic parameters, which are improved for the speech rooms, due to the lack of certain optimum parameter ranges specifically developed for mosques. However, the prayer hall is quite a challenging environment where both speech and musical rituals are held and also where the feeling of sacred space should be kept. In this context, some researchers focused on developing optimum value ranges of acoustic parameters and design criteria for mosque acoustics (Prodi and Marsilo, 2003; Orfali, 2007; Utami, 2005). In some studies, acoustic parameter values were analyzed for the mosque models with different plan schemes to draw attention to the effects of early design decisions on the acoustics of the environment for future mosque projects (Abdou, 2003; Eldien and Qahtani, 2012). Reverberation time, sound pressure level distribution and sound transmission index which have effects on speech intelligibility of volumes have been evaluated in some studies (Sü and Yilmazer, 2008; Suarez, et al., 2004).

Architectural features are also another parameter that affects the acoustical environment. Dimensions, plan typology and ceiling structure with dome are the main architectural elements that constitute the acoustical environment of the prayer hall as well as building materials and construction techniques in historical mosques (Kitapçı and Çelik Başok, 2021; Yelkenci Sert and Yılmaz Karaman, 2021). It can be said that the dome geometry and excessive volume of the prayer hall are important factors in the acoustical environment of historical mosques.

There have been changes in the architecture and/or material properties of mosques throughout their history such as extensions or interventions because of structural and/or material deteriorations, and function changes. These interventions that were made at different times have effects on both the visual and acoustical characteristics of the original state of the prayer hall. For that reason, research in archaeoacoustics has been focused on ancient worship spaces, since it is possible to study the acoustic environment of ancient worship spaces with the help of simulation tools (Dordevic, et al., 2019; Omar, et al., 2020; Alberdi, et al., 2021) and to revive the sound of worship spaces that disappeared or had major transformations throughout history (Karabiber, 2000; Suárez, et al., 2018; Tanaç Zeren, et al., 2016). In addition, the modern use of an ancient building may require function change and to meet the needs of the new function acoustical interventions would have to be considered in some cases (Postma and Katz, 2015).

There are many acoustic studies on historical mosques as seen in the literature review. However, a few studies examine historical plaster samples and their effects on acoustics environments. This study is aimed to fill this lack in the literature to show the effects of original plasters on the auditory environment in the conservation studies of historical mosques.

DEFINITION OF THE STUDY

The selection of surface materials is one of the main criteria that builds the acoustical environment of rooms. Additives within the mortar paste and the thickness of the plaster layer affect the properties of surfaces. Plasters used on the walls protect the buildings from deterioration and provide durability and most surfaces are covered with plaster interiors of historical mosques (İpekçi, et al., 2019). As mentioned before, some structural and architectural renovations are inevitable during the lifespan of historical mosques. They can change the original acoustic environment of the prayer hall, in which good intelligibility for speech and music and/or preventing higher background noise levels is an important issue. These issues are dependent on the sound absorption coefficient of plasters because of the big amount of plastered surface area (Bozkurt and Demirkale, 2019).

In this context, the study aims to start a discussion on whether the replacement of original plasters can change the original acoustical perception of historical mosques or not. In other words, the study focuses on the change of mortar properties and its effects on the acoustical environment of the prayer hall. This question is an outcome of previous studies (Yelkenci Sert, 2021; Yelkenci Sert and Yılmaz Karaman, 2021) that held around 30 historical mosques built in Western Anatolia. During the calibration process of simulation models of mosques, it is found that the absorption coefficients of the plasters in the current states of the mosques are similar to contemporary cement-based mortars instead of lime-based mortars. Also in a recent study, it is found that absorptive materials can significantly change the sound energy decay rates within Süleymaniye Mosque and Hagia Sofia Mosque depending upon their applied surface areas (Sü Gül, 2019).

To achieve this goal, literature on historical mortars that are used in traditional architecture is reviewed and sound absorption characteristics of historical mortars are collected to simulate probable original acoustics of prayer halls. And the methodology of literature on archaeoacoustics is followed which can be summarised as;

- field measurements to evaluate the acoustical performance of the current properties of the room;
- the creation of an acoustical model of the room, which is calibrated according to measurement data and,
- changes in the room properties to restore the room to the original state or/and determine the effects of different acoustical treatments to make acoustical improvements, respectively (Sü Gül, 2019; Omar, et al., 2020; Postma and Katz, 2015).

Field measurements were held in two historical mosques built with similar room volumes. The prayer halls of the mosques were modelled and calibrated according to measurement data.

The values of objective room acoustic indicators are investigated by comparing the present and probable original states of the mosques. And it is considered that the original mortars, which were lime-based, could be differentiated in terms of absorption characteristics for both cases of the study. In this context, the study aims to find how they might have been sound when they were first built by the use of lime-based mortars. In conclusion, it is found that keeping the content of the

original plaster is an important part of preserving not only the structure but also the auditory perception it used to have.

ACOUSTICAL PROPERTIES OF HISTORICAL PLASTERS

There are some studies on historical mortars and their features in the literature, although the number of studies dealing with their acoustical characteristics is limited.

Most historical mortars are lime-based and include natural fibres originally (Kolay, 2016). Portland cement, which is currently in use as the main ingredient of contemporary mortars has different structural characteristics in comparison to lime. The difference between lime mortar and portland cement mortar, generally used in buildings, causes condensation differences, cement mortar's mechanical strength and elasticity are higher than the lime, and lime has macro gaps while portland cement has micro gaps (Ersen, et al., 2013).

Properties of plaster mixtures that were used in historical buildings are described in the report for the Directorate General of Foundations of the Republic of Turkey to be used in the restoration works. According to this report, the types of historical mortar mixtures are based on hydraulic lime binder, hydrated lime binder and hydrated lime binder with pozzolan additive. These mortar mixtures are expected to be used in the restoration process of historical buildings (Ersen, et al., 2013).

Bozkurt and Demirkale (2019) investigated the sound absorption coefficients of the historical plasters. In this context, they studied three different mixtures based on the hydraulic lime binder, the hydrated lime binder, and the hydrated lime binder with pozzolan additive with the thickness of 3 cm, 6 cm, 9 cm, and 12 cm by the report for the Directorate General of Foundations of the Republic of Turkey (Bozkurt and Demirkale, 2019). Absorption coefficients of these plaster mixtures are used to find out the probable original state of the mosques' acoustical conditions.

Tavukçuoğlu et al. (2011) studied historical lime plaster layers collected from Turkish Hammams for dry, damp, and wet conditions. They found sound absorption coefficients of historical plasters higher than oil-painted cement-based plasters. (Tavukçuoğlu, et al., 2011).

Kayılı (1988) mentions four types of plasters that were collected from historical mosques during the restoration works. According to the study, the replacement of the original "horasan" plasters with hemp fibres caused the increase of RT, especially in mid frequencies within the mosque volumes (Kayılı, 1988).

In the study of Sü Gül (2019), the effects of the historical plasters on the acoustic environment were investigated through two monuments: Hagia Sophia and Süleymaniye Mosque (Sü Gül, 2019). The examples of the paper have 150000 m³ and 75000 m³ volumes respectively and they are supposed to have a different acoustical character with their giant volumes in comparison to the 4000 m³ volumes of this study. But interventions of the plasters on wall surfaces during the restorations are supposed to be similar.

It is also found that the original mortars were replaced with cement-based ones during the restoration processes of the Süleymaniye Mosque. And cement-based plasters were replaced with lime-based plasters in the last restoration works, however acoustic evaluations showed that this replacement may not be enough to turn the mosque into its original state (Sü Gül, 2019).

During the last restoration process, it was seen that the plasters of the Sultan Mosque had many alterations as a result of many earthquakes (the last one was in 1999) that damaged the mosque (Erdoğan, 2006). According to the documents, Yeni Mosque was renovated in 1665, 1887 and 1961 (Aslanoğlu, 1978). In addition, it is found that the absorption coefficients of the plasters in the current state of the mosques are similar to cement-based contemporary mortars. And it is considered that the original mortars could be replaced in both cases and they might sound very different from when they were built.

In Table 2, the sound absorption coefficients of the plasters from the literature are listed. These values of plasters are applied to acoustical models of the two prayer halls and each one is modelled, and results are compared to the current states of the rooms.

According to Table 1; P1 (Plaster No:1) shows the current plaster used for the calibration of acoustic models of this study. P2, P3 and P4 are also current plaster coefficients obtained from the calibration process of similar studies on mosque acoustics. Koutsouris et.al (2016) used the plaster (P2) with absorption coefficients that are shown in Table 2 for simulation models of Selimiye Mosque, one of the masterpieces of Architect Sinan (Koutsouris, et al., 2016). P3 is the current plaster that was used for the calibration of the acoustic model of Suleymaniye Mosque, by the field measurements after the last restoration works (Sü Gül, 2019). Topaktaş (2003) used the plaster (P4) with absorption coefficients of 0.05 for 500 Hz, and 0.04 for 1000 Hz for simulation models of four mosques (Topaktaş, 2003). There is not a significant difference in sound absorption characteristics among P1, P2, P3 and P4.

Other plaster types (between P5- P17) are defined as historical plasters that are quite absorptive in comparison to current plasters (Tavukçuoğlu, et al., 2011; Bozkurt and Demirkale, 2019). Sound absorption coefficients of these historical plasters were applied to the Odeon models of Yeni Mosque and Sultan Mosque.

Table 1 - Sound absorption coefficients of different plaster types collected from the literature; (P1, P2, P3, P4; Current plasters on mosques, P5; historical plaster, P6, P7, P8, P9; mortar mixture based on the hydraulic lime binder, P10, P11, P12, P13; mortar

Plaster types from literature	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
P1 – Current plaster	0.08	0.07	0.07	0.08	0.09	0.10
P2 – Current plaster (Koutsouris, et al., 2016).	0.02	0.02	0.05	0.07	0.10	0.11
P3 – Current plaster (Sü Gül, 2019).	0.13	0.09	0.07	0.05	0.03	0.04
P4 – Current plaster (Topaktaş, 2003)	0.14	0.10	0.05	0.04	0.04	0.03
P5 – Historical plaster, approx. 30 mm thick, 2 layered lime-based plaster collected from the building (Favukçuoğlu, et al., 2011)	0.10	0.12	0.25	0.29	0.33	0.33
P6 – Historical plaster (mortar mixture based on the hydraulic lime binder 30 mm) (Bozkurt and Demirkale, 2019)	0.02	0.03	0.04	0.15	0.19	0.20
P7– Historical plaster (mortar mixture based on the hydraulic lime binder 60 mm) (Bozkurt and Demirkale, 2019)	0.01	0.02	0.07	0.19	0.19	0.12
P8– Historical plaster (mortar mixture based on the hydraulic lime binder 90 mm) (Bozkurt and Demirkale, 2019)	0.01	0.02	0.25	0.12	0.21	0.15
P9– Historical plaster (mortar mixture based on the hydraulic lime binder 120 mm) (Bozkurt and Demirkale, 2019)	0.02	0.03	0.43	0.08	0.19	0.12
P10– Historical plaster (mortar mixture based on the hydrated lime binder 30 mm) (Bozkurt and Demirkale, 2019)	0.03	0.07	0.13	0.20	0.26	0.18
P11– Historical plaster (mortar mixture based on the hydrated lime binder 60 mm) (Bozkurt and Demirkale, 2019)	0.04	0.10	0.19	0.18	0.25	0.19
P12– Historical plaster (mortar mixture based on the hydrated lime binder 90 mm) (Bozkurt and Demirkale, 2019)	0.05	0.11	0.20	0.16	0.26	0.22
P13– Historical plaster (mortar mixture based on the hydrated lime binder 120 mm) (Bozkurt and Demirkale, 2019)	0.07	0.16	0.20	0.20	0.38	0.37
P14– Historical plaster (mortar mixture based on the hydrated lime binder with pozzolan additive 30 mm) (Bozkurt and Demirkale, 2019)	0.02	0.03	0.07	0.17	0.18	0.15
P15– Historical plaster (mortar mixture based on the hydrated lime binder with pozzolan additive 60 mm) (Bozkurt and Demirkale, 2019)	0.01	0.06	0.22	0.11	0.22	0.17
P16– Historical plaster (mortar mixture based on the hydrated lime binder with pozzolan additive 90 mm) (Bozkurt and Demirkale, 2019)	0.02	0.06	0.19	0.08	0.23	0.19
P17– Historical plaster (mortar mixture based on the hydrated lime binder with pozzolan additive 120 mm) (Bozkurt and Demirkale, 2019)	0.05	0.16	0.20	0.12	0.27	0.37

ACOUSTICAL ANALYSIS OF YENI MOSQUE AND SULTAN MOSQUE

In this section, it is aimed to observe the effects of the interventions on the acoustic environment within the scope of the study. First, the architectural features in the current state of the mosques, then acoustical field measurements and simulation processes are described.

Architectural features of cases

In the study, two important mosques, Yeni Mosque and Sultan Mosque, which were built in the 16th century, in two important centres of the Ottoman Empire are evaluated (Figure 2). They are quite moderate examples in terms of size by comparing the mosques that were built in İstanbul, the capital of the Empire, during the same period, however, they are important elements of the history of architecture.

According to the information obtained in the literature, the Yeni Mosque was built by Behram Kethüda during the reign of Sarı Selim at the end of the 16th century in Tire, one of the important centres (sanjak) of the Ottoman Empire at those times (Aslanoğlu, 1978). The mosque's sanctuary has a square plan of 15 x 15 m, covered with a single central dome (Figure 1) and it has the biggest volume among the ancient mosques built around Tire. This form of the prayer hall has been repeated for both historical and contemporary mosque architecture, especially for the moderate examples in smaller cities. The central dome was settled on a hoop, which is 150 cm in height and has 8 window openings (Figure 3). The thickness of the plastered masonry walls reaches 180 cm. Load transfer was implemented from the central dome to the walls through pendentives and squinches that are placed in the corners of the prayer hall. There is a wooden maksoorah carried by wooden pillars above the entrance section. The mihrab and pulpit elements of the mosque are made of marble.

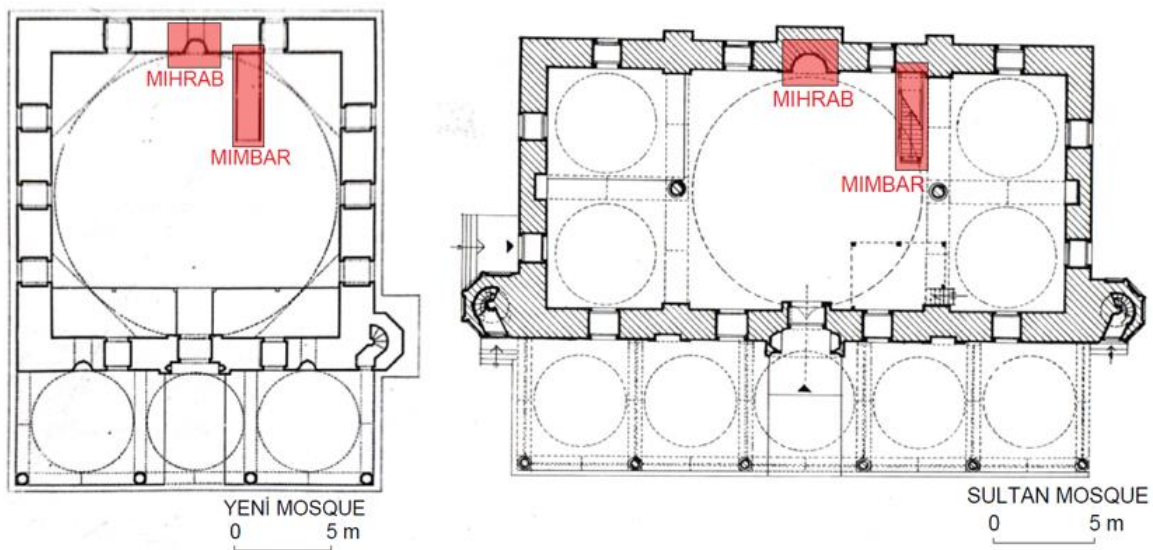


Figure 1 - The plans of Yeni Mosque (left) and Sultan Mosque (right) (Aslanoğlu, 1978; Acun, 1999).

Sultan Mosque, built in the 16th century, is one of the most important historical buildings in Manisa. Manisa, whose history dates back to the Palaeolithic period, is an important settlement named Magnesia and Sipylum in the antique period in Anatolia. Manisa had an important position in the historical period of the Ottoman Empire, not only by being one of the oldest settlements but also by being a sanjak, where princes were educated and managed. As a result, many important buildings were built in Manisa, such as mosques, libraries, schools, Turkish baths, and commercial buildings (Acun, 1999).



Figure 2 - Exterior views of Yeni Mosque (left) and Sultan Mosque (right).

Sultan Mosque has a transverse rectangular plan schema with a volume of approximately 4000 m³ (Figure 1). It is covered with a domed composition consisting of the main dome of about 22.5 m in height and two small domes covering side aisles on two sides. The main dome of the mosque has a diameter of 11.5 m. The smaller domes which are sitting on octagonal hoops have diameters of 5 m. The transitions from walls to domes are provided with pendentives. The mosque has a floor area of 312.5 m². The part where the transition elements to the dome are located is enclosed by a square prism hoop from the outside. The hoop of the dome supported by buttresses is placed on it. Thus, the central dome gives the impression of sitting on a two-storey hoop. The main worship area is connected to the side spaces by two arches that are stepping on pillars (Figure 4).



Figure 3 - Main dome and transition elements in the Yeni Mosque.



Figure 4 - Main dome and arches in the Sultan Mosque.

Table 2 - The architectural features of cases.

	Yeni Mosque	Sultan Mosque
Location	Tire, İzmir	Manisa
Year of construction	16th Century	1522 (16th Century)
Type of roof covering	single masonry domed	multi masonry domed
Plan dimensions	15x15 m	25.75x11.65 m
Height of mosque	13 m	11.8 m
Volume	3442 m ³	4000 m ³
Type of plan	Square	Rectangular
Capacity	291	375
Volume per person	11.83 m ³	10.67 m ³

Dimensions, proportions and geometry affect the acoustical environment of the prayer hall as well as the finishing materials of surfaces. The architectural features of the cases are summarized in Table 2. Both of the mosques were built in the same period with similar capacity and room volume with plastered wall surfaces. Main prayer halls differ in terms of plan geometry and dome configuration depending on the planning scheme. In Sultan Mosque, the prayer hall was formed under the central dome and side aisles connected by two arches on both sides, while Yeni Mosque has a single space under the central dome.

Although mosques have sustained their genuine form and function, some interventions can be observed inside. For example, the original plasters on walls have been changed during the time like other Ottoman mosques. Furthermore, the southeastern part of the Sultan Mosque has been raised 50 cm from the ground. Nowadays, this part is isolated from the main worship area by reflective panel elements. In the Yeni mosque, walls were covered by discordant ceramic tiles approx. 120 cm high (Figure 5).

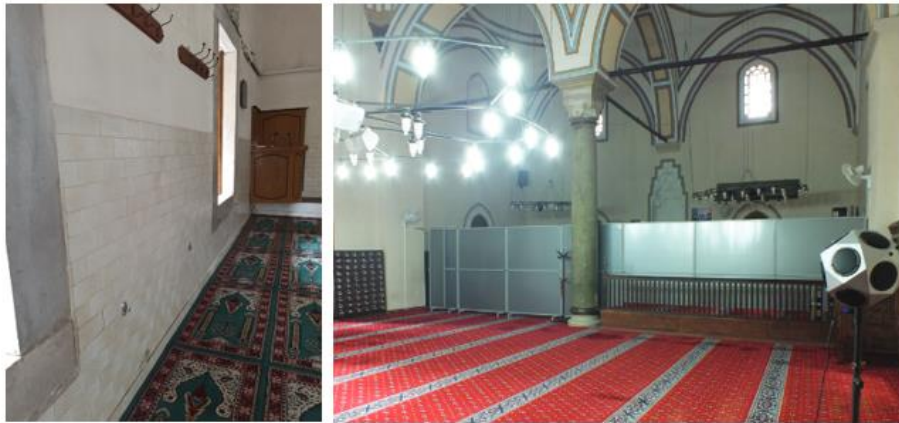


Figure 5 - Ceramic coverings on the walls of Yeni Mosque (left) and dividing panels in the Sultan Mosque (right).

Documentation methodology

The methodology which is defined in section 2 and found to be used in most of the studies on archaeoacoustics is followed in this paper. First, field measurements were held to evaluate the acoustical performance of the current properties of the prayer halls of the mosques. Then, acoustical models of the rooms, which are calibrated according to measurement data, were made to restore the prayer halls to their possible original state. To identify the changes in acoustical conditions of the prayer hall depending on the possible replacement of original mortars on wall and dome surfaces; plaster types are changed on the models and results are compared with the current conditions. In this context, the first part of the study consists of onsite acoustical measurements. The second part of the study contains computer simulations by the ODEON Combined v16 Room Acoustics Software Program launched by the Technical University of Denmark. The acoustical evaluations are carried out by acoustical parameters defined in ISO 3382-1, 2010. Absorption coefficients of historical materials are obtained from the literature review as defined in the previous chapter and listed in Table 2.

Field Measurement Conditions

Field tests were carried out by a team of two people for both mosques in unoccupied conditions. In assessing room acoustic parameters, field measurements were held by ISO 3382-1,2010 (3382-1, 2010). An Omni power sound source was used for the signal generation with a power amplifier (The brand and model of the equipment were B&K 4292-L and Type 2734-A respectively.) The impulse responses at various measurement points were captured by the B&K omnidirectional microphone of the handheld analyzer (B&K-Type 2250-A). Both the microphone and analyzer were calibrated before measurement. DIRAC Room Acoustics Software v.6.0 was used for both generating different noise signals and getting the measured impulse response data for each receiver position.

Before measuring the parameters of room acoustics, background noise levels are measured inside and outside of the prayer halls. And this information is used in both field measurements and acoustical simulations. Daytime average background noise levels (L_{aeq}) obtained during field

measurements have been obtained as 45 dB for the Sultan Mosque and 31.5 dB for the Yeni Mosque.

The sound signal was configured as at least 45 dB higher than the noise in all octaves to ensure the reliability of results related to decay parameters. Tested signals were E-sweep and MLS, and up to pre-results impulse response lengths were set longer than RT of the rooms for all frequencies. There weren't significant differences depending on the signal type, therefore MLS signals were generated by the system used for the measurements. The sound source (S1) was placed in front of the mihrab at a height of 1,5 m simulating the Imam, and the receiver points (R1,2,3...) were placed at a height of 0,85 m. simulating prayer's sitting position (Figure 6- 7).

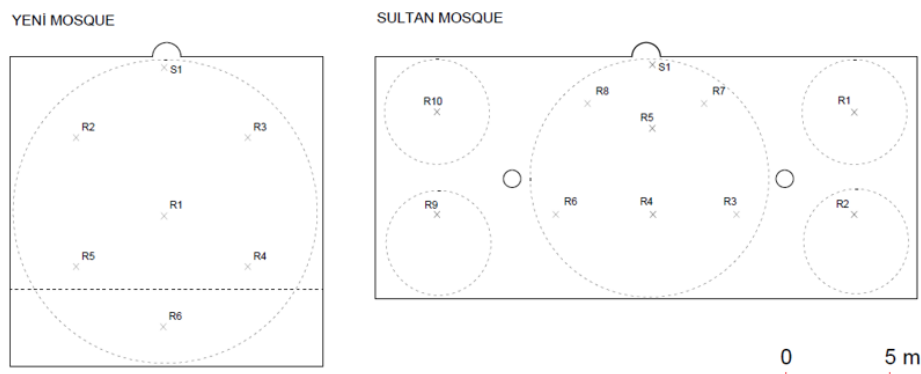


Figure 6 - The locations of sound sources (S) and receiver points (R) in the mosques.



Figure 7 - The positions of sound sources and receiver points in the field measurements (left photo from the Yeni Mosque; right photo from the Sultan Mosque).

Acoustic Simulation Conditions

The acoustical simulations of two monumental mosques are carried out to investigate the original acoustic state of the prayer halls. The geometrical models of mosques based on detailed architectural drawings in the literature and room dimensions were also checked with the architectural documentation by the researchers during the fieldwork. Mosques were modelled with

SketchUp2020, which is compatible with room acoustics software, ODEON. Ray tracing simulations were carried out by ODEON Combined v.16 Room Acoustics Software (Figure 8-9).

The measurement scenario, used for the field measurements was repeated for the acoustical models. The Imam as a sound source was placed in front of the mihrab at 1.50 m from the floor level. Therefore, the 10 receiving points in Sultan Mosque and 6 receiving points in Yeni Mosque were set at a height of 0.85 m as seating level (Figure 8-11).

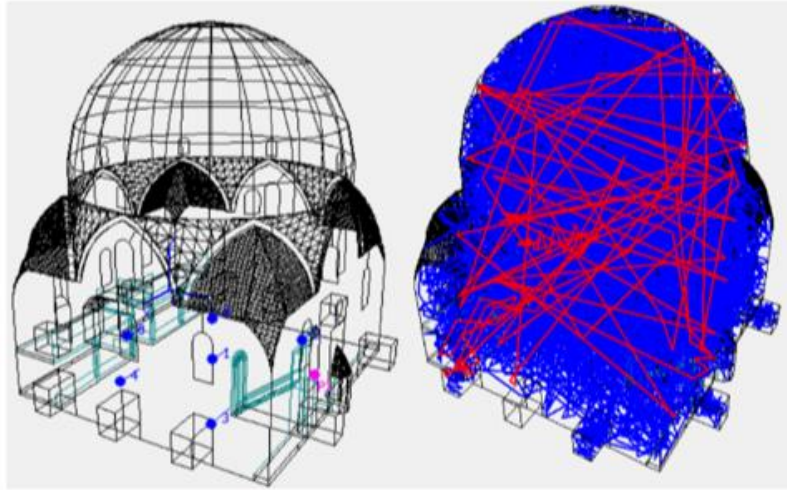


Figure 8 - ODEON model of Yeni Mosque and sound escape analysis.

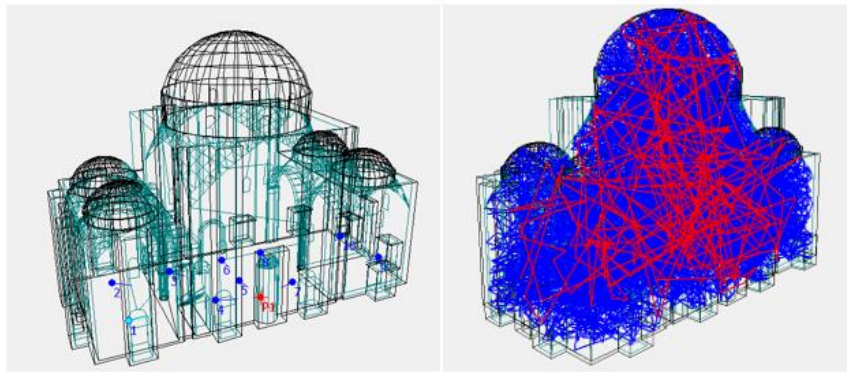


Figure 9 - ODEON model of Sultan Mosque and sound escape analysis.



Figure 10 - 3D displays of Yeni Mosque's ODEON model (from S1, R5, and R4 positions).

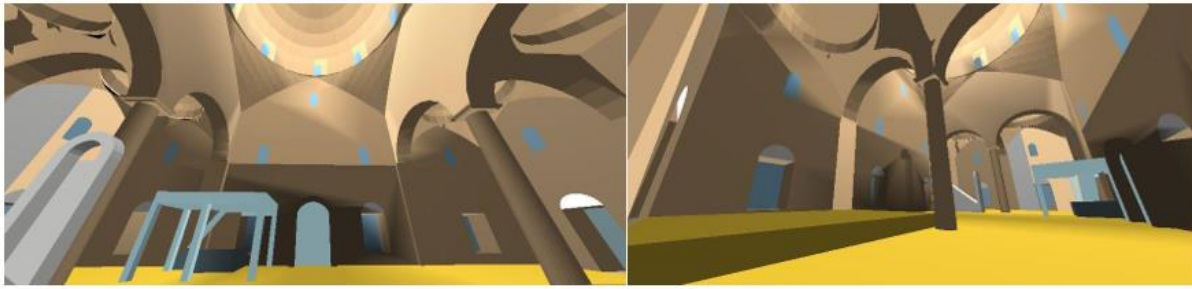


Figure 11 - 3D displays of Sultan Mosque's ODEON model (from S1 and R10 positions).

The models were calibrated and further utilized according to the original states. The calibration process started with selecting absorption coefficients for the surface materials in the geometrical model from available databases and/or literature. Sound absorption and scattering coefficients of materials were explored to adjust the mean reverberation parameters to within 1 JND of the measured value (Sü Gül and Çalışkan, 2013; Postma and Katz, 2015).

Table 3 - Material properties used for the ODEON model. (1 optimized plaster values for both mosques).

locations	Absorption Coefficient						Surface Area (m ²)	
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	Yeni M.	Sultan M.
Wall, transitions & dome surfaces ¹	0.08	0.07	0.07	0.08	0.09	0.10	1198.3	2214.4
floor carpet (Cahrisma, 1999)	0.02	0.03	0.07	0.19	0.39	0.62	261.78	307.7
window	0.18	0.06	0.04	0.03	0.02	0.02	55.83	58.1
wooden surfaces	0.42	0.21	0.10	0.08	0.06	0.06	78.64	78.6
marble	0.01	0.01	0.01	0.01	0.02	0.02	53.32	63.3
curtains	0.03	0.12	0.15	0.27	0.37	0.42	15.67	-
Steel trapeze profile	0.3	0.25	0.20	0.10	0.10	0.15	9.32	-

The walls of mosques are plastered, and the floor is covered with carpet as usual. In the acoustical model, the sound absorption coefficients data for materials such as marble, glass surfaces, and ceramic tiles are defined in most sources and these surfaces are mostly reflective and cover smaller areas by comparing the wall, ceiling and floor surfaces. On the other hand, absorptive materials like carpet on the floor can especially affect the room's properties. For that reason, the selection of carpet is an important issue to regulate the effect of high reverberant volumes by reflective materials. In the study, the absorption coefficients for carpets are obtained from the measurements made for the CAHRISMA project and applied as a flooring material to calibrate the simulation model by fieldwork (Cahrisma, 1999). Another distinctive material is plaster, which covers all the wall surfaces as well as the domes and transition elements of the roof structure. Current plaster is

found quite a reflective material by the calibration process, and material properties are shown in Table 3.

It can be concluded that the estimated sound absorption performances of plasters that exists today and possibly changed in previous restorations of mosques, were obtained through the calibration process. The model has been calibrated for unoccupied conditions as the same with field measurements. The difference between T30 values of simulated and measured halls (Table 4) is kept under a range of 5% (1 JND) which is suggested in the previous works in the literature (Alberdi, et al., 2021; Postma and Katz, 2015).

Table 4 - T30 results of measured and simulated (present state) mosques.

T30 (s)		125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz
Yeni Mosque	Dirac	4.40	4.58	3.53	3.16	2.35	1.59
	Odeon	4.61	4.45	3.56	3.06	2.31	1.57
JND (5%)		0.22	0.23	0.18	0.16	0.12	0.08
Difference		0.21	-0.13	0.03	-0.10	-0.04	-0.02
Sultan Mosque	Dirac	3.88	4.13	3.45	2.66	2.11	1.54
	Odeon	4.02	4.18	3.46	2.68	2.02	1.53
JND (5%)		0.19	0.21	0.17	0.13	0.11	0.08
Difference		0.14	0.05	0.01	0.02	-0.09	-0.01

Acoustic evaluation according to the current state of cases

In this part, the acoustic environments of the current conditions of both mosques were evaluated according to values of parameters obtained by the acoustic measurements. In the evaluations, average values of objective parameters are preferred to use to make the subject more understandable for experts from other disciplines. The possible original acoustic environments of the mosques were discussed in the next section, via acoustical models created with historical plaster samples to simulate possible original states of the prayer halls.

As stated in the literature review, describing the desired acoustical environment is quite a challenging issue because of not only the variation of rituals but also the need for a feeling of “sacred space” inside. From the point of view of reverberation time, high values in mosques have negative effects on speech intelligibility, while low values may cause mosques perceived as “dry” during religious rituals. What is expected from the acoustic environment of mosques is to provide a level of reverberation that creates the desired "divine" environment for prayers who use mosques during religious rituals.

The measured reverberation time (T30) values of mosques are shown in Figure 12. The field measurement results show that both mosques have very high T30 values in comparison to optimum values defined by previous studies on mosque acoustics (Kayılı, 1988; Orfali, 2007)

(Kuttruff, 2009). It is seen that these mosques are not suitable for speech activities but they can provide a desirable volume for liturgical rituals. In addition to this, it is observed that T30 values at 250 Hz are higher than mid frequencies. However, T30 values of low frequencies closer to optimum ranges are important for the intelligibility of speech (Imam’s orders).

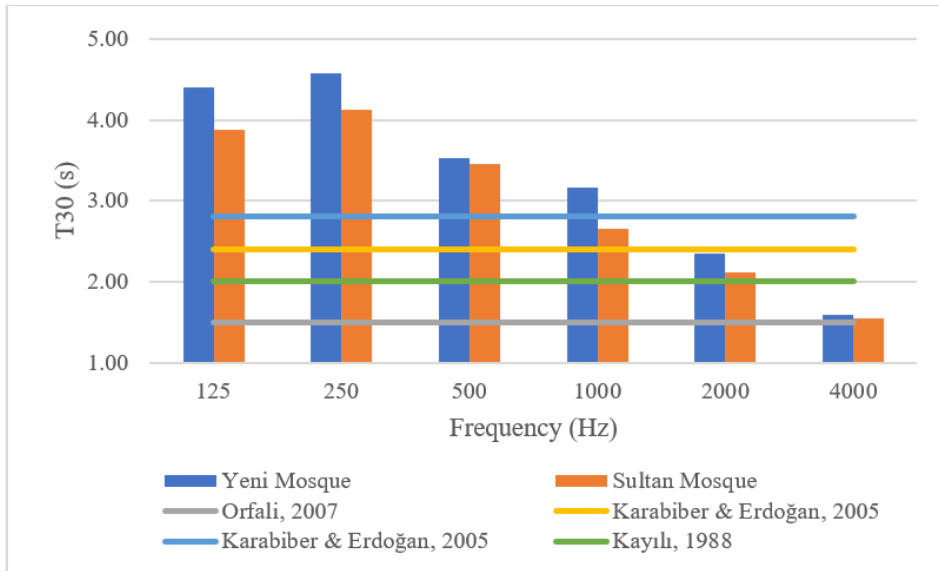


Figure 12 - T30 results from the measured data for the current states of both mosques.

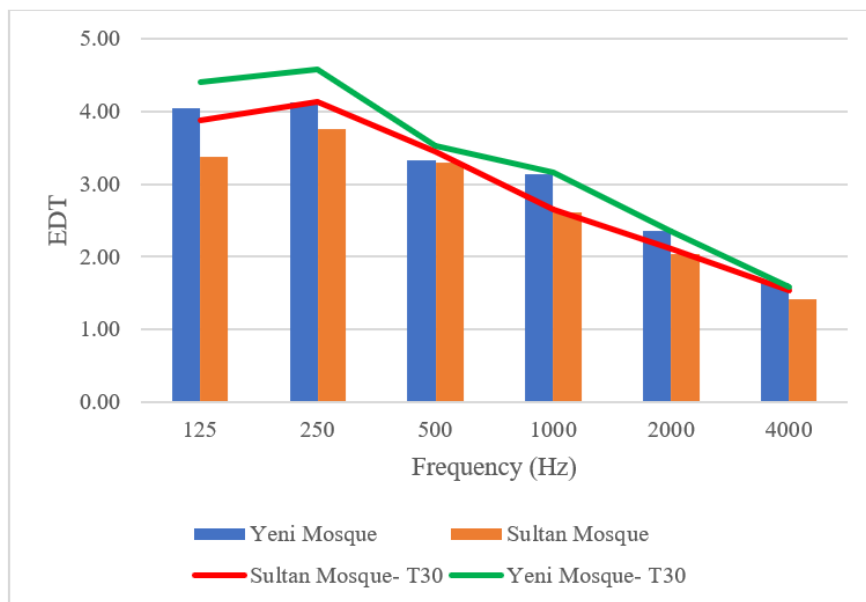


Figure 13 - EDT results from the measured data for the current states of both mosques.

For providing acoustical quality in volumes, the EDT parameter values should be within $\pm 10\%$ of reverberation time (RT) (Mehta, Johnson, & Rocaford, 1999). If the T30 and EDT graph slopes are similar in the examined mosques, it can be said that the sound distribution in the volume is homogeneous and regular. Homogeneous sound distribution is an important requirement for

achieving the desired intelligibility in volume acoustics. Sound decay within the volume is found quite uniform in both cases as EDT and T30 values are found very close (Figure 13). EDT is also another instance of the reverberant field in the prayer halls describing the early reflections.

During the Friday sermons, the intelligibility of speech becomes important. In this context, D50 and speech transmission index (STI) parameters are used to evaluate speech intelligibility. For volumes where speech is desired to be understood well, the sound signal should be preserved in the frequency range effective for the speech function. Moreover, for speech intelligibility, it is expected that the audio signal will not be damaged by high background noise and long reflection time (Sü Gül and Çalıřkan, 2013).

The results of D50 are presented between 125 Hz and 4000 Hz in Figure 13. D50 is related to speech intelligibility and needs to be greater than 50%, however, D50 values that are higher than 20% are considered sufficient for speech intelligibility in some of the studies (Kuttruff, 2009). In the study, D50 (Definition) values obtained lower than 50%, however, the values are higher than 20% for almost all frequencies (Figure 14). Values of D50 are found lower at the receiver points that were placed behind the mimbar, which are quite big elements by comparing the dimensions of the interior space, for both Sultan and Yeni Mosques.

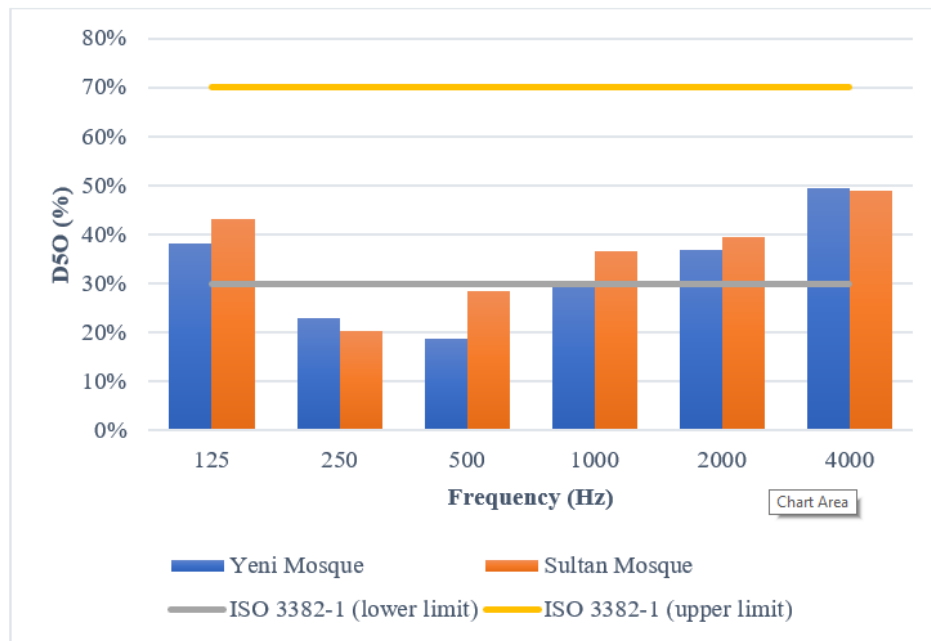


Figure 14 - D50 results from the measured data for the current states of both mosques.

Clarity is defined as the logarithmic ratio in dB of the energy of the sound arriving in a closed volume within the first 80 ms to the energy of the sound arriving at the receiver after this period. For clarity of both speech and music, it is accepted to an optimum range for C80 can be between -4, and +4 (Long, 2014). In the literature, the range of 0, -4 dB in musical activities and -2, +2 dB in speech activities are considered the optimum ranges (Sü Gül, et al., 2014). However, it is stated that the feeling of spaciousness and sacred feeling surrounds the listeners in the volumes with the optimum C80 values between -2 and 0 dB for musical activities (Kitapçı and Çelik Başok, 2021).

Average C80 values for 500 Hz and 1000 Hz are -5.4 dB, -2.88 dB respectively in Yeni Mosque, -3.31 dB, -1.35 dB in Sultan Mosque. It can be said that the Sultan Mosque is in the more appropriate range in terms of C80 values compared to Yeni Mosque (Figure 15).

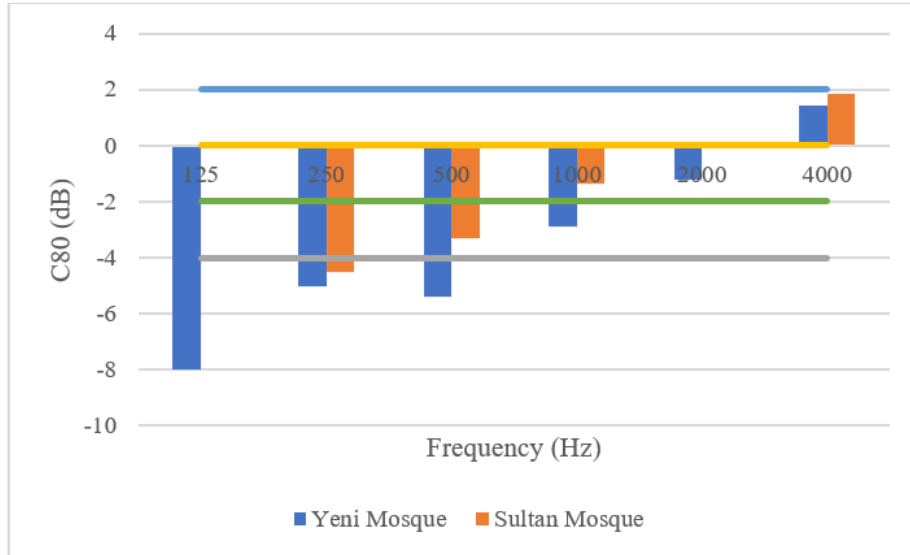


Figure 15 - C80 results from the measured data for the current states of both mosques. (---, ---; optimum C80 values for music, ---, ---; optimum C80 values for speech (Gül, Çalışkan & Tavukçuoğlu, 2014)

STI is an objective parameter used to measure speech intelligibility in a closed volume. STI is evaluated in the range of 0 and 1. The optimum values for STI are defined as; 0 – 0.32 as bad, 0.32-0.45 as poor, 0.45-0.60 as fair, 0.60-0.75 as good, 0.75 – 1.0 as excellent.

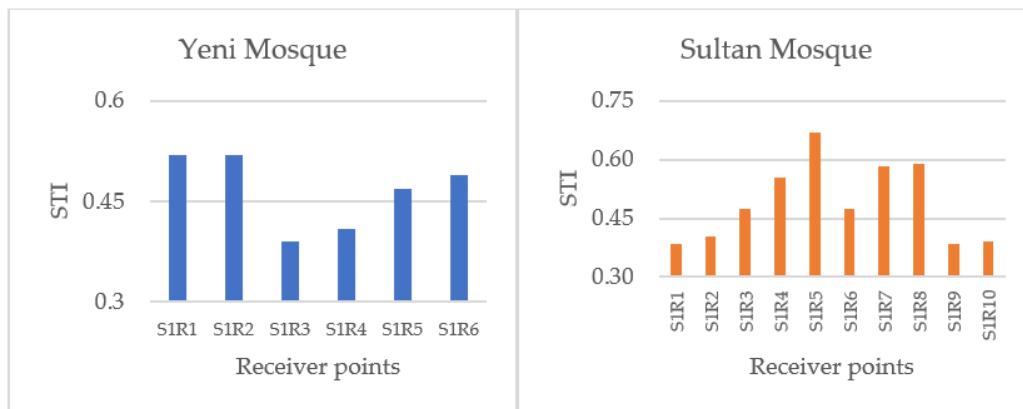


Figure 16 - Measured STI values for all receiver points in the case of mosques (Bad 0 - 0.32, Poor 0.32 - 0.45, Fair 0.45 - 0.60, Good 0.60 - 0.75, Excellent 0.75 - 1.0)

The average STI values are obtained as 0.49 in Sultan Mosque, and 0.47 in Yeni Mosque and they are considered fair. According to the graphics in Figure 16, receiver points that are located close to the mihrab (R1 and R2 in Yeni Mosque and R5 in Sultan Mosque) reach the best STI values. The lowest values are measured at R9, and R10 in Sultan Mosque located in the women’s worship area separated by plastic panels in current use and R3 located behind the mimbar in Yeni Mosque.

EVALUATION OF POSSIBLE ORIGINAL STATES OF THE PRAYER HALLS DEPENDING ON DIFFERENT PLASTERS

Acoustical models of mosques without interventions such as dividing panels and ceramic coverings are used to present their original states. There are 17 scenarios created by applying different plasters defined in 'Table 2 on mosques' walls and dome surfaces in the simulations. P1 represents the current plaster found by the acoustical measurements; P2, P3 and P4 represent sound absorption coefficients of different current plaster types collected from similar research in literature. P5- P17 represents historical plasters and absorption coefficients of them obtained from the studies of Tavukçuoğlu, et al. 2011 and Bozkurt and Demirkale, 2019.

Figure 17 shows optimum T30 values from the literature and measured reverberation time (T30) values of 17 scenarios. Orfali, Kayılı, Karabiber & Erdoğan recommend optimum T30 values depending on the volumes of mosques for the mid frequencies. To compare the results, optimum T30 values are defined according to the approximate volume of cases, which is 5000 m³. The use of historical plasters decreases reverberation times (T30) in suggested ranges for mosques by previous studies, as expected. In mid frequencies, more suitable T30 values are obtained as the thickness of plasters increases. However, since the plaster thicknesses determined for the plaster type P8, P9, P12, P13, P16, and P17 are 9-12 cm, the application of these plasters on the dome surfaces of the mosques may not be realistic.

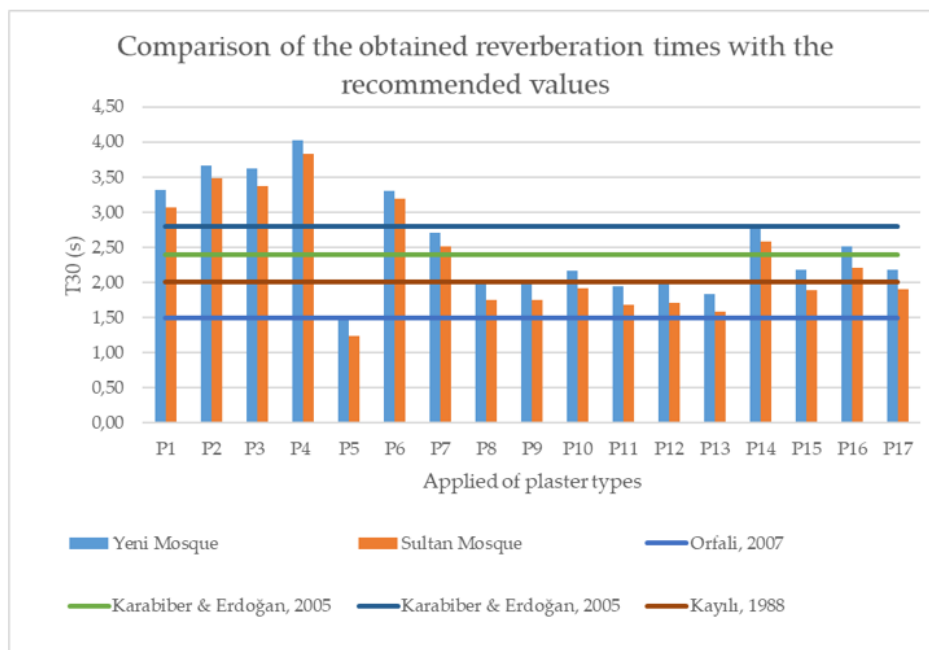


Figure 17 - Simulated T30 (s) values for mid frequencies with different plaster types compared to optimum values for volume of 5000 m³ (●, ●; (Karabiber and Erdoğan, 2002), ●; (Kayılı, 1988), ●; (Orfali, 2007)).

Figure 17 shows that the plaster types can create great differences in the perception of the acoustical environment of the users. These differences can be defined by using JND, which is one of the classic psychoacoustic experiments. Blevins et. al. (2013) defines just noticeable difference (JND) of reverberation time (RT) as "It quantifies the minimum change in RT that can be readily perceived. ... The

present accepted value for the JND of RT, published in ISO 3382-1, is 5% for reverberation metrics.” When the average reverberation times in the mosques are examined for the volumes where P1, P5 and P11 plasters are applied, quite different values are obtained. In this context, the JND values of the T30 are calculated. The greatest difference will be perceived when the environment transition is made from P1 to P5 or from P1 to P11. 11 JND difference occurs between P1 and P5, and 8 JND difference occurs between P1 and P11.

Table 5 indicates the average values of T30 for 500 Hz and 1000 Hz for the 17 scenarios. Coefficients of variations are calculated to show the differences in T30 values depending on the receiver points for each scenario. The coefficient of variation analysis method, which is expressed as a percentage, is used to determine the larger spread of the variables in the group of variables with different averages of the coefficient of variation and to evaluate the variables within themselves. The coefficient of variation (%) value is obtained by dividing the standard deviation value of the group of variables examined by the arithmetic mean and multiplying the result by 100. If the coefficient of variation value is small, it is interpreted that the value distribution does not move away from the mean values, and if it is large, it is interpreted that the variables move away from the mean values and show a different distribution.

Table 5 - Obtained T30 values from acoustical simulation models with different plaster types. (CV (%); coefficient of variation).

plaster type	T 30 (YENİ MOSQUE)			T 30 (SULTAN MOSQUE)		
	500 Hz	1000 Hz	CV (%)	500 Hz	1000 Hz	CV (%)
P1	3.56	3.06	0.31	3.46	2.68	0.45
P2	4.09	3.24	0.32	4.11	2.85	0.33
P3	3.56	3.68	0.42	3.46	3.29	0.43
P4	4.09	3.95	0.45	4.11	3.56	0.34
P5	1.59	1.34	0.26	1.37	1.11	0.69
P6	4.42	2.18	0.28	4.54	1.85	0.32
P7	3.56	1.86	0.27	3.46	1.56	0.32
P8	1.59	2.49	0.13	1.37	2.14	0.45
P9	0.97	3.06	0.41	0.82	2.68	0.49
P10	2.54	1.79	0.12	2.33	1.5	0.44
P11	1.96	1.93	0.39	1.73	1.63	0.57
P12	1.88	2.08	0.25	1.66	1.77	0.58
P13	1.88	1.79	0.32	1.66	1.5	0.7
P14	3.56	2.01	0.25	3.46	1.7	0.31
P15	1.76	2.61	0.19	1.53	2.25	0.36
P16	1.96	3.06	0.17	1.73	2.68	0.35
P17	1.88	2.48	0.17	1.66	2.14	0.43

According to the results of the coefficient of variation values, the values in the Sultan Mosque are mostly higher than in the Yeni Mosque. It can be thought that this difference is due to the differences in the spatial and geometrical characteristics of the examined mosques. The Sultan Mosque can be defined as a couple of volumes with side spaces, while the Yeni Mosque has a single volume shaped under a single dome. According to the obtained CV values, the variation depending

on the receiver points for T30 distributions in the volume is not large. Since the minimum and maximum values of the average T30 value range according to the value legend obtained from the Odeon are similar to each other, it is decided to analyze the distribution of T30 over grid maps.

To calculate STI values for many receivers, grid response analysis is used for this study in the absence of a sound reinforcement system. Grid analysis is defined as a useful way for acoustical researchers to see a map of the spatial distribution of acoustical parameters (Rindel, 2001). The dimensions of the grids are arranged as 1.0 x 1.0 m at a height of 0.85 m. Grid response analysis aims to investigate the impact of plaster types on the STI values of Sultan Mosque and Yeni Mosque. The results of current situations and P5, and P11, which gave the best results in terms of T30, EDT and STI parameters, are presented in the grid maps (Table 6-8).

Grid maps of T30 and EDT for Yeni Mosque and Sultan Mosque are given in Table 6 and Table 7. It is seen that the average T30 values are quite low for historical plasters and high for plasters used for the current situation. The minimum and maximum T30 values obtained from the receiver points are also given in the tables. It has been concluded that there are no significant value differences for the T30 parameter between the receiver points. However, the effect of the mimbar on the T30 value distribution can be understood from the grid analysis of the Sultan Mosque. Although T30 values were lower in the area behind the mimbar in the Sultan Mosque, this situation is not valid for every plaster type in Yeni Mosque.

Table 6 - Simulated average T30 and EDT values on grid analysis for Yeni Mosque.

	DISTRIBUTION OF T30 VALUES	DISTRIBUTION OF EDT VALUES
	<p>P1 (current state) T30_{min}= 3.30 s T30_{max}= 3.33 s</p>	<p>P1 EDT_{min} = 3.33 s, EDT_{max} = 3.41 s</p>
	<p>P5 T30_{min}= 1.46 s T30_{max}= 1.47 s</p>	<p>P5 EDT_{min} = 1.47 s, EDT_{max} = 1.66 s</p>

Table 6 continues.

	<p>P11 $T_{30min} = 1.93$ s $T_{30max} = 1.95$ s</p>	<p>P11; $EDT_{min} = 1.96$ s, $EDT_{max} = 2.08$ s</p>

The difference between the mean values of EDT and T30, and the average EDT_{min} and EDT_{max} values are calculated to be higher in the Sultan Mosque compared to the other case. According to Table 6 and Table 7, it is seen that the distribution of EDT values in the main worship areas of the Yeni Mosque is more balanced compared to the Sultan Mosque. Homogeneous sound distribution and desired intelligibility are obtained more clearly in Yeni Mosque.

Table 7 - Simulated average T30 and EDT values on grid analysis for Sultan Mosque.

	DISTRIBUTION OF T30 VALUES	DISTRIBUTION OF EDT VALUES
	<p>P1 (current state); $T_{30min} = 3.05$ s, $T_{30max} = 3.09$ s</p>	<p>P1; $EDT_{min} = 2.88$ s, $EDT_{max} = 3.22$ s</p>
	<p>P5; $T_{30min} = 1.23$ s, $T_{30max} = 1.26$ s</p>	<p>P5; $EDT_{min} = 0.9$ s, $EDT_{max} = 1.45$ s</p>

Table 7 continues.

	<p>P11; $T30_{\min} = 1.66$ s, $T30_{\max} = 1.69$ s</p>	<p>P11; $EDT_{\min} = 1.41$ s, $EDT_{\max} = 1.9$ s</p>

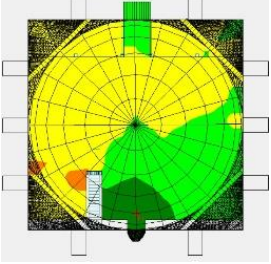
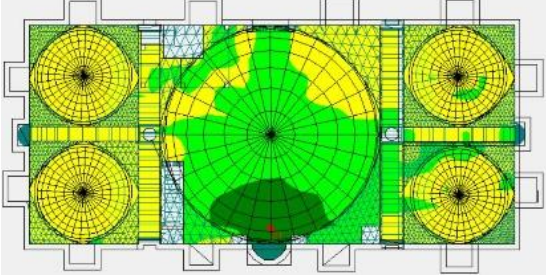
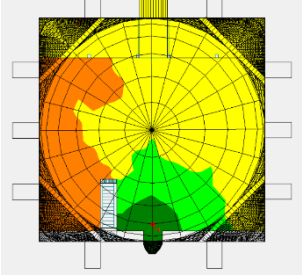
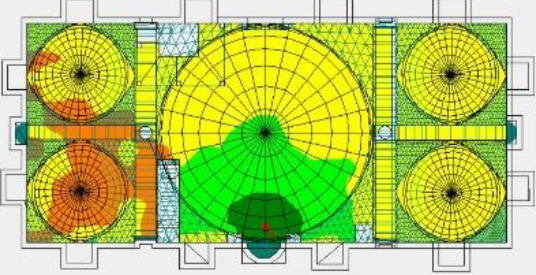
Average STI values in Yeni Mosque were obtained as 0.45 (P1), 0.42 (P2), 0.44 (P3), 0.43 (P4), 0.56 (P5), 0.46 (P6), 0.45 (P7), 0.47 (P8), 0.47 (P9), 0.49 (P10), 0.50 (P11), 0.51 (P12), 0.50 (P13), 0.45 (P14), 0.48 (P15), 0.48 (P16), 0.54 (P17) and in Sultan Mosque were obtained as 0.49 (P1), 0.46 (P2), 0.47 (P3), 0.47 (P4), 0.62 (P5), 0.50 (P6), 0.48 (P7), 0.51 (P8), 0.51 (P9), 0.54 (P10), 0.55 (P11), 0.56 (P12), 0.61 (P13), 0.48 (P14), 0.52 (P15), 0.52 (P16), 0.59 (P17) respectively.

The current situation and the historical plaster samples that gave the best results were included in the analysis made on the grid plans. According to this, in P5 and P11, fewer areas with poor STI quality and lower CV (%) values than the other simulated materials are observed. The CV (%) values in the Sultan Mosque are concluded as higher than in the Yeni Mosque. It can be said that the differences in STI values between receivers are higher in Sultan Mosque. In the current situation, areas that were determined to be weak in terms of STI improved in P5 and P11 and reached “fair” levels. In the case of P11, which is one of the plasters that give the best STI values, the effect of the mimbar is still understood on the grid plans for both mosques (Table 8).

Table 8 - Simulated average STI values for mosques on grid analysis. (CV (%); coefficient of variation).

<p style="text-align: center;">DISTRIBUTION OF STI VALUES</p> <p style="text-align: center;">• Bad 0 - 0.32, • Poor 0.32 - 0.45, • Fair 0.45 - 0.60 • Good 0.60 - 0.75, • Excellent 0.75 - 1.0</p>	
YENİ MOSQUE	SULTAN MOSQUE
<p>P1 (current state) CV (%) = 12.65</p>	<p>P1 (current state) CV (%) = 19.31</p>

Table 8 continues.

	
<p style="text-align: center;">P5 CV (%)= 12.18</p>	<p style="text-align: center;">P5 CV (%) = 13.89</p>
	
<p style="text-align: center;">P11 CV (%)= 11.9</p>	<p style="text-align: center;">P11 CV (%) = 16.4</p>

CONCLUSIONS

Historical worship spaces like mosques in the study contain a unique and dynamic record of human activity for Centuries and each generation tried to therefore shape and sustain the historic environment. As a result, mosques have had several changes/interventions, and which are difficult to identify the exact construction date, during restoration works. Consolidation of the building has priority in most of the restoration process. However, the term ‘building’ goes beyond physical form, to involve all the characteristics that can contribute to a ‘sense of the building’ (Drury and McPherson, 2008). For that reason, the conservation of historical mosques is found related to acoustical concepts as well as visual concepts. The conservation of original acoustical conditions is another important issue to have a perception of historical mosques. However, there is not enough study in the literature to regain the sound environment of the period when they were first built, because of the possible interventions they had during their lifetime.

The study focused on the change in material properties especially the content of the plasters which were applied during restoration works throughout the history of mosques. Because it is found that the absorption coefficients of the plasters in the current state of the mosques are similar to today’s cement-based contemporary mortars. This issue also underlined by the other studies in the literature, revealing the dome and the wall surfaces of historical buildings in the Ottoman period were covered by plasters that had different characteristics (İpekçi, et al., 2019, Sü Gül, 2019). And it is concluded that the original mortars could be differentiated for both cases of the study and they might sound very different when the time they were first built.

- When transitioning from current state mosque environment (P1 plaster is used) to original environment (historical plasters no:P5 and no:P11 are used), users will easily be able to perceive that both environments have different acoustical characters.
- While the acoustical field results for current states of cases are not closed to the optimum values suggested in the literature, historical plasters provide more desired environments for both acoustic functions as speech and music.
- The distributions of acoustical objective parameters become more uniform with historical plasters. The variations depending on the receiver points are further reduced, especially in parameters related speech, and provides more equitable conditions for the entire congregation. All these results reveal the difference that the original content of the plasters creates not only for visual but also for auditory perception.

In this context, it has been revealed that the mosques may not have original plasters with the acoustic data obtained with the current situation measurements. This outcome can raise the question; of whether it is possible to comment on the originality of materials of a historical space by identifying its current acoustical character.

To have more certain comments on this issue; the study should be widened with more materials and scenarios. For this purpose, by taking samples from historical plaster surfaces and determining their sound absorption characteristics, the applicability of plasters with similar properties in renovation works can be ensured. It may be necessary to repeat more plaster samples, in more mosques, and in different volumes. Also, the carpet surfaces, which have an effective surface area like plaster surfaces, are expected to significantly affect the acoustical environment of mosques. In further studies, sound absorption coefficients for carpet surfaces can be analyzed together with historical plasters, and the change of T30 values for music and speech functions according to the carpet types can be examined.

For the sustainable conservation of the historical environment; it is important to keep the status of historical mosques with original values. The relevant disciplines striving to create a suitable acoustic environment in mosques can benefit from this study which insight into the selection of appropriate materials for historical mosques during the restoration projects. For that reason, maintaining the original acoustic environment of the prayer hall for the users should be an evaluation criterion for the field of conservation. Therefore, the data obtained from the present study can be used for mosques that are in the restoration process.

Conflict of Interest Statement

There is no conflict of interest for conducting the research and/or for the preparation of the article.

Financial Statement

No financial support has been received for conducting the research and/or for the preparation of the article.

Ethical Statement

All procedures followed were in accordance with the ethical standards.

Copyright Statement for Intellectual and Artistic Works

In the article, copyright regulations have been complied with for intellectual and artistic works (figures, photographs, graphics, etc.).

Author Contribution Statement

A. Fikir / Idea, Concept	B. Çalışma Tasarısı, Yöntemi / Study Design, Methodology	C. Literatür Taraması / Literature Review
D. Danışmanlık / Supervision	E. Malzeme, Kaynak Sağlama / Material, Resource Supply	F. Veri Toplama, İşleme / Data Collection, Processing
G. Analiz, Yorum / Analyses, Interpretation	H. Metin Yazma / Writing Text	I. Eleştirel İnceleme / Critical Review

AUTHOR 1: A/B/C/D/F/G/H/I

AUTHOR 2: A/B/C/D/F/G/H/I

REFERENCES

- 3382-1, T. E. I., (2010). *Akustik- Odaların akustik parametrelerinin ölçülmesi*, Ankara, Türkiye: Türk Standartları Enstitüsü.
- Abdelazeez, M. K., Hammad, R. and Mustafa, A., (1991). Acoustics of King Abdullah Mosque. *The Journal of the Acoustical Society of America*, 90(3), pp. 1441-1445.
- Abdou, A., (2003). Measurement of acoustical characteristics of mosques in Saudi Arabia. *The Journal of the Acoustical Society of America*, 113(3), pp. 1505-1517.
- Acun, H., (1999). *Manisa'da Türk Devri Yapıları*. Ankara, Türkiye: Türk Tarih Kurumu Yayınları.
- Alberdi, E., Galindo, M. and León-Rodríguez, Á. L., (2021). Evolutionary analysis of the acoustics of the Baroque Church of San Luis de los Franceses. *Applied Sciences*, Cilt 11, p. 1402.
- Aslanoğlu, İ., (1978). *Tire'de Camiler ve Üç Mescit (Mosques in Tire)*. Ankara, Türkiye: ODTU Mimarlık Fakültesi Yayını.
- Blevins, M. G., Buck, A. T., Peng, Z., Wang, L. M. (2013). *Quantifying the just noticeable difference of reverberation time with band-limited noise centered around 1000 Hz using a transformed up-down adaptive method*. Toronto; Canada, International Symposium on Room Acoustics.
- Bozkurt, T. S. and Demirkale, S. Y., (2019). Laboratory analyses and numerical simulation for sound absorption of plasters in historical buildings. *Journal of Cultural Heritage*, Cilt 36, pp. 103-117.
- CAHRISMA, (1999). *Conservation of the Acoustical Heritage by the Revival and Identification of Sinan's Mosques' Acoustics*, Istanbul, Turkey: Yıldız Technical University.
- Carvalho, A. and Monterio, C. G., (2009). *Comparison of the acoustics of mosques and catholic churches*. Krakow, The Sixteenth International Congress on Sound and Vibration.
- Committee, t. I., (2012). *UNESCO ICH (Intangible Cultural Heritage)*. Available at: <https://ich.unesco.org/en/decisions/7.COM/11.32>.
- Dordevic, Z., Novkovic, D. and Andric, U., (2019). Archaeoacoustic examination of Lazarica Church. *Acoustics*, Cilt 1, pp. 423-438.
- Drury, P. and McPherson, A., (2008). *Conservation principles policies and guidance for the sustainable management of the historic environment*, London: English Heritage.
- Eldien, H. H. and Qahtani, H. A., (2012). *The Acoustical Performance of Mosque Main Prayer Hall Geometry in the Eastern Province*. Saudi Arabia, Acoustics 2012 Nantes Conference.
- Elkhateeb, A., Adas, A., Attia, M. and Balila, Y., (2015). *The Acoustics of Masjids, Why They Differ from the Classical Speech Rooms*. Florence, Italy, 22nd International Congress on Sound and Vibration.
- Elkhateeb, A. and Ismail, M., (2007). Sounds from the past the acoustics of Sultan Hassan Mosque and Madrasa. *Building Acoustics*, 14(2), pp. 109-132.

- Erdoğan, C. Ü., (2006). *Manisa Cami ve Mescitlerinin Cephe Düzeni*. İzmir, Türkiye: Ege Üniversitesi Sosyal Bilimler Enstitüsü Türk İslam Sanatı Anabilim Dalı.
- Ergin, N., (2008). The soundscape of sixteenth-century Istanbul mosques: Architecture and Qur'an recital. *Journal of the Society of Architectural Historians*, 67(2), pp. 204-221.
- Ergin, N., (2016). Mekân/Yazı/Ses: Osmanlı'da Kadınların Cami Hamiliğine İlişkin Bir İnceleme. %1 içindeC. Katipoğlu, dü. *Mekânlar/ Zamanlar/ İnsanlar: Hamilik ve Mimarlık Tarihi*. Ankara, Türkiye: Middle East Technical University Press.
- Ersen, A., Gürdal, E., Güleç, A., Alkan, N., Ersan, H.Ö., M. Eruş, M., Çağırın, E., Baykır, M. and Akıncı, G., (2013). *Geleneksel harçlar ve koruma harçları, restorasyon ve konservasyon çalışmaları (A traditional mortar and mortars protecting plaster report)*, İstanbul, Türkiye: İstanbul Metropolitan Municipality.
- Grabar, O., (1983). Symbols and Signs in Islamic Architecture. %1 içindeR. Holod, dü. *In Architecture and Community: Building in the Islamic World Today*. New York, USA: Millerton.
- Hamadah, H. A. and Hamouda, H. M., (1998). Assessment of speech in large auditoria case study: Kuwait State Mosque. *Applied Acoustics*, 54(4), pp. 273-289.
- İpekçi, E., Sağın, E. U. and Böke, H., (2019). Interior plastering of Ottoman bath buildings. *Case Studies in Construction Materials*, Cilt 11.
- Ismail, M. R., (2013). A parametric investigation of the acoustical performance of contemporary mosques. *Frontiers of Architectural Research*, Cilt 2, pp. 30-41.
- Karabiber, Z., (2000). *A New Approach to An Ancient Subject: Cabrisma Project*. Garmisch-Partekirchen, 7th International Congress on Sound and Vibration.
- Karabiber, Z. and Erdoğan, S., (2002). *Comparison of The Acoustical Properties of An Ancient and A Recent Mosque*. Seville, Spain, Forum Acusticum; Spanish Acoustical Society (SEA).
- Kaylı, M., (1988). Mimar Sinan'ın Camilerindeki Akustik Verilerin Değerlendirilmesi. %1 içindeMimarbaşlı Koca Sinan: Yaşadığı Çağ ve Eserleri. İstanbul, Türkiye: T.C. Başbakanlık Vakıflar Genel Müdürlüğü, pp. 545-555.
- Kitapçı, K. and Çelik Başok, G., (2021). The acoustic characterization of worship ambience and speech intelligibility in wooden hypostyle structures: The case of the Aslanhane Mosque.. *Acoustics Australia*, Cilt 49, pp. 425-440.
- Kleiner, M., Klepper, D. L. and Torres, R. R., (2010). *Worship Space Acoustics*. FL, USA: J.Ross Publishing.
- Kolay, İ. A., (2016). *Osmanlı Dönemi İnşaat Belgelerine Göre Anıtsal Yapılarda Örtü ve Duvar Sistemleri*. İstanbul, Türkiye, 8. Çatı ve Cephe Sempozyumu.
- Koutsouris, G., Norgaard, A. K., Christensen, C. L. and Rindel, J. H., (2016). *Discretisation of Curved Surfaces and Choice of Simulation Parameters in Acoustic Modeling of Religious Spaces*. Greece, The 23rd International Congress on Sound & Vibration.
- Kuttruff, H., (2009). *Room acoustics*. Oxon: Spon Press.
- Long, M., (2014). *Architectural acousticsUSA*. USA: Elsevier Academic Press,.

- Odabaş, E., Sü Gül, Z. and Çalışkan, M., (2011). *Doğramacızade Ali Paşa Camii'nin Akustik Ölçümlerle Değerlendirilmesi*. Ankara, Türkiye, 9. Ulusal Akustik Kongresi.
- Omar, N. M., Al-Sayad, Z. M., Maarouf, I. S. and Al-Hagla, K. S., (2020). The documentation of archaeoacoustics identity of Sultan-Barquq complex. *Alexandria Engineering Journal*, Cilt 59, pp. 4159-4169.
- Orfali, W. A., (2007). *Sound Parameters in Mosques*. Salt Lake City, UT, USA, 153rd Meeting of Acoustical Society of America.
- Postma, B. N. J. and Katz, B. F. G., (2015). Creation and calibration method of acoustical models for historic virtual reality auralizations. *Virtual Reality*, Cilt 19, pp. 161-180.
- Prodi, N. and Marsilo, M., (2003). On the effect of domed ceiling in worship spaces: A scale model study of a mosque. *Building Acoustics*, 10(2), pp. 117-133.
- Rindel, J. H., (2001). The use of computer modelling in room acoustics. *Journal of Vibroengineering*, 3(4), pp. 219-224.
- Suarez, R., Alonso, A. and Sendra, J. J., (2015). Intangible cultural heritage: The sound of the romanesque cathedral of Santiago de Compostela. *Journal of Cultural Heritage*, Cilt 16, pp. 239-243.
- Suárez, R., Alonso, A. and Sendra, J. J., (2018). Virtual acoustic environment reconstruction of the hypostyle mosque of Cordoba. *Applied Acoustics*, Cilt 140, pp. 214-224.
- Suarez, R., Sendra, J. J., Navarro, J. and Leon- Rodriguez, A. L., (2004). The acoustics of the cathedral-mosque of Córdoba. *Acta Acustica united with Acustica*, 90(2), pp. 362-375.
- Sü Gül, Z. and Çalışkan, M., (2013). Impact of design decisions on acoustical comfort parameters: Case study of Doğramacızade Ali Paşa Mosque. *Applied Acoustics*, Cilt 74, pp. 834-844.
- Sü Gül, Z., (2019). Acoustical impact of architectonics and material features in the lifespan of two monumental sacred structures. *Acoustics*, 1(3), pp. 493-516.
- Sü Gül, Z. and Çalışkan, M., (2013). *Acoustical Design of Turkish Religious Affairs Mosque*. Montreal, Acoustical Society of America.
- Sü Gül, Z., Çalışkan, M. and Tavukçuoğlu, A., (2014). Geçmişten günümüze Süleymaniye Camii akustiği. *Megaron*, Cilt 9, p. 201-216.
- Sü, Z. and Yilmazer, S., (2008). The acoustical characteristics of the Kocatepe Mosque in Ankara, Turkey. *Architectural Science Review*, Cilt 51, pp. 21-30.
- Tanaç Zeren, M., Yelkenci Sert, F. and Yılmaz Karaman, Ö., (2016). The acoustic character of space as intangible cultural heritage: example of sephardic synagogues in İzmir. *Yapı*, Issue 418, pp. 132-139.
- Tavukçuoğlu, A., Aydın, A. and Çalışkan, M., (2011). *Taribi Türk Hamamlarının Akustik Nitelikleri: Özgün Hali ve Bugünkü Durumu*. Ankara, Türkiye, TAKDER 9th National Congress.

- Topaktaş, L., (2003). *Acoustical Properties of Classical Ottoman Mosques Simulation and Measurements*. Ankara, Türkiye: The Graduate School of Applied and Natural Science of Middle East Technical University.
- Utami , S. S., (2005). *An acoustical analysis of domes coupled to rooms, with special application to the Darussol Mosque*. Salt Lake City, USA: Brigham Young University.
- Wetiz, C. A., Claus, L. C. and Rindel, J. H., (2002). *Comparison Between In-situ Recordings and Auralizations for Mosques and Byzantine Churches*. Lyngby, Denmark, Joint Baltic-Nordic Acoustical Meeting.
- Yelkenci Sert, F. and Yılmaz Karaman, Ö., (2021). An investigation on the effects of architectural features on the acoustical environment of historical mosques. *Acoustics*, 3(3), pp. 559-580.
- Yelkenci Sert, F. (2021). *Ege Bölgesindeki Tarihi Camilerde Farklı Mekansal Kurgulara Bağlı Akustik Koşulların Analizi*. İzmir, Türkiye: Dokuz Eylül University.

BIOGRAPHIES OF THE AUTHORS

Fatma YELKENCİ SERT (Res. Assist. Dr.)

Fatma Yelkenci Sert graduated from the İzmir Institute of Technology in the department of architecture. She received a Master's degree in 2015 and a PhD degree in 2021 at Dokuz Eylül University, Department of Architecture. Her studies focus on the acoustics of worship buildings, cultural heritage, architectural lighting, and building materials.

Özgül YILMAZ KARAMAN (Assoc. Prof. Dr.)

Özgül Yılmaz Karaman received her B.Arch. from Dokuz Eylül University (1998). She earned her M.Arch. (2002) and PhD. Degree (2010) in architecture from DEU. She works as an Associate professor at Dokuz Eylül University, Department of Architecture since 2015. Her major research interests include architectural acoustics (sound insulation and room acoustics), building constructions and materials and traditional construction techniques.