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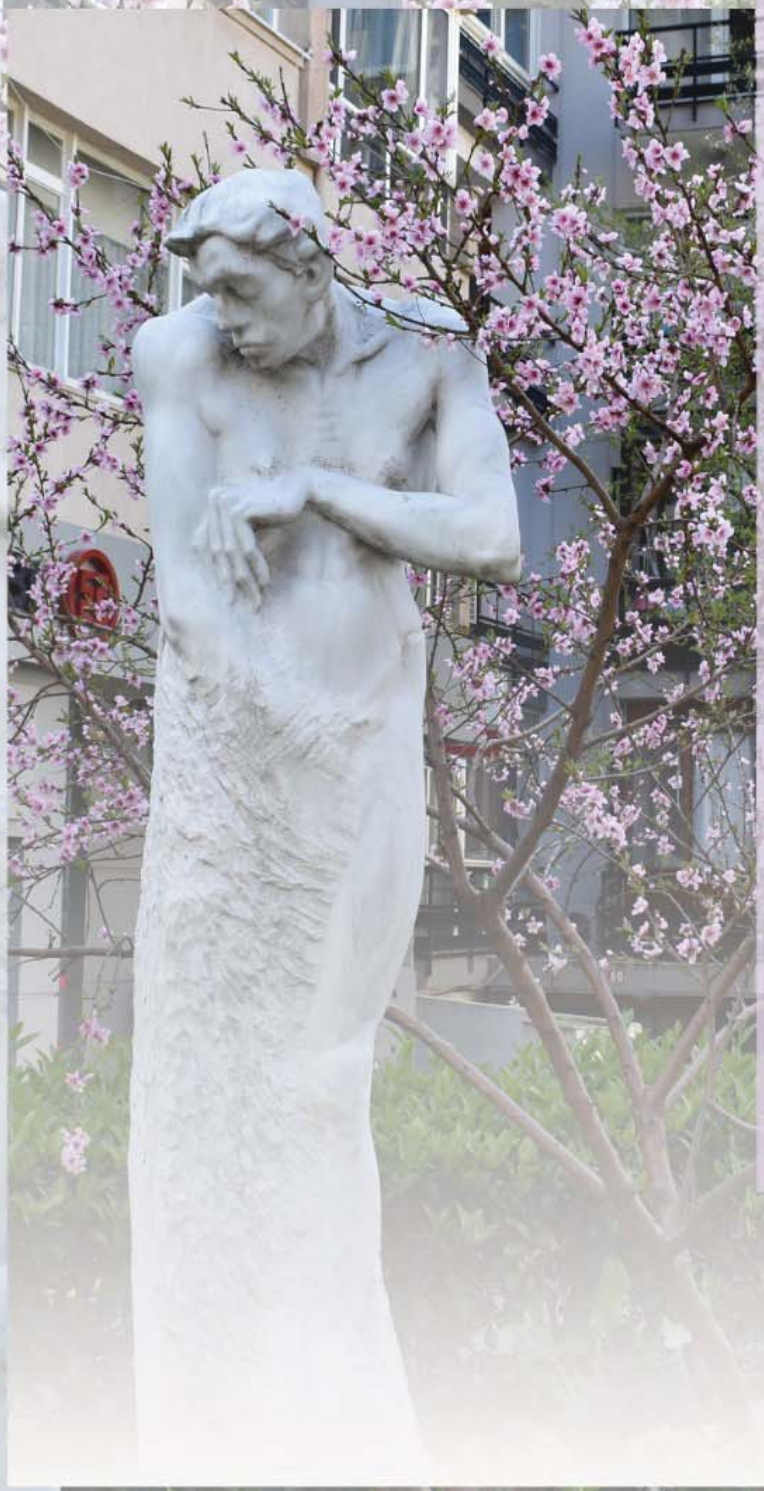
International Journal of Architecture & Planning



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ICONARP

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ICONARP INTERNATIONAL JOURNAL OF ARCHITECTURE & PLANNING

ICONARP as an e-journal considers original articles, research briefs, book reviews and viewpoints in peer-reviewed. ICONARP is an exciting new venture occurred with experiences, theoretical approaches, critical and empirical studies in the field of architecture and urban planning.

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The journal aims to be a platform for the studies of design, education and application and has a goal to be a bridge in between traditional/modern, east/west, local/global in the disciplines of Architecture / Planning.
Architecture and Planning, as two interconnected fields, are strongly affected by other disciplines such as fine art, urban design, philosophy, engineering, geography, economics, politics, sociology, history, psychology, geology, information technology, ecology, law, security and management. However, there are no academic journals which specifically focus on the connections of architecture and planning with other social fields. ICONARP aims to fill that gap. Our scope is to provide a suitable space for theoretical, methodological and empirical papers, which use global and local perspectives together, in architectural and urban studies.

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EDITORIAL

ICONARP began its broadcast life as peer-reviewed faculty journal in the field of international architecture and planning and now it is the fourteenth issue.

ICONARP is continuing its growing process with this new issue.

The fifteenth issue will be published in December 2019 and we wait for your contributions with your scientific studies until September 2019.

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A Quest for Sustainability of Cultural Heritage Sites: The Hanlar District of Bursa, Turkey

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H. Özge Tümer Yıldız****

Abstract

Today, many studies have been carried out to support community engagement in planning and urban design processes in Turkey. This study which tries to bring together community engagement and urban design within the framework of sustainability of cultural heritage sites is a part of a scientific research project which aims to create a participative model to develop an urban design guideline for the Hanlar District, a historical commercial district including many inns in the city centre of Bursa, in Turkey. While a series of community engagement techniques were experimented during the project process, the aim of this article is to examine the potential benefits of using educational charrettes as a kind of design charrette to establish a participatory and competitive platform including public, private, voluntary actors and local people in urban design process of heritage sites. It overviews the charrette use in developing adaptive re-use and urban design schemes for the inns and their surrounding public spaces which are not actively used in the Hanlar District which has

Keywords: *Cultural heritage sites, sustainability, adaptive reuse, community engagement, educational charrettes, Hanlar District of Bursa*

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been a UNESCO world heritage site since 2014, and then highlights the proposals that were developed in terms of the objectives of the Bursa and Cumalikizik Management Plan. Finally, this study presents the usability, suitability and practicability of educational charrettes as a community engagement way in the urban design process of the heritage sites while enabling different actors to create new visions to sustain heritage sites. However, it also emphasizes the need for a participatory and holistic urban design process for the Hanlar District of Bursa including the adaptive re-use strategies for the inns to sustain the district.

INTRODUCTION

Rapid urbanization leads to many problems in cultural heritage sites of developing countries. Ranging from traffic and tourism pressures to a tendency towards high-rise constructions and urban regeneration projects, the issues threatening the authenticity and integrity of cultural heritage sites are various. In addition, while increasing number of shopping centres and changing lifestyles and habits trigger depopulation trends in historic cores, some historic buildings have been left abandoned in heritage sites. Together with the lack of policies concerning the sustainable urban conservation, the pressures on cultural heritage sites will continue to rise (ICOMOS, 2005; Van Oers, 2010; Aksoy & Enlil, 2012).

However "cultural heritage is inherently relevant to the debate on sustainable development because it reflects and symbolizes the mutual adaptation over time between humans and their environments." (UNESCO, 2013; p.2). It gives each place its identifiable features and it is the accumulation of human experience as an important part of the affirmation and enrichment of cultural identities (ICCROM, 2005). Thus, cultural heritage sites are getting more important for societies, as anchors which provide a sense of belonging and security to modern societies against the rapid urbanization in a changing world (UNESCO, 2013). At this point, the conservation of the cultural heritage has become a corner-stone of any cultural policy as shared property of communities which ensure their sustainability (ICCROM, 2005).

Today, the role of the cultural heritage has also changed as a driver of sustainable development which has three pillars as economic, social and environmental (Keiner, 2005). In an economic sense, cultural heritage sites provide higher real estate values for their uniqueness and sense of place, attracts tourism, employment and local investment and results in further

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improvement to urban areas. In a social sense, cultural heritage sites contribute to the satisfaction of human needs by providing symbolic meanings that bind community to space (Tweed & Sutherland, 2007), strengthen communities with a shared cultural identity, retain the spirit of place as a source of pride for future generations and as a non-renewable cultural resource. In an environmental sense, cultural heritage sites also offer low-energy and regional appropriate examples of human adaptability by having traditional building technologies and materials, by adaptive reuse possibilities of existing built fabric, by supporting walkability, compactness and mixed use development (ICOMOS, 2016). Thus, the conservation and enhancement of cultural heritage diversity should be actively promoted as an essential aspect of human development and sustainability (UNESCO, 1993).

The sustainability of cultural heritage sites has featured as a prominent issue in many cities of Turkey, especially after the amendment related to new definitions such as "management site" and "management plan" in the Law on Conservation of Cultural and Natural Property in 2004. In this respect, Bursa's historical city centre (Hanlar District) has also become an issue of growing importance for local governments and with the foundation of Bursa Site Management Unit in 2011 UNESCO nomination process started. The Hanlar District was inscribed as a UNESCO world heritage site together with five component sites in Bursa in 2014. By this time, many urban design and restoration projects have been implemented in the Hanlar District. However, while these projects carry out many positive attributes for the revitalization of the district, some shortcomings are observed in terms of economic, social and environmental sustainability of the district.

At this point, it is seen that different urban design tools are used to sustain cultural heritage sites in many developed countries. Especially, design guidance comes forward as the range of tools that set out operational design parameters to direct the design of development by way of direct participation in the production of design guidance in order to improve its content, encourage unanimity of vision, avoid discord, and ultimately improve outcomes (Carmona, 2017). Therefore, community engagement is vital in preparing design guidelines.

Today, urban design practice and community engagement is still in progress in the Turkish planning system and studies have been carried out by central and local governments to establish a legal administrative infrastructure to develop urban design guidelines and to integrate community engagement in urban design process. To support these studies, a scientific research project which aims

to create a participative model to develop an urban design guideline to sustain cultural heritage sites was conducted in Bursa Uludag University and a case study including a range of community engagement methods (indirect methods and group interaction methods) in the Hanlar District was carried out in the context of this project. The project team preferred surveying and interviewing techniques in order to include the maximum number of urban residents within the minimum possible time. In addition to these, a design charrette as conducted in many design guideline development process in many cultural heritage sites, was also carried out during the project process.

This article focuses on the process, the practice and the results of the design charrette as a way of community engagement in sustaining cultural heritage sites. Thus, the aim of this article is to examine the potential benefits of using educational charrettes as a kind of design charrette to establish a participatory and competitive platform in developing adaptive re-use and urban design schemes for unused inns and their surrounding public spaces in the Hanlar District. It evaluates the kinds of adaptive reuse and urban design strategies that can be developed within a short period of time through the Bursa and Cumalikizik Management Plan and then discusses the projects of architecture students in terms of the sustainability of the district.

SUSTAINABILITY OF CULTURAL HERITAGE SITES THROUGH COMMUNITY ENGAGEMENT

World Heritage Convention (WHC) declared that the heritage management should be placed in a broad framework which links heritage and sustainable development (UNESCO, 2013). To address the sustainability of worldwide cultural heritage sites, the 2030 Agenda for Sustainable Development states that cities and human settlements should be inclusive, safe, resilient and sustainable by strengthening efforts to protect and safeguard the world's cultural and natural heritage (United Nations, 2015).

In this scope, it is emphasized that cultural heritage management should both help to conserve and manage heritage sites in a way that protects heritage values, and should enhance social, economic and environmental benefits. Within this context, a number of policy and conceptual references have been created to promote community engagement in cultural heritage management as a vital aspect of social dimension of sustainability. The addition of Community as the fifth strategic objective to Credibility, Conservation, Capacity-building and Communication by the WHC reflects an increasing demand for

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community engagement at all stages of the heritage management process while linking conservation approaches to sustainable development and protection of human rights (Brown & Hay- Edie, 2014). In this sense, UNESCO ascribes great significance to the participatory approach, in which the inclusion of local communities -all interest groups, not only residents and visitors, both local and global, but also public officers, NGOs, and various professionals- has a key importance for decision-making processes (Scientific Research Centre of the Slovenian Academy of Science and Arts, 2014).

It is essential to adopt a fully participatory and bottom-up approach to heritage conservation and management, by empowering local communities, to raise awareness among communities, site managers and decision makers of heritage as a key factor for the overall wellbeing of society and build capacities of all concerned actors, and to enhance cooperation among all the stakeholders at different levels (Boccardi & Scott, 2014). Community engagement makes heritage management processes more responsive and delivers outputs and outcomes that are better aligned with the actual needs of the property and its stakeholders. It promotes a constructive role for heritage to contribute to society and helps to prevent gentrification which dents social sustainability (UNESCO, 2013).

The action of community engagement should start from the preparation step of the world heritage nomination and continues to the inscription step and to the post-inscription step (Park, 2012). There is a wide range of community engagement methods available for the urban design studies in cultural heritage sites. Basicly, the engagement methods are classified into five major categories; awareness methods, group interaction methods, gaming methods, indirect methods, and open-ended methods (Sanoff, 2000). The choice of engagement methods will depend on an understanding of the context (every situation is unique), the purpose (the aim to achieve) and the process (how the purpose will be achieved) (Involve, 2005).

Design charrettes are one of the group interaction (face-to-face) methods and moslty used to convene interest groups in a series of interactive meetings aimed at solving a particular problem (Sanoff, 2000). There are varying definitions of charrettes and a range of types, with different purposes and methodologies. The briefest description is an illustrated brainstorm. Actually, a charrette is the best way to get the most creative proposals for addressing the most challenging problems from the most accomplished designers in the most compressed period

(Kelbaugh, 2011). It can be defined as an intensive, multi-disciplinary charrette with the aim of developing a design or vision for a project or planning activity (EPA, 2018). As a four- to seven-day planning event, the charrettes assemble a team of all stakeholders such as planners, residents, business people, architects, environmental experts, policy makers, and others and works together in brainstorming sessions and sketching charrettes. Throughout the charrette, participants passionately argue their points and generously share their knowledge and insights. A design team then works to revise and update the plans. After that, the new plans become the focus for discussion among the participants. All of this occurs within a highly compressed time frame (Lennertz & Lutzenhiser, 2003). According to Zucker (1995), charrettes can be altered to fit most local situations and they can be grouped into four categories as educational charrettes, leadership forums-retreats-focus groups, traditional problem-solving charrettes and interdisciplinary team charrettes. Among these, educational (academic) charrettes are commonly used to serve community issues by addressing a well-defined architectural or urban design problem and result in schematic, illustrated ideas. The process can last from one day to several weeks and involves university architecture students, instructors and the related community groups (Sanoff, 2000).

In another study, Kelbaugh (2011) describes two basic charrette types, as competitive and collaborative. In the first one, multiple schemes are developed for the same site by different teams, in the second one, a single scheme is developed by teams that work on different aspects or sub-areas of the same site or that work on separate sites. Educational charrettes, tend to be the first type, while professional practice generally favors the second type. However, the originality of this study is to benefit from both competitive and collaborative power of educational charrettes to integrate community engagement to urban design studies in the cultural heritage sites.

SUSTAINABILITY OF CULTURAL HERITAGE SITES WITH ADAPTIVE RE-USE STRATEGIES

The value of cultural heritage for promoting sustainability of cities comprises inclusive economic development, social cohesion, inclusion and equity, livability and sustainability of urban areas. To improve livability and sustainability of urban areas, adaptive reuse of existing built fabric, including buildings, historic urban districts, and towns can be an important and efficient way of conservation processes (ICOMOS, 2016). Rather than left neglected and unrecognizable, heritage buildings can continue to

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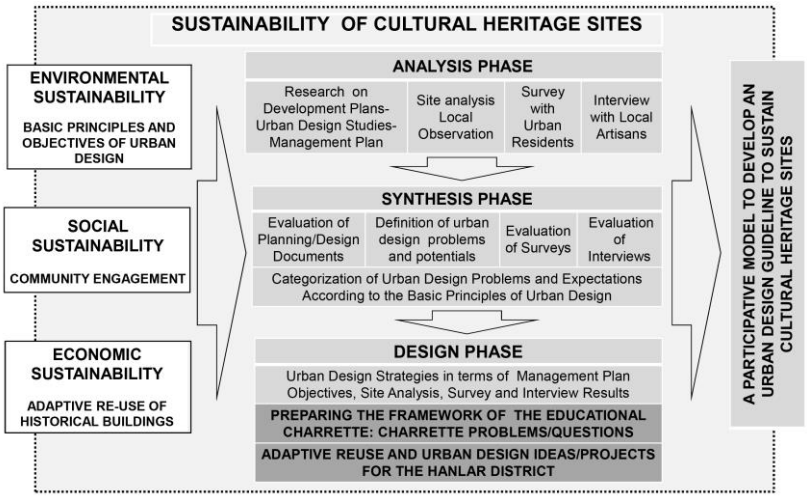
be used and appreciated with adaptive reuse projects (Department of the Environment and Heritage, 2004).

Adaptive reuse of heritage buildings provide many economic, social and environmental benefits which are also consistent with the goal of sustainable development (Yung & Chan, 2012). In an economic point of view, it is usually much cheaper to adapt an existing building than demolishing it and redeveloping the site (Douglas, 2006). Also, sympathetic adaptive reuse schemes create commercially viable investment assets through a self-financing form of conservation and bring a lasting prestige for the owners because of the buildings' originality and historic authenticity (Department of the Environment and Heritage, 2004; Yung & Chan, 2012). It is not easy to measure the social benefits of adaptation. However, sensitive adaptation schemes can bring back life to run-down urban areas and retain the character of a streetscape of old buildings which offer psychological reassurance because of their distinguishing characteristics. One of the main environmental benefits of reusing buildings is the lower embodied energy than a similar size new-build scheme. Adaptive reuse minimizes pollution and waste by demolition and the need for using up fresh material resources and energy required in producing and transporting them. In addition to these older buildings tend to have thick solid walls, small windows and natural lighting and ventilation, which leads to economy in energy consumption (Douglas, 2006). Thus adaptive reuse makes a significant contribution to low carbon reduction and sustainability.

However, the process of adaptive reuse of heritage buildings has many challenges in terms of architectural and urban design. The significance and integrity of important historic assets can be threatened by poorly designed adaptations (Yung & Chan, 2012). Whereas the adaptive reuse of a heritage building should respect and retain cultural significance of the heritage sites, it should have minimum impact on the heritage building and its setting and understand the spirit and context of the place while acting as complementary to the values of the historic urban landscape and adding a contemporary layer that provides value for the future. It should avoid facadism which is gutting the building and retaining its façade and seek a new use for the building that is compatible with its original use (ICOMOS, 1999; Department of the Environment and Heritage, 2004). Finally, balancing economic viability, social vitality including cultural significance and semantic relation and environmental requirements during the design process are the major issues in the adaptive reuse of historic buildings for sustainable cultural heritage sites. Thus,

developing and discussing adaptive reuse strategies can be a starting point for the sustainability of the Hanlar District.

Table 1. The place of the educational charrette in the scientific research project case study diagram



THE REVIEW OF THE CASE STUDY OF THE SCIENTIFIC RESEARCH PROJECT

The case study of the scientific research project carried out in the Hanlar District was composed of the phases of analysis, synthesis, and design (Table 1). In the analysis phase, a research on current development and management plans and urban design studies, site analysis, a survey of urban residents and in-dept interviews with local artisans were conducted and the Hanlar District was analysed through the basic principles of urban design. In the synthesis phase, the results of the analysis were evaluated; the urban design problems and the expectations of users were categorized. In the design phase, adaptive reuse and urban design strategies were developed to meet the problems/expectations of the district and an interdisciplinary collaborative and competitive educational charrette were held in which architecture students develop adaptive reuse and urban design ideas/projects for the idle spaces in the Hanlar District through the results of the site analysis and the objectives of the Bursa and Cumalikizik Management Plan (Polat et al, 2018). This article focused on the process, the practice and the results of the educational charrette as a community engagement way in urban design of the Hanlar District.

The Historical Background of the Hanlar District

The Hanlar District is the commercial centre of Bursa shaped by the caravan route in the Ottoman era. It comprises numerous historical inns, markets, bazaars and especially the Bursa Grand Bazaar. The main structure of the Hanlar District is the Orhan

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Ghazi Complex, ordered to be built on the plains outside the city walls in the 14th century by Sultan Orhan Ghazi, who conquered Bursa. It is the first complex in Bursa with a mosque, madrasah, public kitchen, han and Turkish bath. Buildings that were built around the Orhan Ghazi Complex helped to develop the Hanlar District from the 14th century until the mid-16th century. In the 17th century, there were 3170 stores and at least 27 inns in the district. Afterwards, new neighbourhoods outside the city walls started to develop around the new Sultan Complexes (Bursa Site Management Unit, 2013).

In the 19th century, the commercial centre of the city was affected negatively due to industrialization because the new road networks passing through the city compromised the spatial integrity of the district. Furthermore, the Bursa Grand Bazaar suffered extensive damage from fires in 1801 and 1889 as well as from the 1855 earthquake. However, as the first capital of the Ottoman Empire, the city was built as soon as possible by Ottoman governors. After the Turkish Republic was founded, the Hanlar District continued living, but new governmental buildings representing new regime were built near the old commercial centre. Today, the growing importance of a lifestyle based on consumption affected uses and spaces in the Bursa Grand Bazaar and Hanlar District. New adjustments have been made to meet the new demands of society. However, the Hanlar District still carries the tradesmen culture of the Ottoman era. Traditional daily Ottoman rituals such as first sale of the day, bargaining, master-apprentice relations, and neighbourliness among tradesmen continue in the Hanlar District. Due to the sustained traditional Ottoman trade life in addition to the current trade life regulations, the Hanlar District has not lost its liveliness and feeling of the Ottoman era over the past 700 years. Moreover, the Hanlar District enables people to experience the Ottoman trade life in original and historical spaces. There are 21 registered monumental buildings including 7 inns which have two stories, square or rectangular plan properties, and still survive with commercial functions in the core area (Bursa Site Management Unit, 2013).

The Evaluation of The Bursa - Cumalikizik Site Management Plan

With its unique qualities, the Hanlar District (Figure 1, Figure 2) was registered as a UNESCO world heritage site in 2014. During the UNESCO nomination process, the Bursa and Cumalikizik Management Plan was prepared by the Bursa Site Management Unit. Many analyses related to the physical, social, demographic, economic and legal structure of the district were conducted and

workshops and meetings were held with lots of participants from stakeholders.

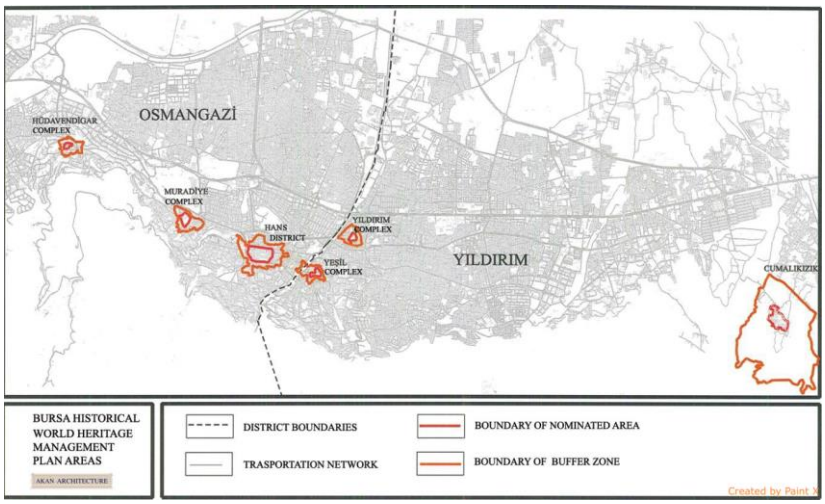

Figure 1. The Hanlar District and the other heritage sites in Bursa

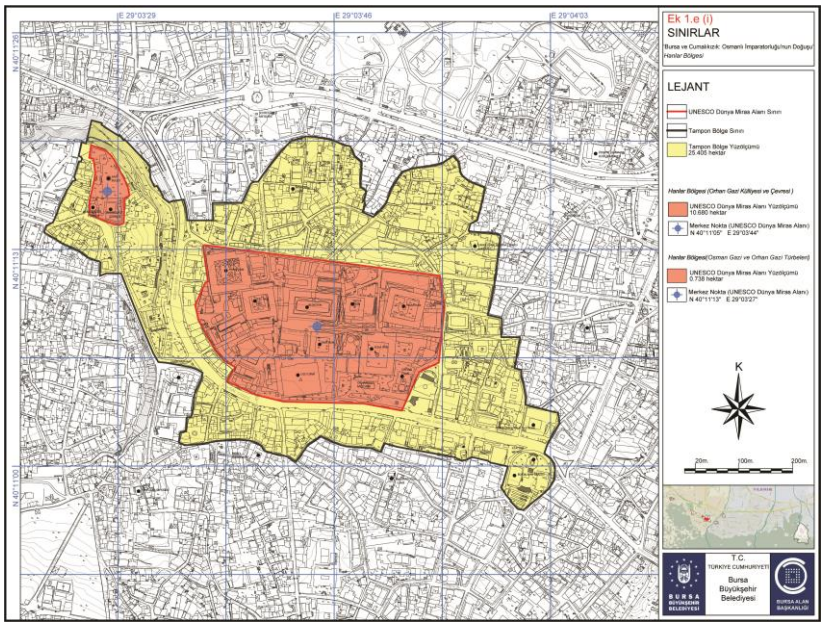

Figure 2. The Hanlar District in the Bursa City Centre

The management plan includes action plans which have been dealt with under seven topics in accordance with different objectives whose one of them is to increase the social, economical, environmental quality of life in and around the heritage sites. The main problems about the social-economic-environmental quality of life in the Hanlar District stated in the Management Plan are;

- lack of mixed uses (mainly retail facilities),
- lack of socio-cultural activities and spaces for people living around the city centre,
- lack of green spaces and landscaping,
- lack of multi-user diversity (mainly same type of visitor profile such as low-medium income groups, not young people, students, children, or mall customers)

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- changing resident profile around the city centre (mainly immigrants from Syria)
- lack of young and talented artisans in the district (Bursa Site Management Unit, 2013).

In this context, the following objectives were developed:
Objective B3.1- Development of the cultural use of areas to enable the conservation of the traditional culture and character by hosting social and cultural events.
Objective B3.2- Creation of a sustainable financial model with the participation and cooperation of relevant institutions and organizations.
Objective B3.3- Increase in the quality of urban life and environmental quality by supplying social services and achieving a balance between use and conservation (Bursa Site Management Unit, 2013).

Both these objectives and the results of the site analysis realized by the research project team have led to the need to organize a competitive and collaborative design charrette concerning the Hanlar District. Thus, this charrette would be a chance to encourage architectural students to solidify the objectives and actions of the Management Plan and to study with real institutional stakeholders and local representatives.

Results of The Site Analysis, Surveys and Interviews
The project team faced similar problems as in the Management Plan during the site analysis. The main detected problems are related to the lack of spatial quality and mixed use, security problems at night, poor accessibility for pedestrians and deterioration of historic pattern.

In addition to the site analysis, a survey of 370 urban residents was conducted. The survey was focused on shopping mall users in Bursa. Because as stated in the Management Plan today many urban residents prefer going to shopping malls instead of the Hanlar District. The number of shopping malls is increasing rapidly in Bursa and also in Turkey and the people spend increasingly more time in these centres. Therefore, the survey was designed to measure the perceptions, satisfaction levels and expectations of this group with the Hanlar District to attract shopping mall users to the city centre. According to the results, the most prominent demand is new cultural activity areas (for open-air concerts, theatres, exhibitions, cinemas, etc.) and secondly, parks, recreational areas, food and beverage areas (cafes, restaurants, bars, clubs, etc.) in the Hanlar district.

In addition to the survey, 22 in-depth interviews were made with local artisans from different sectors in the Hanlar District. The artisans were required to evaluate their profession in terms of their income level and customer profile and to express their expectations of the physical, economic, social, cultural, and functional factors related to the district. However the expectations were mainly focused on the new functions which should be developed in the Hanlar District, such as social-cultural facilities that will attract different age groups to the district and keep them longer in the district. In particular, it was highlighted that there should be facilities for young people such as cinemas, bowling, cafes and entertainment centres in the district; educational spaces for sustaining the bazaar culture; places for vocational education; places for art displays (shadow play etc.); publicity and exhibition areas (handicraft etc.); children's parks and recreation areas; and public outdoor spaces for events and transport and service units to support these facilities such as parking lots, information centres, WCs, health cabins, and baby care units. In addition to these, facilities for tourism such as boutiques and apart-hotels should be developed in the district (Polat & Tümer Yıldız, 2018).

Thus, the project team decided to organize a design charrette to experience the practicability of educational charrettes in developing adaptive re-use and urban design schemes for the inns and their surrounding public spaces in the Hanlar District to discuss the ways to carry Hanlar District into the future.

Educational Charrette Process in The Hanlar District As a Community Engagement Way

The main aim of this charrette was to support community engagement in the planning and urban design process of cultural heritage sites of Bursa by creating a collaborative and competitive platform to discuss different adaptive reuse and urban design ideas/projects for the sustainability of the Hanlar District.

In this charrette, with the participants from local governments, relevant public institutions, universities, the Bursa City Council, trade associations, non-governmental organizations, citizens and architecture students, spatial and social problems with the change of life styles in the city centre of Bursa and adaptive reuse and urban design ideas/projects to overcome these problems were discussed. Thus, the architecture students were required to develop creative adaptive reuse and urban design ideas for the inns and their surroundings for the revitalization of the Hanlar District. This can be a way to integrate the inns which are not actively used today, into public life and to sustain historical urban pattern for next generations.

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The charrette lasted three days. In the first day, the scientific research project was announced, studies about the UNESCO nomination process of the Hanlar District and case studies about urban design studies in other cultural heritage sites were presented by the academicians from the project team and professionals from the Bursa Metropolitan Municipality. Furthermore, site analysis was made by the students of the Department of Architecture of Bursa Uludag University and they determined and identified the problems and the potentials in the Hanlar District (Figure 3).

Figure 3. The Aerial View of the Hanlar District in the Bursa City Centre

In the direction of the detected problems, it was observed that students seek solutions in their projects for poor accessibility, lack of mixed-uses, lack of multi-user diversity, lack of green spaces, inefficient use of public spaces, poor design quality, deterioration of historic pattern by facadism, inappropriate uses of historic buildings and poor urban furniture.

In accordance with the detected potentials, it was observed that students benefit from the fact that the district has been a UNESCO world heritage site with its unique cultural and architectural quality. Furthermore its easily accessible location in the city centre, vacant areas are also seen as the potentials of the district. In addition to these, there are many connections between the inns and bazaars from different levels and many landscape elements such as monumental trees and fountains which can effect the design process. The original identity of the historical buildings and the built environment in the human scale were also highlighted as potentials by the

In the light of aforementioned issues, it was required that the students should have answered the charrette questions with their design ideas/projects.

A. How can the economic viability of Bursa Hanlar District be provided to meet future requirements of city dwellers by a mixed use development?
B. How can the social vitality and cultural interaction be increased in the Hanlar District?
C. How can the spirit of Bursa Hanlar District be retained to enable to experience the uniqueness of the Hanlar District for both the city dwellers and the tourists?
D. How can the environmental benefits be embedded in the Hanlar District?
E. How can the authenticity of the inns and the other historic monumental buildings be retained while adding a contemporary layer which is complementary to the values of the Hanlar District?

Within this framework, it was important to develop adaptive reuse and urban design ideas/projects in accordance with the objectives of the topic of social-economic-environmental quality of life in the Bursa and Cumalikizik Management Plan.

Figure 4a-4b. Coordinators and students of charrette- Presentations of the proposals of students at the end of the charrette

In the second day, students discussed their ideas with the coordinators (Figure 4a-4b). They were motivated to use their imagination limitlessly and think freely and innovatively during the process of design. Furthermore, the quality of the produced work was not necessarily required to be suitable for implementation. Because the authors wanted to experience the usability, suitability and practicability of educational charrettes as a community engagement way in the urban design process of the heritage sites. Thus, the limitations such as property, economic resources, etc especially in re-using historical buildings were ignored during the charrette process. This charrette was a simulation of the design charrette which will be organized by the local governments during the development of the urban design guideline for the Hanlar District.

The charrette ended with the presentation of adaptive reuse and urban design proposals and discussion in a platform where the relevant actors and the citizens participated (Figure 5). Twelve

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design proposals were graded 1 to 5 by the evaluation jury of the charrette according to how they answered the charrette questions and how they met the objectives of the Management Plan. Below, all of the proposals developed by the students were summarized to generate more sustainable solutions for the Hanlar District.

Figure 5. The Study Areas in the Hanlar District

- Proposal 1: Green Bursa

Bursa was known as "Green Bursa" till the 20th century. However after the industrial investments, the city has experienced huge migration from rural areas of Turkey. Thus, the aim of this project, is to revive the "Green Bursa" again. Based on the inadequacy of the green spaces in the city centre, the main concept is to develop a green corridor that integrates the Gokdere Valley with the Castle Area across the east-west direction in the city centre. To reach this aim, creating a green spaces network by demolishing unqualified buildings on the Cumhuriyet Street, which is a route for pedestrians and the tram, can be an alternative way to connect current green spaces which include registered plane trees in the city centre. In this way, while the Cumhuriyet Street turns into a greener pedestrian way for social activities, relaxing and reviving treatments with the required landscaping, the visual conflict on the street can be minimized. The green spaces can also be a chance for creating edible public spaces which encourage participation in growing and sharing of food and strengthen community relations. Thus, the street can be a meeting route for local people, such as families with children, students, teens and senior citizens while supporting environmental sustainability.

- Proposal 2: Compatible additions to historic buildings/inns

The city of Bursa, which has hosted various civilizations for thousands of years, composed of historical layers which have their own unique values. Developed as a trade centre in the Ottoman Empire period, the Hanlar District consists of different kinds of

buildings such as a covered bazaar, a city hall, mosques, market places, inns, baths and shops today. Over time, many historical buildings have been surrounded by exterior additions with commercial functions. However, these additions mostly harm historic buildings and hinder visual perception. The aim of this study is to present ways how to make compatible additions to historic buildings to enable visual and functional harmony. The proposal suggests to preserve the building's historic character by conserving its significant materials, features, form and scale while designing a new exterior addition. It also emphasizes that a compatible addition should not copy the historic building so that the new work cannot be confused as historic. Thus, this proposal provides guidance to owners, architects and developers on how to design a compatible addition in the Hanlar District to sustain the original identity of the heritage sites.

- Proposal 3: Creating a new touristic focal point in the Hanlar District: Ipek Han, Pirinc Han and Poultry Market Hammam

The Hanlar District was inscribed as a UNESCO world heritage site in 2014. Therefore, tourism potential will increase in the near future and this will create a need for new touristic requirements in the district. The purpose of this study is to create a new touristic focal point around the Pirinc Han, Ipek Han and the Poultry Market Hammam. The study area is highly accessible due to its location near the main artery of the city, Ataturk Avenue, at the corner of the pedestrian and tram way, Cumhuriyet Street and near the Zafer Plaza mall which is always crowded. However, the Pirinc Han, apart from the cafes on the ground floor, is not used actively. The second floor is left in derelict conditions. The upper story of the Ipek Han is also empty and only home textile shops are located on the ground floor. The Poultry Market Hammam is used as a cheap bazaar. All of these buildings were badly renovated by its owners/renters.

Within this framework, the Poultry Market Hammam is reused as an infobox with a new addition where tourists can visit when they come to the city centre. This addition can be completely made of glass and steel to create a contrast with the stone walls of the inns. The Ipek Han is turned into a boutique hotel and the Pirinc Han is reused with art courses, exhibition areas, gift shops, cafes and restaurants. The open space, which is situated behind those two inns and used as a parking lot, is transformed into an event area with new landscaping. Thus, the study area will be a more attractive and lively place for different kind of users by supporting economic sustainability.

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- Proposal 4: Bursa Research Institute: Ipek Han

Although there are two universities in Bursa, many students do not to come to the city centre due to the lack of places that appeal to them. Therefore, the aim of this project, is to both attract the students into the city centre and to form a mutual platform for the urban studies between the university, the local authorities, the Site Management Unit, and the urban residents. In this context, due to its accessibility potential and a more restful setting, the Ipek Han is re-organized as the Bursa Research Institute for urban studies. Individual and group working areas, workshop studios, lodgings for prolonged studying, an administrative office, an exhibition hall, a library, a seminar hall and a cafe are placed in the Ipek Han. Additionally, a rotating tower, where artistic studies could be performed, is designed in the middle of the courtyard. Thus, the Ipek Han which can be a meeting and sharing place for youth and local people, will also provide to strengthen the urban memory by urban awareness studies which broaden civic culture and community engagement in terms of social sustainability (Figure 6).

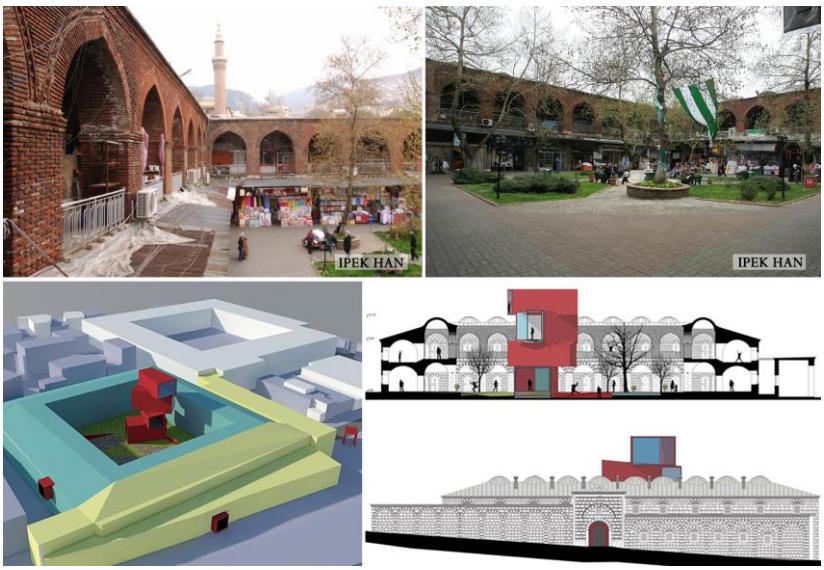

Figure 6. The proposal of Büşra Sayoğlu, Oğuz Yeke

- Proposal 5: Bursa's voice: Fidan Han

Bursa has also many intagible heritages in addition to its heritage sites. One of them is traditional music culture. The Hanlar district can be a suitable platform to introduce the music culture of Bursa to new generation. To reach this aim, Fidan Han, which is one of the most tranquil and the most unknown inns of the district, is chosen. The Han is not perceived from the outside, and its entrances are not visible because of the buildings surrounding it. Therefore, increasing sensory perception of the Han is the main purpose of this proposal. Fidan Han is reused as a music museum

and a musical education centre. The museum, a café and a gift shop can be on the ground floor and a concert area can be arranged on the courtyard. On the upper story of the Fidan Han, where fancy evening dresses are sold in existing stores, classrooms and studios for individual and group work can be arranged. Thus, by demolishing the unqualified additions and by adding a musical layer, the Fidan han will be perceived as much memorable while it is safeguarding traditional values in terms of social sustainability.

- Proposal 6: Fashion Centre: Ipek Han

Ipek Han, one of the inns where the silk dealers gather in Bursa in older times, lost its quality and has dilapidated over time. The purpose of this study is to transform Ipek Han into a fashion centre in order to introduce and vivify the textile sector in Bursa which was an important silk production and trade centre during the Ottoman Empire. To reach this aim, the Han is transformed to a cocoon where people learn textile manufacturing skills. On the ground floor of the Han, there can be stores and exhibition centres, whereas on the upper story, there can be workshop areas and sewing courses for the designers and their trainees. In addition to these, a steel structure that surrounds the Han and turns it into a giant cocoon is designed. This structure with its lighting equipment, advertising panels and seats orients people to the multi-use stage for different events which is located on the original facade of the Han (on the west side). Thus, while the Ipek Han is converted to a vocational education platform that prepares people to work in textile sector, its surroundings will turn into lively public spaces with fashion shows and charity bazaars in terms of economic sustainability.

- Proposal 7: A door to the Hanlar District: Techno-Museum han – Pirinc Han

After the Bursa was inscribed as a UNESCO heritage in 2014, there is a need for a museum which introduces heritage sites in Bursa. Because there are six heritage sites related to each other in Bursa and the Hanlar District is only one of them in the city centre. The aim of this study is to convert the Pirinc Han, which is located at the beginning of the Hanlar District, into a heritage museum which uses digital technology. Although the Pirinc Han is on a busy pedestrian route, it does not have an entrance on the Cumhuriyet Street and the other entrances are not perceived in the urban pattern. Additionally, the limited accessibility to the upper floor of the Han by steep stairs reduces the use of these spaces. Therefore, to increase the perception of the han, the courtyard is covered with a transparent structure made of steel and glass. This canopy

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also transforms to a bridge and an elevator which wraps the demolished corner of the Han on the Cumhuriyet Street. Thus, the less used first floor with a beautiful mountain view is opened to public use. An information desk, gift shop, cafe-restaurant, digital exhibition hall, documentary room, seminar hall, digital archive and children's learning studio can be arranged in the Han. Thus, The Pirinc Han will be more accessible for all and it will become a bridge which connects the past to the future in terms of social sustainability.

- Proposal 8: Bursa Stage: Pirinc Han

The aim of this project is to attract different age groups to the centre of the city, creating a new focal point for cultural activities in the Hanlar District. Within this framework, for its accessible and central location, the Pirinc Han and its surrounding is selected as the centre of musical arts. The courtyard of the han is thought as a main stage and an open concert area. In the inner parts of the han, a practise space for artists, spaces for music courses, musical instrument stores, a cafe, an administrative office are arranged. Additionally, stairs and elevators that enable the accessibility to the upper stories are placed in the demolished corner of the han. Situated next to the Pirinc Han, but having no connection to it, the Zafer Plaza shopping mall building is converted into a performance art centre. The parking lot at the back of the building is arranged as a stage for the amateur music groups. The open space in front of the Zafer Plaza and the Pirinc Han is re-designed as a multi-purpose public space for different events, such as watching concerts or films on the open air screen, organizing exhibitions or second hand market for local people. Thus, in this proposal it is benefited from the unifying power of music. The Pirinc han will create an opportunity to promote local music culture to new generations while supporting young artists in terms of social sustainability (Figure 7).

- Proposal 9: Style han: Geyve Han

The purpose of this study is to revive design facilities in Bursa city centre instead of selling imitation and unqualified products. There is a vocational school of design in Bursa since 2010 called Faruk Sarac which includes different departments such as graphic design, interior design, restoration, fashion design etc. However, its facilities are unknown by the citizens and the school is not integrated with the city life. Thus, the Geyve Han is reused as a design centre where the students work and display their products. Situated between Cumhuriyet Street and the Long Bazaar, the Geyve Han, including mostly home textile stores, does not get its

fair share of attention and not used actively. The concept of the project is to benefit from the lightness and the flexibility of the fabric and to contrast with the rigid and geometric structure of the Han. In this proposal, design, production and workshop studios takes place in the Han, while the public space in front of the Han is converted into a sharing platform where design products are displayed on a portable stage which also serves as a eating-drinking-playing space in daily life. The entrances of the Han and the portable stage are defined with fabric. In addition, the Han is decorated with fabric during design days. Thus, the Geyve Han will be a catalyst to move from imitation to innovation in terms of economic sustainability.

Figure 7. The proposal of Elif Yalçınkaya, Nazım Karataş, Abdullah Yetkin

- Proposal 10: Digital Art Centre: Geyve Han

The aim of this project, is to benefit from the power of digital art to bring people together. For this, the Geyve Han and its surrounding is selected because of its central location, the pedestrian density and the amphitheatre on the east side of the han. In this framework, the Geyve Han is converted into a digital art centre where works of installation art, film/video and animation, internet and software art, virtual reality and augmented reality art are displayed. There will be places such as exhibition spaces, a seminar hall, a café, an office, a gift shop, a maker lab and education spaces for courses in the han. The main concept, is to create a contrast with the digital technology in a historical site. The walls of the han are used as screens to increase the use of the han at night. The amphitheatre are used for light and

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film shows. In addition to visual effects, the Geyve han will be a gathering point for the people who want to be familiar with the technology, teens and children can work in makerspaces, as the elders can learn to use internet and can scan their old photos which can be displayed in exhibitions such as “once upon a time in Bursa”.

- Proposal 11: Sericulture Centre: Fidan Han

Bursa was an important sericulture centre between 15th and 19th century during the Ottoman Era. After the Turkish Republic was founded, sericulture industry was supported by the central government, however when artificial silk started to be produced, sericulture industry declined. Especially after 1980s, sericulture factories in Bursa were closed. However, in recent years, local governments started planting mulberry trees in some counties to revivify sericulture in Bursa again. Thus, the purpose of this project is to revitalize sericulture and the other local arts and crafts in Bursa again. For this study, the Fidan Han, which is located on an active shopping line -Long Bazaar- and easily accessible through Koza Han where many silk shops are located, is selected. The Fidan Han is re-arranged as a place where design, production, sale and education takes place. In this centre, local artisans may show their craft, local people may come to learn a craft, creative craft courses for different age groups can be organized, textile, wood, paper etc. wastes can be collected and recycled, charity bazaars and festivals can be organized. Artisan production spaces (such as places to see silkworm production phases and weaving looms) and shops are arranged on the ground floor of the han, while education spaces are placed on the upper floor. In this proposal, the inner Fidan Han which is surrounded by unqualified buildings next to Fidan Han, is also reused as a cafe, a seminar hall and an exhibition space for the arts and crafts products. Moreover, the building in front of the Fidan Han is removed and a new landscaped area which has a soothing effect of water and mulberry trees are created. Thus, the Fidan Han will be a breathing space in today's world where everything is consumed so fast.

- Proposal 12: Tastes of Bursa: Kapan Han

The aim of this study is to create a place where the local food culture of Bursa is introduced, while food and beverage facilities are presented, socializing opportunities such as courses in culinary arts are offered in the Hanlar District. For this, the Kapan Han which is situated in front of the exit of the pedestrian underpass, connecting the northern and southern parts of the city,

on the Ataturk Avenue, is selected. Currently, there are home textile companies in the Kapan Han. In this proposal, one of the exits of the underpass is designed to direct the pedestrians to Kapan Han which is converted into an eating-drinking street. On the ground floor and upper stories of this street which goes through the han places such as cafes, restaurants, bakeries and bars are located. Additionally, culinary courses and themed food contests are organized in the street (Figure 8).

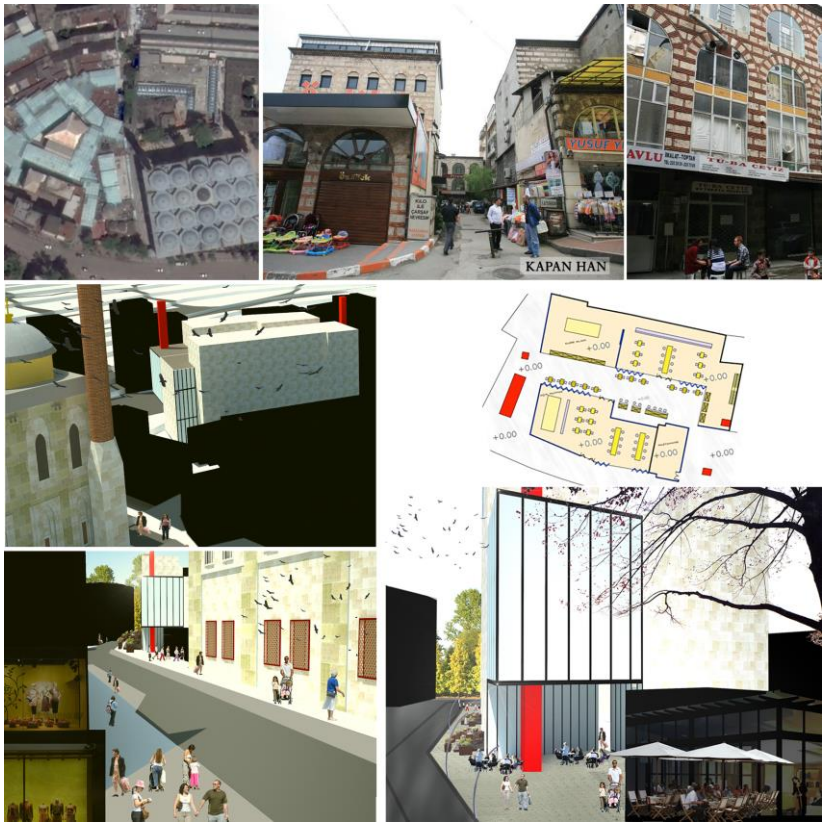

Figure 8. The proposal of Tuğba Aslan, Hatice Kübra Kaya

Results of The Educational Charrette

At the end of the charrette, the proposals were categorized in terms of the objectives concerning the topic social-economic-environmental quality of life in Bursa and Cumalikizik Management Plan. Ten of them were related to Objective B3.1 which aims to develop the cultural use of areas to enable the conservation of the traditional culture and character by hosting social and cultural events. The proposal 1 was related to Objective B3.3 which aims to increase the quality of urban life and environmental quality by supplying social services and achieving a balance between use and conservation, and the proposal 2 was related to another topic called cultural values, conservation and planning which includes the implementation of architectural projects in accordance with contemporary conservation approaches and national and international conservation criteria. This was a positive result of the charrette, because all of the

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proposals were developed to support the objectives of the Bursa and Cumalikizik Management Plan.

Table 2. The matris of the charrette questions and the scores of the proposals

Charrette questions / Design proposals	A	B	C	D	E	Total point
1. Green Bursa	1	4	5	5	3	18
2. Compatible additions to historic buildings/inns	1	2	5	4	5	17
3. Creating a new touristic focal point in the Hanlar District: Ipek Han, Pirinc Han and Poultry Market Hammam	5	5	4	2	5	21
4. Bursa research institute: Ipek Han	3	5	4	4	5	21
5. Bursa's voice: Fidan Han	3	5	2	1	1	12
6. Fashion centre: Ipek Han	5	5	2	3	5	20
7. A door to the Hanlar District: Techno-museum han – Pirinc Han	3	5	2	3	5	18
8. Bursa stage: Pirinc Han	5	5	4	2	5	21
9. Style han: Geyve Han	5	5	3	3	5	21
10. Digital art centre: Geyve Han	3	5	4	2	5	19
11. Sericulture centre: Fidan Han	3	5	5	4	3	20
12. Tastes of Bursa: Kapan Han	5	5	5	2	5	22

In addition to this, twelve design proposals were graded from 1 to 5 by the jury according to how they answered the charrette questions. As a result of the jury evaluation, the twelfth proposal

called Tastes of Bursa got the highest score (Table 2). Because eating and drinking facilities are very appropriate for the chosen study area and it can motivate the Kapan Han to be a more lively place. It can also enable to increase economic and social vitality and cultural interaction while adding a contemporary layer to the historical city centre. The other positive proposals aim to attract different user groups to the city centre such as families, university students and academicians, young local people, tourists, women and especially mall customers.

The student projects may be furthering the goals of the management plan and have varying degree of support from stakeholders, but they also may cause gentrification. For example, converting the poultry market into a glass-and-steel infobox and boutique hotel -presumably only for tourists and elites, without much regard to the livelihoods for hundreds of local residents, should not be encouraged. Another one, digital museums and student facilities may disrupt the sense of place and uses. In this regard, some of the student projects may not be socially sustainable even as they may be economically and environmentally sustainable. Even UNESCO would like to limit the social transformation on its designated sites, and would not appreciate interventions that fuel such transformations.

However, it is not a true approach to convert the Hanlar District into an open-air museum. If the heritage sites do not integrate with today's technology and expectations, they may look like a theater scene that reflects the past, but do not live. Therefore, it is necessary to conserve and develop the bazaar culture while preserving the original architectural pattern of the Hanlar District as emphasized by the local artisans. Because the bazaar culture will be forgotten over time as many of the citizens prefer to go to the shopping malls instead of the city centre. For this reason, many proposals were presented to attract different user profiles to the city centre. On the other hand, the proposals were produced in a very short time, so they need to be handled in a holistic urban design process for the city centre and developed in professional workshops with both local people and other relevant actors.

CONCLUSION AND DISCUSSION

Cultural heritage conservation should follow the wider concept of sustainable development which include economic, social and environmental issues to reach a higher quality of life in cities. In this context, this study which focused on community engagement presents key opportunitues for the sustainability of cultural heritage sites of Bursa.

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First of all, the educational charrette conducted in the Hanlar District was an inter-disciplinary, participatory, collaborative and competitive study which was realized to support the objectives of Bursa and Cumalikizik Management Plan with the colloboration between Bursa Site Management Unit and Faculty of Architecture of Bursa Uludag University.

In addition, the charrette provided to be discussed the innovative adaptive reuse and urban design ideas about the inns putting up the limitations such as property problems and economic resources. This allowed local governors also other stakeholders to create new visions about heritage sites, while developing urban awareness about the sustainability of heritage sites and use of community engagement tools. Additionaly, the charrette ensured to develop reconciliation between different groups, such as students, NGO's, local governments etc. Thus, this experience presented the usability, suitability and practicability of educational charrettes as a community engagement way in the urban design process of the heritage sites.

Secondly, adaptive reuse of the idle inns and their surroundings, can be an efficient way to improve livability of the inns. However, it is a must to develop an integrated urban design approach which aims the economic, social and environmental revitalisation of the Hanlar District rather than just physical renewal (Vural Arslan et al, 2011). Because in some cases, the drive for sustainability through adaptive reuse projects in heritage sites may result in denting social sustainability leading to gentrification, commodification and consumption for tourists and elites. Therefore, it can be beneficial to use the educational charrettes as an inclusive way to develop, to discuss and to compromise on creative adaptive reuse and urban design ideas in the development of urban design guidelines to sustain cultural heritage sites.

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Evaluation of Traditional Şirince Houses According to Sustainable Construction Principles

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Abstract

Şirince is a village which has unique traditional building samples and which is heavily influenced by the influx of tourists in the summer season for the last decade. Many buildings in Şirince have changed function due to tourism activities and a significant amount of them have been renovated. Besides, some new buildings has been constructed from modern building materials such as reinforced concrete in the settlement. Since the management plan has not yet put into force in the region, excessive interventions can be seen in renovations and restorations. However, the settlement is still facing a decrease in population for some reasons. In order to preserve the population of Şirince the sustainability of the region has to be ensured and the existing historical and architectural texture has to be preserved.

This study mainly focuses on the evaluation of Şirince according to sustainable construction principles and suggests some interventions in order to increase the sustainability. As a first statement it can be mentioned that, tourism has to be viewed as a means rather than an end to improve the sustainability of the settlement. The constructions has to be carried out according to ecology based principles, a healthy built environment has to be created and non-renewable natural sources has to be used efficiently to increase the sustainability in constructions.

Keywords: *Cultural heritage, rural settlement, traditional houses, sustainability, sustainable construction*

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Excessive restoration interventions has to be prevented, traditional materials and techniques has to be preserved. Reusing and recycling of materials has to be evaluated in order to make environment-friendly applications.

INTRODUCTION

Anatolia, which is one of the oldest settlements in history, has hosted many important civilizations since the prehistoric times. The people of Anatolia have had important livelihoods and before the increase of urbanization most of the people lived in rural areas in Anatolia. The technological developments which emerged after the Industrial Revolution firstly increased the urbanization and then caused migration from rural areas. The livelihood diversification resulted with a decrease of population in these regions. However rapid urbanization has led to significant environmental, social and economic problems in urban areas and therefore recently rural areas have become attractive to many people. Although there has been a certain amount of migration from urban to rural areas during the last few years, the population decrease in rural areas still continue for some reasons.

It is crucial to ensure a sustainable development in rural areas by protecting the population of these regions and by providing the economic development. "The Rural Development Program" prepared by the Ministry of Development is an important step which is taken by the government for this purpose. This program, which is prepared within the scope of the EU (European Union) accession process and planned to be put into practice gradually, aims to establish the current situation of the rural areas and presents the steps to revive these regions. The program includes topics such as; improving agriculture, animal husbandry, infrastructure services and education, using renewable energy sources efficiently and preserving the existing texture of the region.

The preservation and management of historic remains, monuments and traditional buildings, which have the characteristics of cultural heritage, is also very important in ensuring a sustainable development in rural areas. This approach has gained importance all over the world in recent years, and some important organizations such as UNESCO and ICOMOS have taken steps to protect and manage the cultural heritage properly. One of the most important action which has to be taken for this purpose is to prepare a proper management plan for the region (Akdogan, 2007). Management plans include topics such as; agriculture, education, management and preservation. However, the preservation of existing buildings is one of the most important

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of these topics in protecting the historical and architectural texture of the region.

In this study, the general characteristics of traditional Şirince houses, the properties of the settlement according to sustainable construction principles and the measures which can be taken to increase the sustainability of the region are mentioned.

SUSTAINABLE CONSTRUCTION PRINCIPLES

The sustainability concept is being discussed since the mid-20th century and is mainly based on the idea of excessive consumption of natural resources will not be beneficial for human beings in the long term. The rapid growth of human population has led an increase in the need for construction and resulted with an excessive consumption of natural resources. Therefore construction industry was associated with the sustainability concept.

Construction industry, which has a significant share in the global economy and consumes the highest amounts of natural resources, can be sustainable by producing structures that use natural resources efficiently, creating healthy environments and building ecological structures. The principles of sustainable construction can be divided into four main groups as; social, economic, biophysical and technical sustainability (Hill & Bowen, 1997).

Social Sustainability

Social sustainability defines the principles to improve the quality of human life during construction process. In order to ensure social sustainability; it is crucial to design for everyone (according to age, health conditions, etc.), to protect health, to create a healthy environment and to manage the use of hazardous substances during construction.

Economic Sustainability

Economic sustainability defines the activities that support the economic development of the construction industry with an environmental responsibility which recognizes that some non-renewable natural resources are inevitable in the near future. Accordingly, it is necessary to work with suppliers and contractors who can demonstrate environmental performance, to produce structures which create employment to local people and to be economically appropriate to the target group.

Biophysical Sustainability

Biophysical sustainability states that construction industry has to use ecology supportive systems in construction which also means

to create an ecological design (Figure 1). Energy, water, materials and land consumption, which is caused by the construction industry, has to be reduced. Materials and processes, which is used during construction process, has to have low embodied energy and low toxicity. The construction systems also has to be non-hazardous to the biodiversity of nature and minimize air, land and water pollution.

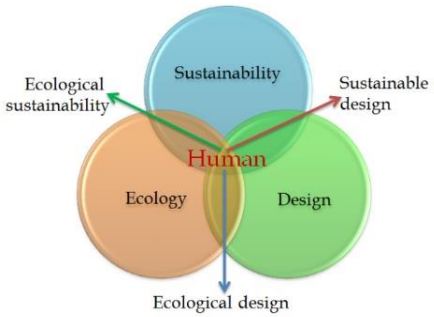

Figure 1. The relationship between sustainability, ecology and design

Technical Sustainability

Technical sustainability implies to construct durable, reliable and functional buildings. While durable buildings usually save energy and create less solid waste, the systems which are used to extend the useful life of constructions are generally wasteful. Correspondingly, dehumanized larger buildings use very complex systems which are not eco-friendly, but smaller buildings can be modified to meet the changing needs of the user without giving harm to the environment. The four main groups and principles of sustainable construction can be summerized in Table 1.

Table 1. Principles of sustainable construction (Hill & Bowen, 1997)

Social sustainability	Economic sustainability	Biophysical sustainability	Technical sustainability
Improve the quality of human life	Ensure financial affordability for intended beneficiaries	Reduce the use of four generic resources, which are energy, water, materials and land, used in construction	Construct durable, reliable and functional structures
Protect and promote human health through a healthy and safe working environment	Promote employment creation	Maximize resource reuse and recycling	Pursue quality in creating the built environment

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Seek equitable distribution of the social costs and benefits of construction	Adopt policies and practices that advance sustainability	Use renewable resources in preference to non-renewable resources	Humanize larger buildings
Design for everyone	Work with environmentally responsible suppliers and contractors	Minimize air, land and water pollution at global and local levels	Revitalize existing urban structure by rebuilding mixed-use pedestrian neighborhoods
		Create a healthy, non-toxic	
		Minimize damage to sensitive landscapes, including scenic, cultural, historical and architectural	

Traditional Şirince houses has always been consistent with sustainable construction criteria. However, there are some unsustainable applications in the settlement for the last few years. The environmental impact of modern practices, excessive interventions in restorations and increased tourism activities of the settlement are some examples of recent applications. The properties of traditional Şirince houses has to be evaluated according to sustainable construction principles in order to improve the current situation of the settlement.

GENERAL PROPERTIES, HISTORY and ARCHITECTURAL TEXTURE of ŞİRİNCE

Location

Şirince is located 86 km southeast of the center of İzmir, in western Anatolia in Turkey. It is a small, inland village of Selçuk District and the village is reached by an 8 km narrow road from the center of the district. Selçuk is located on the İzmir-Aydın highway and the district is 55 km away from the İzmir International Airport. Besides Kuşadası Port is only 20 km from Selçuk (URL 1, 2019). Therefore, it is easily accessible by land, air and sea which can also be seen in Figure 2. Selçuk is a historic point which includes many important historical properties such as Ephesus, the Temple of Artemis and the House of Virgin Mary. Correspondingly, Şirince has always been an important settlement from past to present.

Figure 2. Location of Şirince Village (URL 1, 2019)

Climatic Data

Şirince has a typical Mediterranean climate similar to İzmir. It has hot and dry summers reaching to 34˚C, while the winters are cold and wet with a minimum temperature of 6˚C. According to the meteorological data, the maximum temperature observed to date was 43˚C on 12 August 2002 and the lowest temperature was -8.2˚C on 04 January 1942. The climatic data of Izmir was obtained from Turkish State Meteorological Service records. The monthly average temperature values, the number of rainy days and the bright sunshine duration of the city was given in Figure 3.

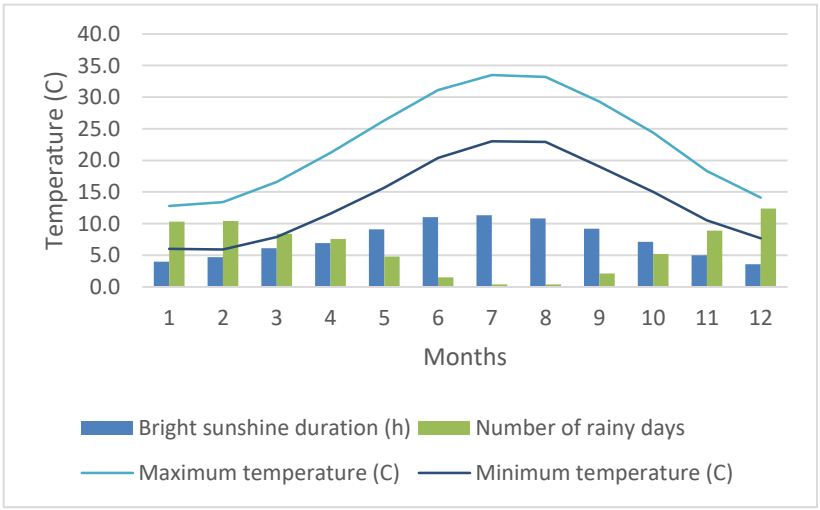

Figure 3. Climatic data for Izmir (data taken from Turkish State Meteorological Service)

History and Development

Although the settlement includes historical remains belonging to Hellenistic, Roman and Byzantine periods, the written documents indicates that Şirince's (meaning "pleasant" in Turkish) history dates back to 14th century. The name Çirkince (meaning "unpleasant" in Turkish), which was the previous name of Şirince, has been firstly traced in a 16th century document. After the

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construction of the John Baptist Church and the discovery of the House of Virgin Mary at the 18th century, the settlement has gained importance and its population has increased. According to the written sources of the period, it can be mentioned that Şirince is a settlement of the Ottoman Empire, the population was nearly 4000 and mainly comprised of Greeks (Akdogan, 2007; Uyar, 2004).

The collapse of the Ottoman Empire and the acquisition of the War of Independence had important effects on Şirince just as many other settlements of Anatolia. After the "Turkish-Greek Population Exchange Agreement" which was signed in Lausanne on January 30, 1923, there was a significant change in the population of Şirince. As the number of population settled in Şirince was less than the population returned to Greece, some buildings remained abandoned. Due to some elements and materials were extracted from the abandoned buildings and used in the renovation of other buildings, the structural and spatial deformation has been accelerated in Şirince (Akdogan, 2007; Uyar, 2004).

The preservation necessity of Şirince became an important issue over the years depending on its existing historical and architectural texture. Correspondingly, in 1982 the conservation studies of the region started with a proposal of a management plan. In 1984 Şirince was designated as a historic site and 88 traditional buildings were registered as historic buildings. In 1997 the historic site of Şirince was enlarged to its present borders and the surrounding area of the settlement was designated as a natural site. A general view and some important landmarks of the village can be seen in Figure 4.

Figure 4. Aerial view of Şirince village (edited from Google Earth)

The management plan studies of Şirince, which was started by the Ministry of Culture and Tourism, has not been accepted and put into force due to some disputes and is still on-going (Akdogan, 2007; Kilinc-Unlu, 2011).

Although the popularity of Şirince has increased with the influence of surrounding tourism centers and attracts a significant amount of tourist and investor for the last decade, the level of urbanization is increasing throughout the country and the population of Şirince is still decreasing. According to the data of The Rural Development Program which was prepared by the Ministry of Development, the rate of population living in rural areas was 56.1% in 1980 and this rate has decreased to 35.1% in 2010 as can be seen in Table 2.

Table 2. City and village population, 1927-2000 (Turkish Statistical Institute Table 1, 2018)

Census year	Total	City population	Village population	Proportion of city and village population in total (%)	
				City	Village
1927	13 648 270	3 305 879	10 342 391	24,22	75,78
1935	16 158 018	3 802 642	12 355 376	23,53	76,47
1940	17 820 950	4 346 249	13 474 701	24,39	75,61
1945	18 790 174	4 687 102	14 103 072	24,94	75,06
1950	20 947 188	5 244 337	15 702 851	25,04	74,96
1955	24 064 763	6 927 343	17 137 420	28,79	71,21
1960	27 754 820	8 859 731	18 895 089	31,92	68,08
1965	31 391 421	10 805 817	20 585 604	34,42	65,58
1970	35 605 176	13 691 101	21 914 075	38,45	61,55
1975	40 347 719	16 869 068	23 478 651	41,81	58,19
1980	44 736 957	19 645 007	25 091 950	43,91	56,09
1985	50 664 458	26 865 757	23 798 701	53,03	46,97
1990	56 473 035	33 326 351	23 146 684	59,01	40,99
2000	67 803 927	44 006 274	23 797 653	64,90	35,10

The Turkish Statistical Institute declared the rate of population living in rural areas as 7.5% in 2017 (Ministry of Food Agriculture and Livestock, 2013). The population of Şirince decreased from 839 to 468 in the 1980-2018 period (Turkish Statistical Institute Table 2, 2018).

One of the most important reasons of the population decrease of Şirince is that it focuses entirely on tourism. While agricultural activities were common in the previous years, tourism activities became increasingly popular for the last decade. A significant amount of traditional buildings were refunctioned and some buildings were reconstructed for touristic purposes during this period.

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Nevertheless, Şirince's tourism mainly depends on weekend tourism other than the summer season. Therefore most of the young residents live in the nearby settlements during the low season by causing a population decrease in Şirince. In order to preserve the population of the settlement the sustainable development of Şirince has to be ensured and the existing historical and architectural texture has to be preserved.

Architectural Features of Traditional Şirince Houses

The general characterization of traditional Şirince houses does not differ from the vernacular architectural tradition of Anatolia which is composed throughout centuries. The structures are effectively designed anonymously by taking advantage of local material and resources, adapting to environment and climate, respectful to the surrounding buildings. The houses are situated parallel to the topography and their heights are usually the same in order not to prevent the view of the surrounding structures (Bektaş, 2014; Erdem A.; Yergün U., 2015; Kuban, 2017). A general view from the village can be seen in Figure 5.

Figure 5. A general view of Şirince

Most of the traditional houses in Şirince are two-storied, while a few of them are built one or three-storied. The foundation and ground floor of the structures are built with stone and lime mortar is used as the binding material. While the upper floors of the back façade can also be built with stone, they are mostly built with adobe filled wood. The planimetric properties of traditional houses were highly affected by the socio-cultural elements and the religious rules of the region. Therefore the ground floor of the structures are mostly built without or with a minimum amount of openings and mainly closed to the outer space. The oriels and bay windows on the upper floors create an interaction with the street.

Wooden lintels span above the door and window openings, and also usually in walls to support the system. Stone walls can be used uncoated, but they can also be plastered with lime. The upper

floor and partition walls are plastered with lime and then painted with whitewash. The roofs of traditional Şirince houses are mostly pitched and covered with traditional tiles. A suitably renovated typical traditional Şirince house can be seen in Figure 6.

Figure 6. A suitably renovated traditional Şirince house

The houses can be built with or without a courtyard according to the size of the land and as most of the daily work takes place on the ground floor, courtyard is usually the main working space of the house. Spaces such as; warehouse, poultry house, barn, etc. are also located on the ground floor. The upper floors are designed as living space. A typical plan of a traditional Şirince house with a courtyard can be seen in Figure 7.

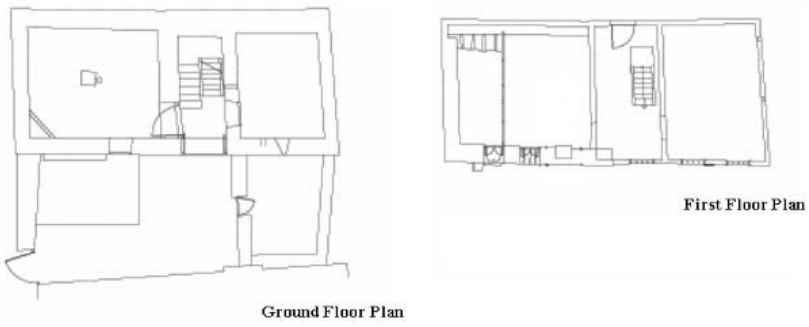

Figure 7. A typical plan of a traditional Şirince house with a courtyard (Uyar, 2004)

In conclusion, traditional Şirince houses are generally built with local building materials and are respectful to the nature and the surrounding buildings. However, some modern interventions and applications are not constructed with an ecological and sustainable approach. In order to ensure the sustainability and preserve the existing texture of the region, first of all an evaluation of the existing properties has be made according to sustainable construction principles. Correspondingly, precautions has to be

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taken to prevent the deterioration of the existing texture of Şirince.

EVALUATION of TRADITIONAL ŞİRİNCE HOUSES ACCORDING to SUSTAINABLE CONSTRUCTION PRINCIPLES

Strengths and Weaknesses of The Village

In order to evaluate the properties of traditional Şirince houses according to sustainable construction principles, firstly the current situation, the strengths and weaknesses of the region has to be determined. According to the results of the evaluation a framework should be proposed to improve the weaknesses and to use the strengths as benefits. In this way, the sustainability of the region should be ensured, the existing texture should be preserved and environment-friendly applications should be performed. The strengths and weaknesses of Şirince which are obtained from a previous study (Akdogan, 2007) and from the local authorities by the author can be seen in Table 3.

Table 3. Strengths and weaknesses of Şirince village

Strengths	Weaknesses
Registered as a historic site	The tourism activities mainly depend on weekend tourism
176 registered historic buildings	Agricultural activities has been decreased for the last years
Cultural tourism attractiveness	Decrease of population due to migration from the village
Having a conservation plan	Abandoned traditional historic houses
Residential use of traditional historic buildings	Low-income local residents & high real estate prices
Awareness of the local residents to protect the traditional houses and the site	High maintenance and restoration costs of traditional historic buildings
Production of traditional products such as house wine and olive oil	Lack of knowledge about the conservation and maintenance of historic buildings
Willingness of the investors to acquire property	Deteriorated idle buildings due to lack of maintenance
Highly entrepreneurial population	Refunctioned historic buildings
	Modern applications inharmonious with the historic texture
	Traffic problem on the high season
	Poor information and service facilities in the village

The most important advantage of Şirince is that the settlement and the surrounding area is designated as a historic site and many structures are registered as historic buildings. Today there are 176 traditional historic buildings registered as cultural asset in

the village. The other important properties of the settlement are; it is close to the main tourist attractions, it is easily accessible and it has cultural tourism components. Besides, the preservation awareness of the local residents has raised about protecting the region and the traditional historic buildings. The out-of-town investors who acquired properties in Şirince also made contribution to this approach.

However, there are also some important weaknesses of the region. One of the most important weaknesses of Şirince which affects the economic sustainability is that agricultural activities has been decreased for the last years and the economy of the village entirely depends on the tourism activities. Nevertheless, the tourism season does not spread throughout the year in the region. Besides, the information and service facilities towards the tourists are still insufficient and there are significant problems related to transportation especially in high tourism season.

The other important weaknesses of Şirince are, a lot of traditional historic building has been renovated and refunctioned since the tourism activities has gained importance, but improper applications and excessive interventions change the existing historic and architectural texture negatively. Also due to the preservation and maintenance of historic buildings is a time consuming and expensive process, some traditional historic buildings are neglected, damaged or even destroyed by the environmental factors.

Although Şirince has a significant number of strengths, the above-mentioned weaknesses of the settlement has to be evaluated according to sustainable construction principles and suggestions should be made to improve them.

Evaluation of Şirince Village According to Sustainable Construction Principles

- Social sustainability

There are some problems about social issues which needs to be improved and some suggestions which could positively affect the current properties of the village. The current situation and possible suggestions are given in Table 4.

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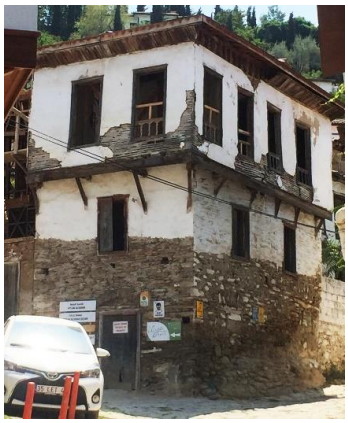
Table 4. Evaluation of social sustainability properties of Şirince Village

Current situation	**Suggestion**	**Description**
- Some pavements and roads are neglected and broken, steep slopes makes walking difficult for the user	- A renovation work has to be carried out on the pavements and roads of the village - Elevators, escalators and cable cars can be used in transportation for easy access to the hills of the village (St. Jean and Demetrius Hills)	 A steep slope in Şirince (Uyar-2004)
- The village gets busy with cars and buses in the high tourism season	- Elevated multilevel car parking systems should be used not to increase the land used as parking area - A part of the village center could be pedestrianized - Tour buses could be used for transportation to the tourist attraction points of the village - Scheduled bus services could be offered to the surrounding tourist centers to prevent the increase in the car and bus traffic	 Roadside parking in the village
- Insufficient information and service facilities	- Untidy and worn information and guidance signs should be renewed - Service facilities such as public toilets should be improved - A tourist information center should be designed and built at a specific attraction point	 Untidy information signs in Şirince

- The relationship of the houses with the urban area is destroyed in some parts of the village	- House-street relationship has to be protected with the help of a proper management plan - Urban green spaces can be created between the houses and street in order to increase the strength between the house and urban area and to increase the ecological quality of the region	 The poor relationship between house and urban area

- Economic sustainability

The economic development of the village could be ensured mainly by preserving the population of the village and by creating ways to encourage a spread of visitors throughout the year. The main problems and possible suggestions are given in Table 5.

Table 5. Evaluation of economic sustainability properties of Şirince Village

Current situation	**Suggestion**	**Description**
- Şirince's tourism mainly depends on weekend tourism other than the summer season	- Local agricultural products can be offered as an alternative tourism activity, such as wine tourism. Visitation to vineyards, wineries and wine festivals should be offered to spread the tourism throughout the year - Traditional village products could be promoted with food festivals and courses to create a demand to gastronomy tourism	 Alternative tourism facilities

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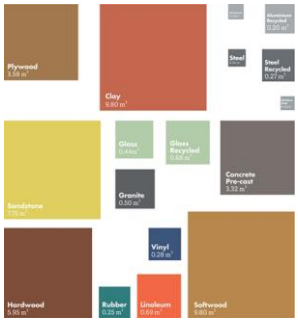
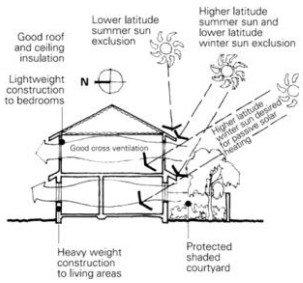
- The prices of the real estate market has been radically increased for the last decade	- Financial affordability has to be ensured by constructing appropriate minimum housing standards (local material and with basic traditional architectural features) - In order to increase the awareness in the construction industry the environment-friendly contractors can be promoted - Soft loans or non-refundable loans has to be created for the local residents of the village - Employment creation and labor intensive construction (including traditional building crafts) can be promoted	m^2 — Price 120 — 285.000 96 — 337.000 200 — 403.000 155 — 250.000 110 — 225.000 Prices of some real estate in Şirince

- Biophysical sustainability

Biophysical sustainability states that the quality of human life has to be improved by demonstrating a responsible approach while constructing. The problems and suggestions of Şirince can be seen in Table 6.

Table 6. Evaluation of biophysical sustainability properties of Şirince Village

Current	**Suggestion**	**Description**
- Some new buildings and restorations have improper details and applications which cause a negative change in the existing historic and architectural texture	- The management plan for preservation has to be put into force as soon as possible - Traditional construction techniques and materials should be used to prevent the elimination of the sense of history in the village - The visual harmony between the structures should be acquired by preserving the historical features of the traditional buildings and by avoiding excessive restorations	 A reinforced concrete building in the village

- Some traditional historic buildings are neglected, damaged or even destroyed by the environmental factors, as the preservation and maintenance of historic buildings is a time consuming and expensive process	- Public, local, civil and private organizations should work together in order to create funds and restore the idle and damaged historic buildings	 An abandoned building
- Modern building applications increase the consumption of non-renewable natural sources (energy, water, material)	- Materials with low embodied energy has to be used in constructions (traditional and local materials) (URL 2, 2019) - Reusing and recycling options has to be taken into consideration in constructions - The use of renewable natural sources such as wood has to be increased	 Embodied carbon of some building materials
	- The orientation and envelope properties of the structures has to be carefully designed to obtain indoor thermal comfort with minimal energy consumption (heating and cooling) - A passive thermal design (such as the use of breezes for natural cooling, solar warming of building, inclusion of a courtyard for natural ventilation) has to be produced during the design process (M., 2011) - Existing and planned vegetation can also be used to improve the thermal and lighting comfort of the buildings	 Natural passive cooling systems

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- Environmental pollution occurs during the construction of the buildings	- The wastes has to be classified, stored and eliminated properly - Toxic products should be carefully used in constructions (solvent-based finishes, adhesives, VOC, etc.) in order to create a healthy indoor and outdoor environment	Sources of VOCs as building materials; - Paint, varnishes, caulks, adhesives - Carpet, vinyl flooring - Composite wood products - Upholstery and foam

- Technical sustainability

The problems and suggestions about technical sustainability can be seen in Table 7.

Table 7. Evaluation of technical sustainability properties of Şirince Village

Current situation	**Suggestion**	**Description**
- The durability of traditional buildings is getting lower in Şirince	- Traditional techniques and materials should not be abandoned - The use of cement-based materials should be avoided in restorations and construction of new structures - The details (nails etc.) should be cleaned and the damages in traditional buildings should be prevented	 The effect of an awning to the space perception
- The low-density urban areas result with the deterioration of constructions and urban areas	- Mixed-use pedestrian neighborhoods should be created in order to integrate housing and retail spaces and enhance living and leisure environments - Energy efficiency technologies should be increased in traditional buildings in order to decrease the energy consumption	 A pedestrianized street in Alaçatı (Çeşme)

CONCLUSION

Şirince had become a popular tourist attraction point with its location, historical and architectural texture and is influenced by the influx of tourists in the summer season from the early 1990s. Tourism resulted with a significant change in the daily life of the local residents. Due to the village mainly focuses on tourism

activities the entire village became a commercial area and the real estate prices increased a lot. However, the tourism season does not spread throughout the year and the local residents of the settlement are migrating from the village. Besides some modern intervention and applications are not constructed with an ecological and sustainable approach. Therefore the village is facing the risk of losing its cultural heritage features. In order to preserve the sustainability of the region, the migration has to be decreased and the historical and architectural texture of the settlement has to be preserved with some precautions.

In this study, the current situation of Şirince Village was evaluated according to sustainable construction principles. The evaluation is carried out through the strengths and weaknesses of the village according to social, economic, biophysical and technical sustainability principles. According to the evaluation it can be mentioned that although the settlement still preserves its local characteristics to a degree, the settlement has some important problems which needs to be immediately improved. Although these principles offer a multi-stage framework which involve different suggestions it can be mentioned that the main aim of them is to preserve the vernacular architectural tradition of the village. Consequently, the suggestions mainly refer to;

- Human health and social justice should be taken into consideration in construction and urban planning
- The relationship between the buildings and the urban area has to be improved
- Design, construct, maintain and demolish of the buildings has to be made by taking advantage of local materials and resources, adapting to environment and climate, respectful to the nature
- Passive solutions such as a good orientation, suitable positioning of windows, a good envelope design has to be carefully evaluated to decrease the energy demand and reduce the carbon emission of the buildings
- Public, local, civil and private organizations should work together in order to preserve the vernacular architectural tradition of the village and to renovate the idle buildings
- The local agricultural products and traditional village products also has to be improved to decrease migration, ensure the sustainability and to spread the tourism throughout the year
- The awareness of the local residents about the tourism activities has to be increased in order to address more fundamental development goals of the region

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Also, the management plan for preservation has to be put into force as soon as possible by taking into consideration the suggested precautions.

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Resume

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Spatial Analysis of Cultural Agglomeration in a Monastery in Cyprus: A Non-Choronological Reading Prior to The Conservation Process

Senem Doyduk*

Abstract

The research presents the spatial analysis of the Acheiropitos Monastery in Kyrenia of Cyprus to analyze the processes of historical agglomeration through time. The analytical survey drawings are used for elucidating the accumulations and layers on the buildings. This paper problematizes various conservation methodologies, which erase traces of different periods due to the a-priori categorisation of the architectural elements via their historical, cultural and aesthetic values rather than their value as a whole. Along this path, the main argument of the paper is developed along the axis of discussion regarding the difference between two synonymous terms explaining the meaning of agglomeration, accumulating and layering. These two terms are used for different cases particularly to be able to present the differences in historical agglomeration processes. In this context, the difference between the

Keywords: *Acheiropitos, monastery, layering, accumulation, Cyprus*

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terms accumulation and layering is emphasized not only as a crucial point in explaining the nuances in the process of agglomeration but also as the main motive behind developing a case-specific conservation strategy. After a basic description of the monastery, the surfaces of buildings are analyzed for understanding the mechanisms of accumulation and layering. The paper claims that the way of analyzing the historical spaces may also determine the method of conservation. In other words, defining the traces and explaining the agglomeration process in historical contexts determine the conservation method that either classifies the cultural objects or otherwise.

INTRODUCTION

The topic of this paper is the spatial analysis of a Byzantine monastery in Cyprus. One of the aims is to outline the main historical background of the site. The buildings of the site will be described in order to present the overall status of the complex, and the architectural elements will be individually explained, in detail, to illustrate the process of spatial agglomeration. The different types of spatial agglomeration are illustrated through analytical survey drawings, which took approximately six months to complete on the site. The discussions on the types of spatial agglomeration are of vital importance, as the conservation process will start at the site in the near future. The site has been closed to the public since the second half of the twentieth century. Control and usage rights have recently been given to Girne American University, thus beginning a new cultural, academic and educational period of the site's history, after the end of its use for military purposes during the period between 1974 and 2008.

Before starting the conservation and restoration process, it is crucial to stress the importance of the periods of agglomeration, as they determine decisions about conservation. The main theme of this paper is how conservation decisions are made; and how the identification of agglomeration and different types of agglomeration (namely accumulation and layering), affect these decisions.

This paper problematizes the kind of conservation methods that erase traces of different periods from the site by categorising the architectural elements via their historical, cultural and aesthetic values. These architectural elements are essentially, the key data for the traces of agglomeration. The main research question is how the spaces of this monastery site have agglomerated from the fifth century to the twenty-first century. This paper argues that it is necessary to clarify how spaces agglomerate in order to be able to define the direction of the conservation process. If this question were not solved, the most important potential effect of

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conservation decisions would be the loss of the traces of certain periods. Conservation decisions rank architectural objects according to values assigned on the basis of factors such as: age, stylistic qualities, individual characteristics, and so on; thus some objects are preserved, while others are removed during the conservation decision process.

The stance of this paper concerning conservation decisions about objects at multi-period sites is that the artefacts should be evaluated via their historical value. The main debate is whether to forbid the removal of any object at the site or whether some of the non-valuable objects may be removed. This monastery site is a highly controversial case in this area of conservation discussions. Various comments and suggestions have been made concerning the critical evaluation of the architectural objects of any site; a traditional approach regarding the choice of which objects to conserve from different periods of this monastery would be based upon their historical values. However, this paper argues that an additional factor to consider is the place of any architectural element within a process of agglomeration.

TWO SYNONYMOUS TERMS EXPLAINING the MEANING of AGGLOMERATION: ACCUMULATING and LAYERING

The The process of the spatial evolution of this monastery has been analysed using the concept of agglomeration; and not surprisingly agglomeration processes have been identified throughout, as it has such a long history: continuously in function from sixteen centuries onwards. The use of the term agglomeration is not commonly seen within conservation literature, although it is mentioned in particular works such as Pickard's town evaluation characterisation (Pickard, 2002). He uses the term at a different scale, analysing towns in terms of agglomerations of buildings at different periods. (Jokilehto, 2002) quotes from Prof. Sydney Colvin: in his definition of conservation principles, he gives accumulated historical value an important place. The term layering is commonly used, especially in archaeology, including urban archaeology (Polyzoudi, 2013) (Polyzoudi, 2013). Essentially, the term layering can be used as an analytical tool at different scales, from individual buildings to a broader urban context. The term stratification is also used to define the process of historical layering and agglomeration in the discipline of archaeology. (Schnapp, 2001) has termed the analysis of historical layers as layer-science, defining it as a survey of surface deterioration.

In this context, I want to argue that there is in a fact a difference between the terms accumulation and layering, and that this is a crucial point in explaining the nuances in the process of agglomeration in historical buildings and larger scale contexts such as towns. The term of accumulation will be used for the re-use of ruins and artefacts without a coherent systematic logic. However, the term of layering will be used to define the remains of the closer historical periods. In other words, layering, as a process is easier to recognise and define; layers are clearly visible. On the other hand, elsewhere I have explained accumulation as a kind of mess; individual ingredients (or architectural elements) are mixed up and hard to differentiate in a linear way.

The method described above of interpreting historical spaces also paves the path to determining the method of conservation. In other words, defining the traces of the periods and explaining the process of agglomeration in historical contexts determines the method of conservation that either evaluates or classifies the objects in site. It is therefore in opposition to the evaluation of objects in terms of a hierarchy of value that guided conservation decisions in earlier periods. However, historical truth cannot be categorically known or told; it can only be a process of post-evaluation in the present time. In fact, assigning a certain value to a particular object because of its date may lead the conservation strategy to remove other objects that belong to the same accumulated clusters. This could be a dangerous course of action, one that could even lead to total losses of information and objects about particular periods (Doyduk, 2010). The main analytical approach to this agglomerated monastery site is to assign equal important to all objects and periods that goes beyond a chronological categorisation. The reason behind this attitude is that the changes that took place within the monastery do not exhibit the characteristics of a thematic and/or chronological integrity. This approach provides a focus on the process of accumulation and gives a chance to preserve all the architectural, spatial and memorial traces that have left their mark on the buildings' surfaces. This article will try to provide a spatial reading by dichotomies of agglomeration terms, concentrating equally on all periods in the Acheiropitos Monastery.

THE BASIC DESCRIPTION of The MONASTERY

Acheiropitos Monastery is located nearly eight kilometres west of Kyrenia in the Lapithos district of Cyprus (Figure 1). The site is near the coast and the surrounding settlement consists of military bases (Figure 2). The monastery measures 90 metres from east to west, and 56 metres from north to south. The five-decare area

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contains three historical monumental masonry buildings and two small modern concrete additions (Figure 3).

Figure 1. Location of Cyprus, Kyrenia and Achiropitos Monastery

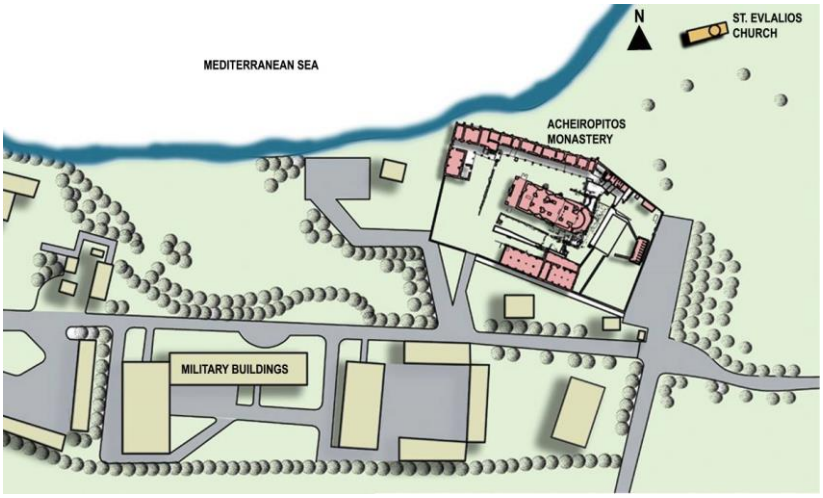

Figure 2. Site plan of the surrounding settlement

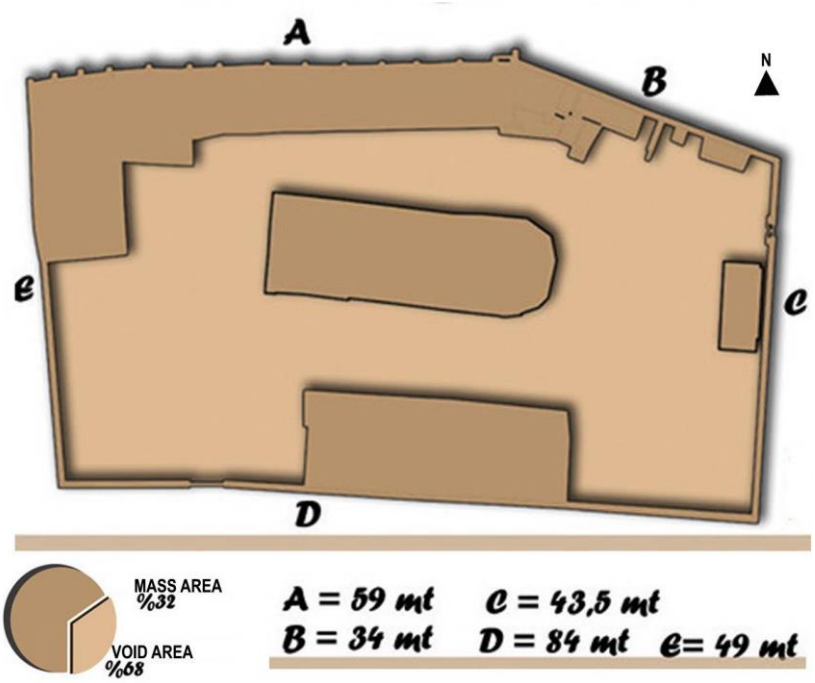

Figure 3. Masses and voids in the site plan

The three masonry buildings are the central church, the building on the north wing (two-storey) and the building on the south wing (single-storey) (1). Besides these three historical buildings, there are two small concrete buildings that were built for military purposes (Figure 4). The monastery was used in its original religious function until the beginning of the twentieth century, when a period of military use started: Greek and then Turkish armies used the site until 2008. Girne American University later rented the building complex from the government. Even though comprehensive and professional restoration work has not yet started, the university takes care of the buildings by carrying out simple repairs and protective conservation measures.

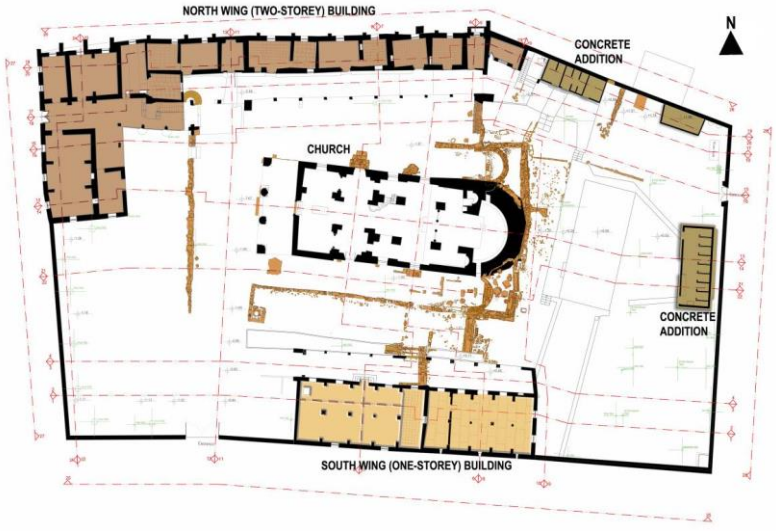

Figure 4. Survey drawing of the site plan, enclosed spaces

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THE SPATIAL ANALYSES of ACHEIROPITHOS MONASTERY

The layers that can be observed upon the surfaces are inherited from these two main functions, religious and military. Although there was only one major change in function, needs relating to the military period resulted in further additions and layers to the buildings and open spaces.

All the monumental buildings at the site are multi-period. The analysis of historical periods will be conducted on a building-by-building basis because each was built at a different period. The analytical examination of the traces from different periods will be carried out on relevant surfaces, such as: ground surfaces, ceilings, and roofs, and the surfaces of the exterior façade and the interior spaces. The shape and material differences of the surfaces give clues about historical interventions. Moreover, changes in planimetric features within the spaces, the expression of the façades, in the pattern of the semi-open spaces (e.g. arcades), and in the proportions from room to room will be the main clues to help track down processes of agglomeration in the chronological analyses. The terms layers and accumulations that focus on the chronological classifications, and thus the divisions, will be the main keywords for analytical reading in this article.

ANALYSIS OF THE SITE

Before delving into specific examples of individual building to building, I will describe the traces of the previous periods observed at the site (Figure 5). As mentioned above, there are five buildings on the site, built at different scales and in different centuries. Construction started in the fifth century and continued until the beginning of the twenty-first century (2). The dating issues are based on historical sources, which are detailed below, particularly in the descriptions of the individual buildings. This article will try to analyse the buildings by focusing on the traces of changes and additions in order to find out the characteristics of the period(s) of the buildings. The traces of previous periods do not always provide exact dates, but the aim of this article is to show the complexity of the periods that can be seen on the building surfaces rather than to focus on the specifics of each period. In addition to the buildings exist present day, there are also some traces, which provide limited information about architectural elements of buildings that cannot be accessed currently, including the old enclosing wall, the bell tower and the remains of the wall corner.

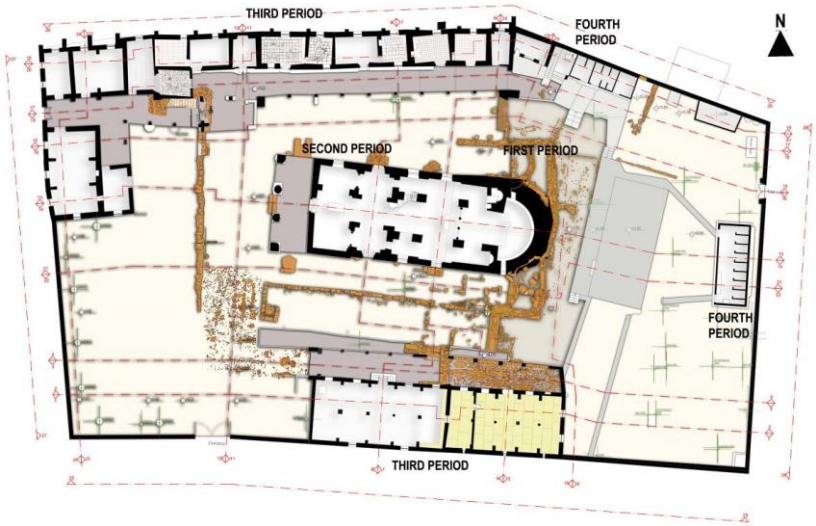

Figure 5. Survey drawing of the site plan, semi-enclosed spaces

The Old Enclosing Wall has been mostly demolished, but it can be sighted from a photograph in Luke (Figure 6a) (Luke, 1957) that it formed the boundary of the monastery. The corner of the one-storey building has some outcropping stones, and this building was probably related to the enclosing wall. As can be clearly scent out from the site, the old enclosing wall has been demolished and present enclosing wall has been built with the traditional stones of the site. Unfortunately, there is no document that gives the exact date of enlarging the site, but it was most probably done during the first half of the twentieth century. The Bell Tower's photographs (Figure 6b) (Lazarides, 2005) from different periods show its architectural concern, but there is no trace of it in its original location. There are some Remains of a Wall Corner as highly sophisticated mosaic designs inside the church and south wing building. In addition to these, two different areas of mosaic patterns were found at the site, near the remains of the wall corner in 2014 (Figure 6c). This specific corner is now unconnected with any other architectural remains, but it can be assumed from the remaining mosaic pieces and from traces of a window line in the wall that there was a closed or semi-open space here. These wall and tower remains can be understood to be remnants of currently unreachable destroyed architectural elements seen at the site. In fact, all the buildings at the site have remnants from different periods.

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Figure 6. (a) The historical image, current status, architectural survey drawing of the old enclosing wall, corner of the single-storey building (Luke, 1957, 102) (b) The historical image of the bell tower (Lazarides, 2005, 159) (c) Image of the current status

ANALYSIS OF THE CHURCH

The key authors who have written about the monastery mainly give dates for the construction of the church. Most of the literature about this monastery focuses on the church, such as the fact that it is the most intact and the oldest building on the site. Like the two other monumental buildings, the church is dated to different centuries in the literature. The church emerges as the most multi-layered building on the site (Figure 7). Some authors assign dates to within a specific century, but others, such as (Hunt, 1990), date it more broadly to the Early Byzantium Period. The dates assigned by different authors range from the tenth to the thirteenth centuries (3). The existing church, built upon the basilica, has three aisles. Other remains of the basilica at the site give the impression that it had a five-aisled plan. However, (Papageorhiou, 1986) suggests that the basilica was built with seven aisles in its

original form. If this is the case, the two monumental buildings that lie along both sides of the church might be concealing the two remaining aisles. The remains of the short wall that can be seen in the south part of the church as a line could well belong to the fourth aisle of the basilica. He dates the basilica even earlier than Gallas, that is, to the end of the fourth century (Papageorhiou, 1986). The ruins of the old basilica can be seen around the church and on the floor of the church as a flooring material. Furthermore, there are also some interesting examples of agglomeration (i.e. coexistence), such as the column basement built into the church wall (Figure 8). As shown in Figure 7, if the ruins of the basilica are assumed to be the first historical layer of this building, the second layer can be considered to start from the apsis section, ending at the third column group of the four groups. The column bases are rectangular without any change in shape due to their inclusion in later architectural developments corners up to this point. The third period of the church's stratification can be assumed to start with the north and south doors. The interior and exterior narthex is dated to the same period in the literature (Thurston, 1971), but detailed observations at the site show some differences between the architectural styling of both spaces. Taking these details into account, the interior and exterior narthex can be understood as two different, consecutive layers. The both narthexes might have been built in the same century, but the connection of the two spaces shows some architectural inconsistencies, whether this was due to a change in workmanship or some other unexpected development. As a result, the narthex area can be dated to two periods, the fourth and fifth layers. As discussed before, one of the important reasons that we cannot date the building in a linear manner is the history of the apse. Despite the fact that the oldest remains in the area of the church are in the eastern part and several later additions were built onto the west end (for example, the sixteenth-century narthex), the apse (at the east end) had been demolished and rebuilt. In other words, the apse was built, according to (Gunnis, 1973), either at the end of the fifteenth century or at the beginning of the sixteenth century, although it might be expected to be the oldest part of the building. (Gunnis, 1973) asserts: "It seems probable that a complete rebuilding was contemplated, although only the apse was erected".

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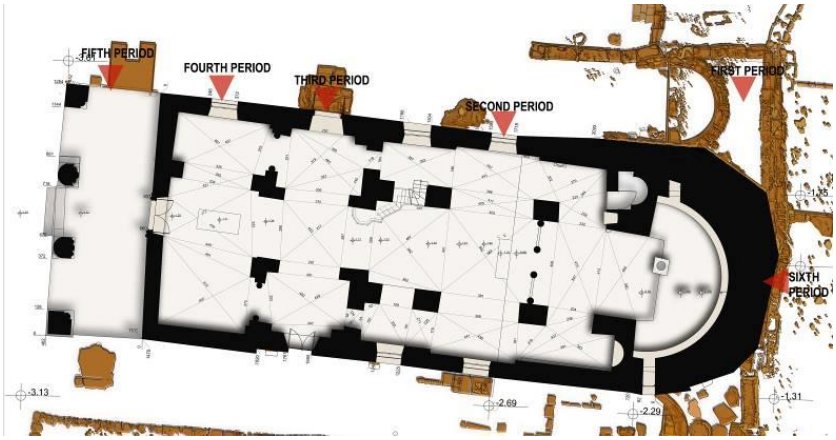

Figure 7. Survey drawing of the church building, floor plan

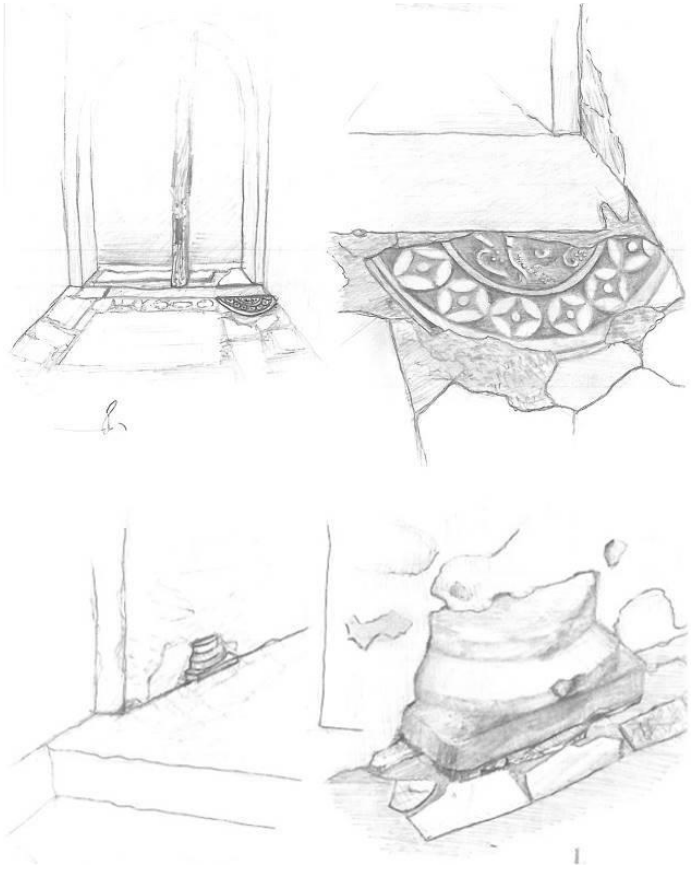

Figure 8. Sketches of agglomeration cases

The covering material of the church floor is one of the most useful tools for analysing the building periods (Figure 9a). The changes in materials used can be seen clearly through the material analyses (Figure 9b). The covering material of the church floor is an opus sectile-type mosaic as far as the third layer. The mosaic covers the church floor throughout the second and third layers ending at the fourth layer: the interior narthex. Limestone is used as a covering material here forming the fourth layer (4). For the fifth layer, a semi-open space (the exterior narthex) pebble stones

are used for the most part. However, opus sectile mosaic tiles also appear here. The differences between the covering materials used on the church floor can be observed most clearly in the section that survives from the fourth stage of the building's history. The limestone used in this section that belongs to the fourth stage of the building agglomeration can be clearly distinguished from the sections that survive from the third and the fifth stages.

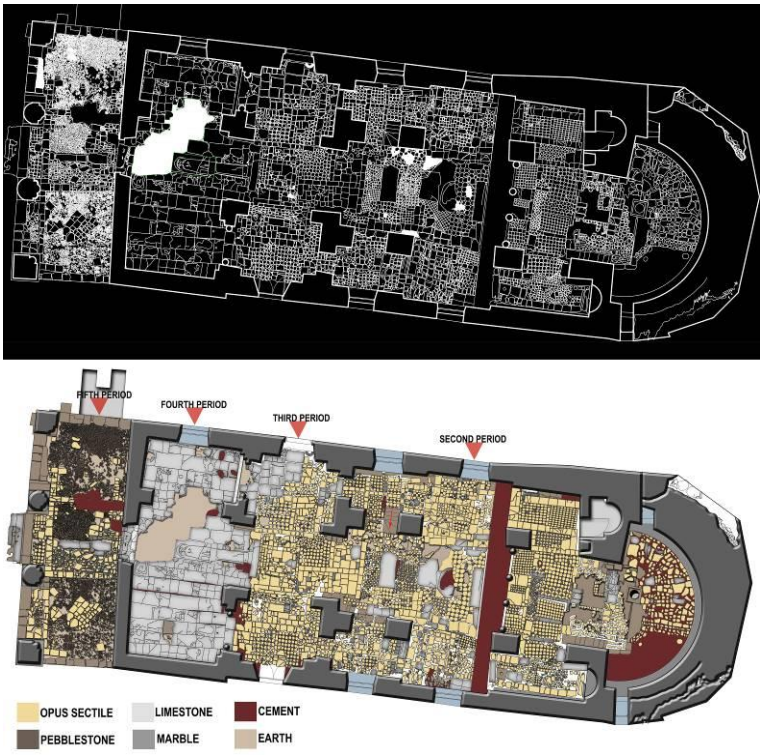

Figure 9. (a) Survey drawing of the church building, mosaics (b) analyses of the church building, mosaic stone types (c) image of the tombstone

The ceiling plan of the church displays symmetry where vaults, domes and arches are used to cover the ceiling (Figure 10a). But at the north side of the interior narthex, there is an irregularity in the organisation of the ceiling. Although the whole ceiling of the interior narthex is covered with a ribbed vault, in one specific area, a tunnel vault can be seen. This difference may have occurred for numerous possible reasons during the construction process, but most likely this area was demolished and rebuilt later. This line of reasoning is taken because of a small yet significant trace at the surface that resembles a line of a gap closed later on at the west exterior wall of this specific part (Figure 10b).

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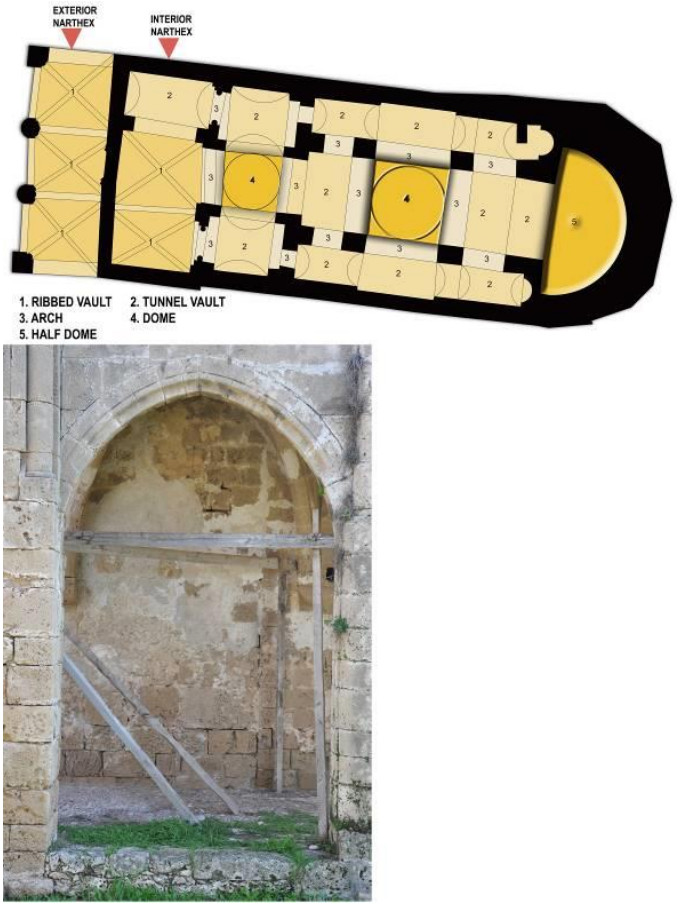

Figure 10. (a) Survey drawing of the church building, ceiling plan (b) Image of the exterior wall from narthex

The roof plan of the church is one of the most significant parts of the building to demonstrate the process of agglomeration (Figure 11a-11b). This is because the layers can be seen clearly, and the design of the building roof is aesthetically striking, with the different heights of the domes at the upper level. The core of the building, which can be termed the second layer due to the remains of the basilica, can be read clearly from this drawing in Figure 11a and Figure 11b. The elements that belong to the second period include the domes and gable roofs. The third layer also has a dome, which is lower than the one from the previous period. There is a unique detail at the intersection of these two layers. There is a window in the west wall of the roof that marks the boundary of the layer from this period. When the new layer started to be built, i.e. the third period in the history of the roof, this window was not closed. Instead, a new dome was built just beside the wall. The gap left between these two walls is only 17 centimetres and the window, 60 centimetres in height, faces this tiny gap. The window can be seen from the roof level; it has been closed from the inside. This relationship can be clearly seen from the longitudinal section of the church (Figure 12a, 12b).

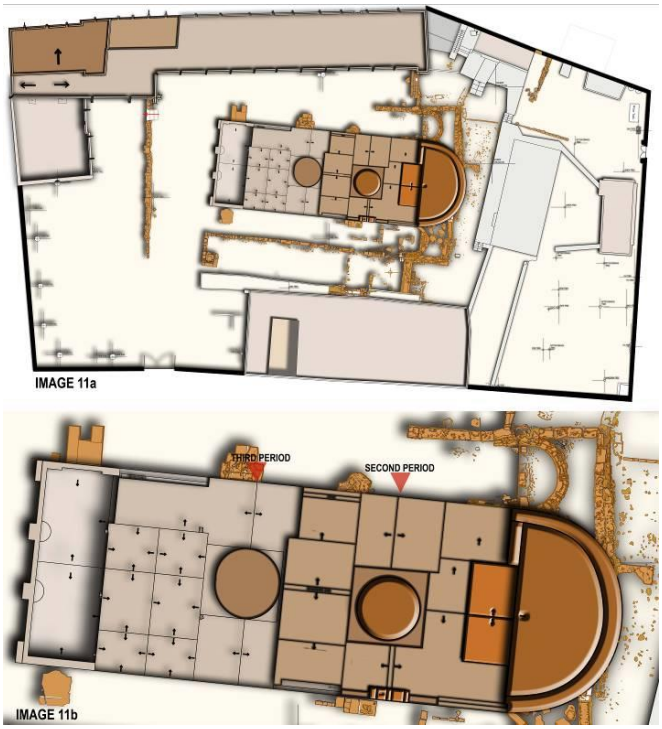

Figure 11. (a) Survey drawing of the site, roof plan (b) survey drawing of the church building, roof plan

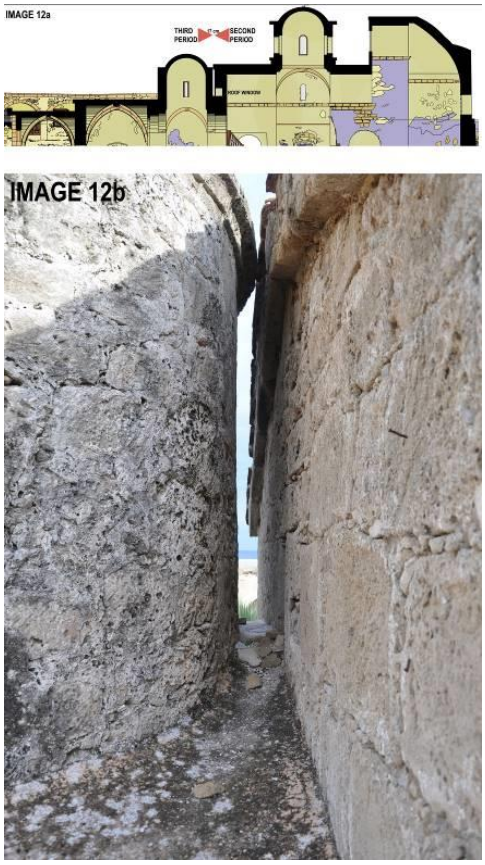

Figure 12. (a) Longitudinal roof section of the church building (b) image of the roof window

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The layers of the church can also be examined from the north and south façades. The north elevation gives information about the boundaries between the second and third periods, the third and fourth periods, and the fourth and fifth periods (Figure 13a). The south façade also shows the same boundaries clearly, via the interventions from different periods (Figure 13b). Besides the layering that is described above, there are also some connections between different periods that can be defined as an accumulation. These connections can be seen from the elevations. The south facade of the church has further traces of accumulation. In the second period, changes in the building surfaces indicate that the bell wall of the church was added later on. The trace of that addition can be seen from the facade. The earlier roof was gabled and some basic repairs and minor additions were made to the surface in order to make it flat (Figure 13c). Another case of accumulation can be seen near the right side of the bell wall where the adjacent wall is built in a different style of masonry (Figure 13d). The relationship of this part of the elevation with the roof plan gives the impression of a repair of the roof valley.

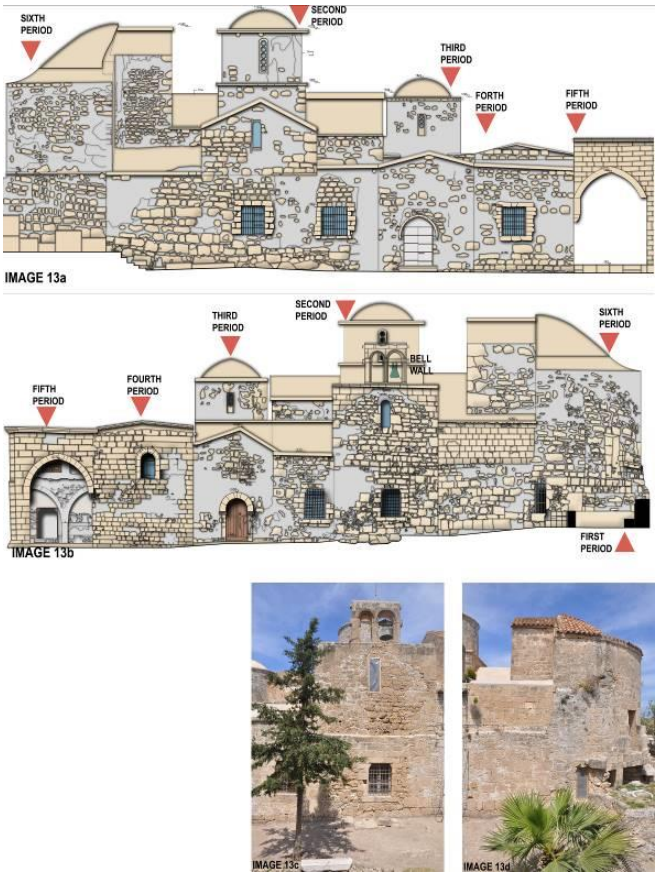

Figure 13. (a) Survey drawing of the church building, north elevation (b) survey drawing of the church building, south elevation (c) image of the bell tower (d) image of the raised wall

ANALYSIS OF THE NORTHERN WING

This building, with its long, impressive façade facing the coast, is located along the northern side of the church and is an L-shaped, two-storey building. The sea-facing façade is in 59 metres long. The visual impact of the building from inside the monastery, with its series of arcades, is less solid compared to the sea façade, which has an extremely powerful massive effect, with windows that were evidently enlarged at a later date, as can be understood from the traces on the walls. (Enlart, 1987) dates this long building back to the fifteenth century. He does not describe the consecutive periods of the building but names the second floor as a modern addition.

The first floor of the north wing was added at a much later date than the ground floor; in addition, the inner rooms of the ground floor show evidence of various periods (Figure 14a). The west corner of the building, with its three rooms, is the oldest part. A two-roomed building can be seen today (room numbers II-G 13 and II-G14 on the ground floor plan), but we can see from the traces of a closed door on the south wall of room II-G 13 that there were originally three rooms. The wall separating the room II-G 13 was demolished and an arch was built in its place. The door of the third room was blocked up and filled with brick: its traces can be seen where the plaster has been removed from the wall (Figure 14b). That original part (Rooms II-G 13 and II-G 14) was built in two storeys in the early stages and it is the oldest part of this building.

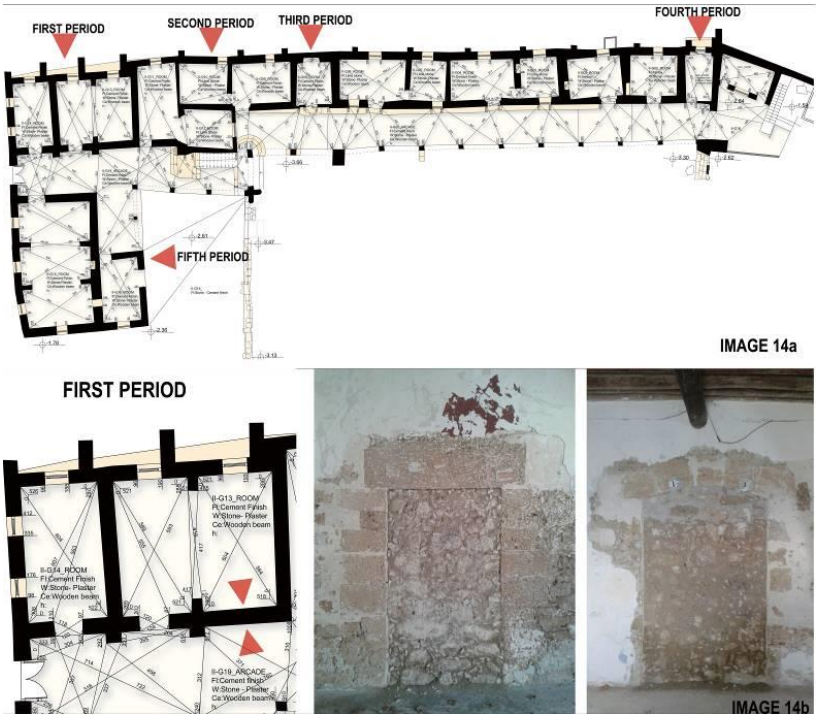

Figure 14. (a) Survey drawing of the north wing building, ground floor plan (b) detailed plan, image of the filled door from first period

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The original stairs were located elsewhere and were probably demolished to enlarge the building to the east. There are numerous traces of the spatial organisation of rooms II-G 10, II-G 11 and II-G 12 on these rooms' ceilings: the inner and outside walls confirm this interpretation. The stairs could have been located somewhere in room II-G 11. The northern façade gives an integrated sense with its four vertical window groups in the section from the first period (Figure 15). Moreover, the traces of stone patterns on the inner face of the northern wall of room II-G10 display stair-like characteristics. The stairs could have started in room II-G 10, rising through room II-G 11 to the upper floor. It is thought that the room II-G 11 was constructed during the first period; however, it was not built as a room, but formed the stairwell.

Figure 15. Survey drawing of the north wing building, north elevation

The second stage of the northern wing includes the core of the building, and is made up of rooms II-G 09, II-G 10 and II-G 12. This area looks like a unified mass from the north façade, particularly because of the common language of the buttress styles, which differ from the rest. However, from the interior perspective, the organisation of this group of rooms, and especially the ceiling plan, is very complicated. The analysis of the periods for this core area cannot be explained by the terminology of layering. Each surface, including walls, floors and ceilings, changed over and over again, so that there is much overlapping of the different layers. Therefore, it makes more sense to say that each period is accumulated here (Figure 16). Room II-G 10 has numerous irregular formations (5). The second, complicated stage ends with room II-G 09 and the third period starts with room II-G 08, which was not a room but an entrance in the original period.

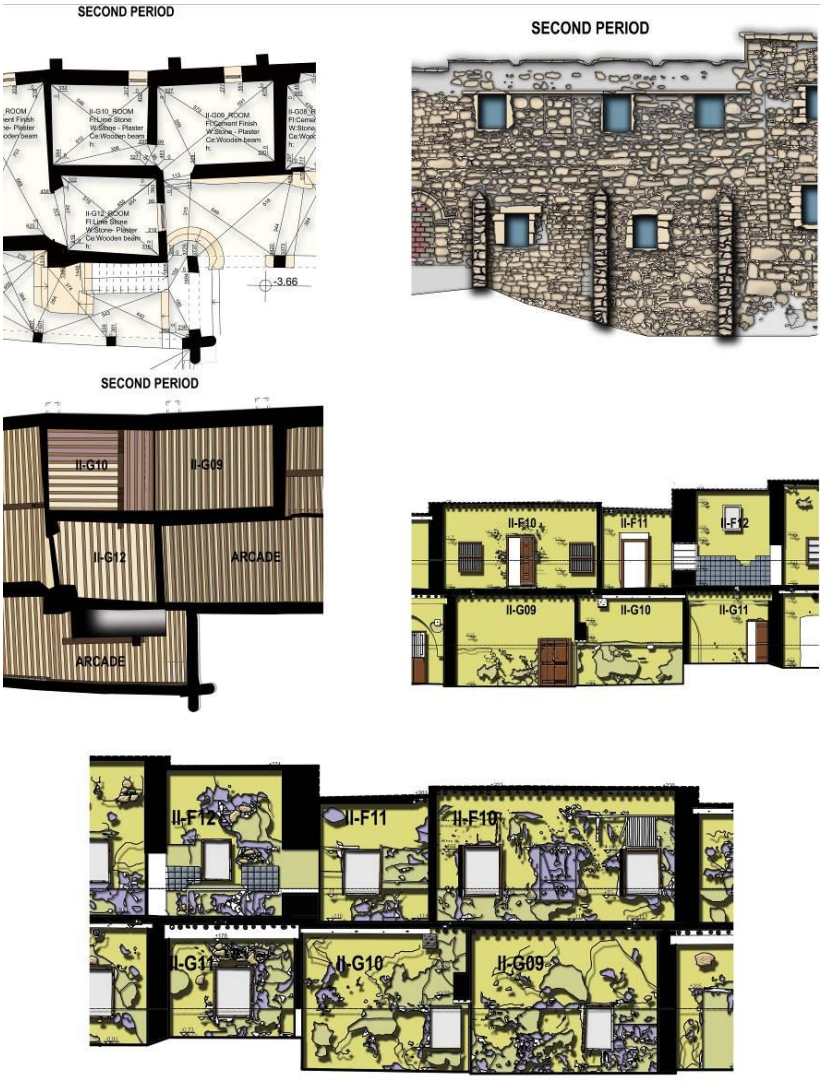

Figure 16. Detailed plan, sections, façade of second period

The third stage of the building starts with an entrance along the seashore in room II-G 08. Today, that entrance cannot be easily identified from the inside because it has been blocked in with a brick wall and plastered. However, the facade on the north side is not plastered and so the richly ornamented entrance archway can be seen. Another clue is hidden behind the supporting column, at the ceiling level, which is opposite room II-G 08, within the arcade. The small ruined stone is thought to be the trace of a former arch, which gives the impression of having been at one end of the building (Figure 17). It may be assumed that the building up to this point (i.e. up to room II-G 01) was constructed during the same period. There is another irregularity in room II-G 07, in that it has a different ceiling design; there are no other traces or clues that help identify the history of construction or period under repair. The reason for this change in the ceiling design of room II-G 07 is not clear (Figure 18). Peculiarly, this room has its entrance from the next room: that is, room II-G-06. This unusual spatial relationship is a typical characteristic of the rooms of this

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building. Rooms II-G 05 and II-G 04 also have the same awkward relationship, but in room II-G 05 no change in its ceiling organisation can be seen.

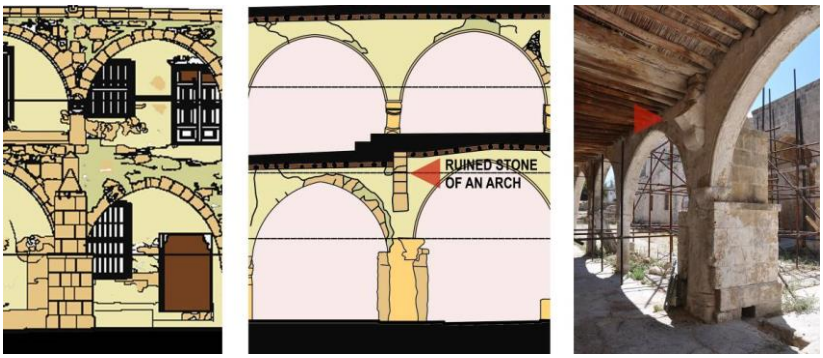

Figure 17. Detailed sections, image of the ruined stone of an arch

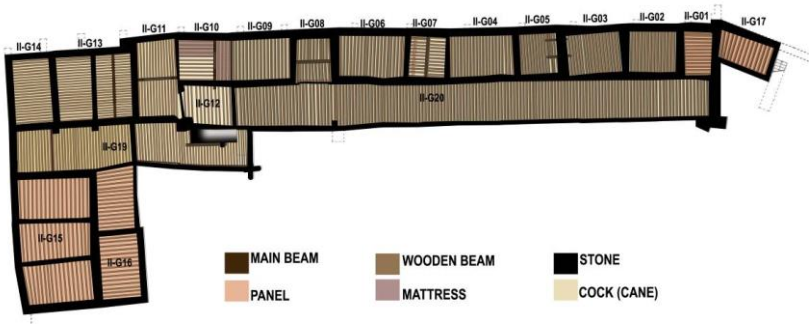

Figure 18. Survey drawing of the north wing building, ceiling plan of the ground floor

Room II-G 01 assumed to have been built at the fourth stage, as it contains some of the unfinished sections were also destroyed (Figure 19a). There are some building remains in front of the window at the north facade, but these cannot be accessed because of the density of wild trees here (Figure 19b). Nonetheless, an arch and a platform can be seen from a distance. The room might have been designed as another entrance, as the trace of a gap within the masonry is clearly visible under the window (Figure 19c). These traces of the arch are along the north side. However, this room also has traces of some ruins along the east side. In front of the room there is a huge column footing on which there are the remains of a broken archway (Figure 19d). The old photograph of (Luke, 1957) also shows the unfinished part at the point of the single-storey arcade (Figure 6a). From the examination of these architectural ruins, it can be assumed that room II-G 01 was a nodal point from which the building could have extended towards the north and east.

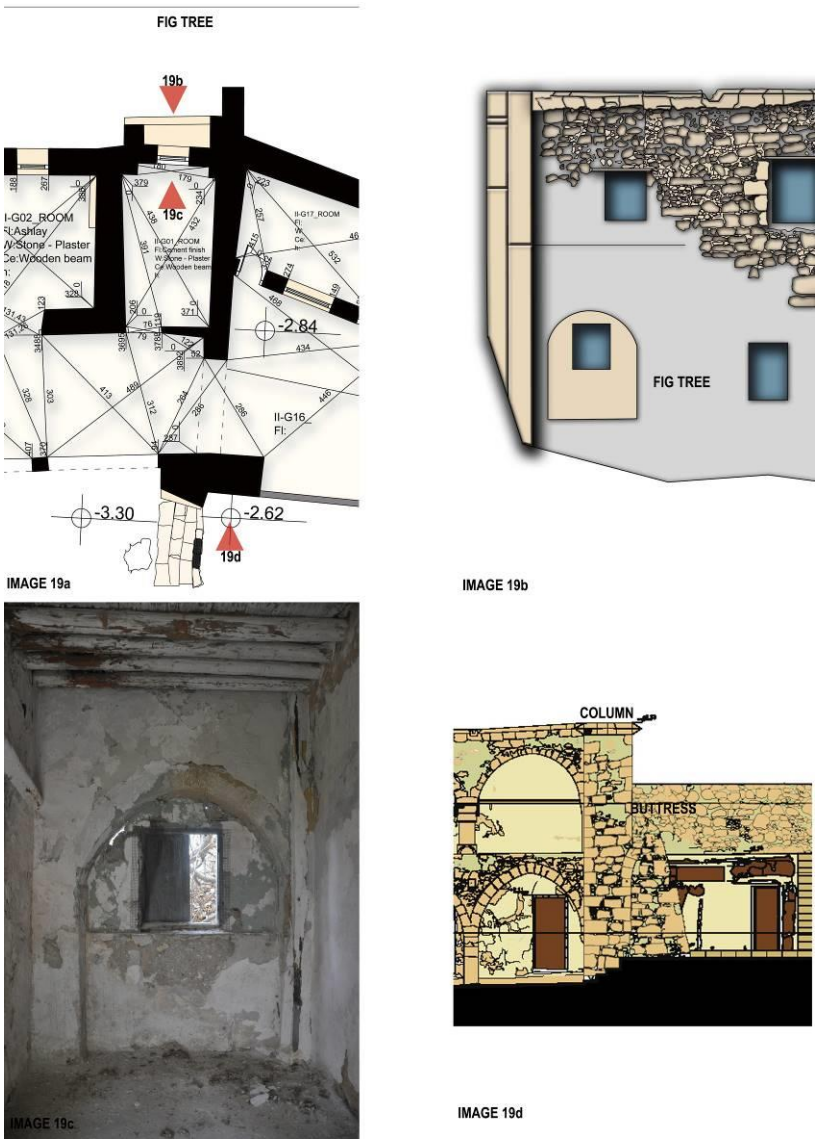

Figure 19. (a) Plan of the room II-G 01 (b) Survey Drawing of the North Façade of the room (c) Image of the room's north wall (d) Survey Drawing of the Column Footing

In the north part of the building, there is an addition that may be dated to the fifth stage. This section has three different spaces of different characters and dates: Rooms II-G 15, II-G 16 and the arcade space at the corner. Even though it cannot be definitively asserted, the arcade and room II-G 15 seem to be older than room II-G 16. Room II-G 15, which is separated into three areas by arches, had some changes to its roof. The west façade of the building provides evidence for the original height of the building (Figure 20a). The horizontal line can be seen from the drawings; the remains of an old gutter also give information about the original height (Figure 20b). While the façade provides the evidence just discussed, a historical photograph ("The Other Cyprus," 2009) yields completely different information about earlier periods (Figure 20c). Two women are standing in the foreground of the photograph; the entrance façade of the church can be seen in the background, which means that they must be standing on top of room II-G 16. What is noticeable is that the

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ground level (meaning the surface of the roof) on which they are standing is today very high- higher than the gutter trace mentioned above. Thus, the level of the gutter, the level shown in the photograph, and today's roof level are all different. This area had various changes made to it, and, in a similar way to the core of this building (i.e. rooms II-G 09, 10, 12), the layering cannot be distinguished clearly. The agglomeration of different periods can therefore be defined with the term of accumulation.

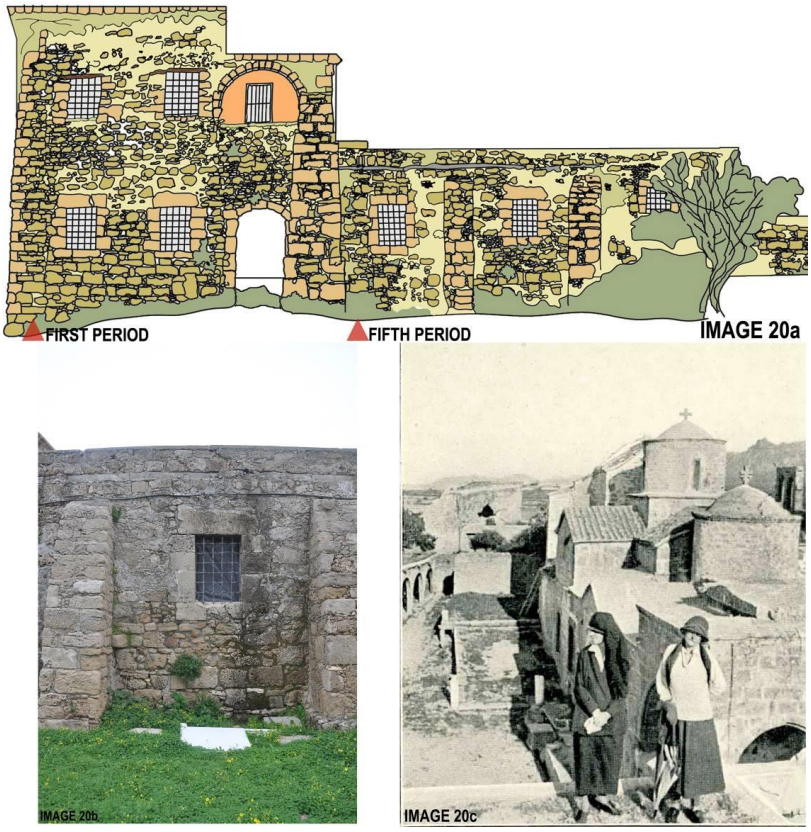
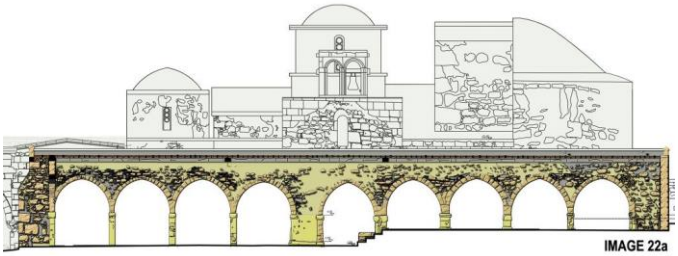


Figure 20. (a) Survey drawing of the north wing building, west elevation, (b) Figure of the elevation, (c) An image from the west addition of the north wing (The Other Cyprus, 2009)

This arcade building is located to the south of the church. It has a rectangular shape and two large rooms with interior columns and arches. The exact date of the building is not known, but what is clear about this building is that the two rooms were built in different periods. It cannot be discerned whether the building is under construction or undergoing repairs, but there is an old photograph from the 1930s (Figure 21) (Enlart, 1987). As (Hanworth, R. & Pollock, 1992) suggest, construction of the buildings started around the church in the twelfth century.

Figure 21. Image of the monastery complex from 1930's (Enlart, 1987)

The two rooms I-G 01 and I-G 03 can be dated to different periods because of the abundance of traces of different constructions and differences in architectural styles. Firstly, the rooms have a significant height difference: 92 centimetres (Figure 22a). The designs of columns that are used for the arcade change at the juncture between these two rooms (Figure 22b). The window organisation from the west side appears to be the same; however, the organisation in the south area is totally different. Furthermore, the sharp vertical line of a change in the masonry style at the south façade gives the sense of an abrupt separation (Figure 22c).



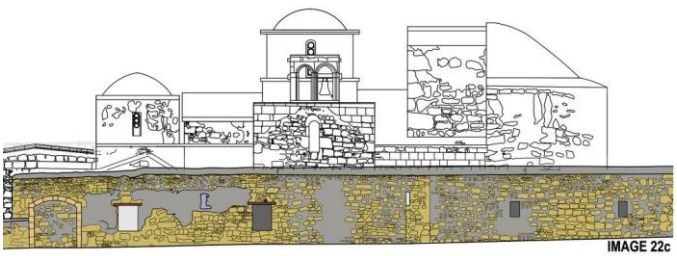


Figure 22. **(a)** Longitudinal section of the south wing building from arcade **(b)** Survey drawing of the south wing building, north elevation **(c)** Survey drawing of the south wing building, south elevation

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I-G 02 is a small room, which must have been separated from room I-G 01 at a later stage; the two rooms were once one space (Figure 23a). Room I-G 03 also displays traces of accumulation. There is an entrance at the end of the west side of the room, but it is not visible from the inside. The south façade of the building has a large ornamental gateway (Figure 23b), which unfortunately has been filled with stone masonry. Inside this room towards the arcade side, a faint line can be seen on the surface under the window, which gives the impression of an old doorway (Figure 23c). Here the cluster of stones within the masonry could be the step of a former stairwell.

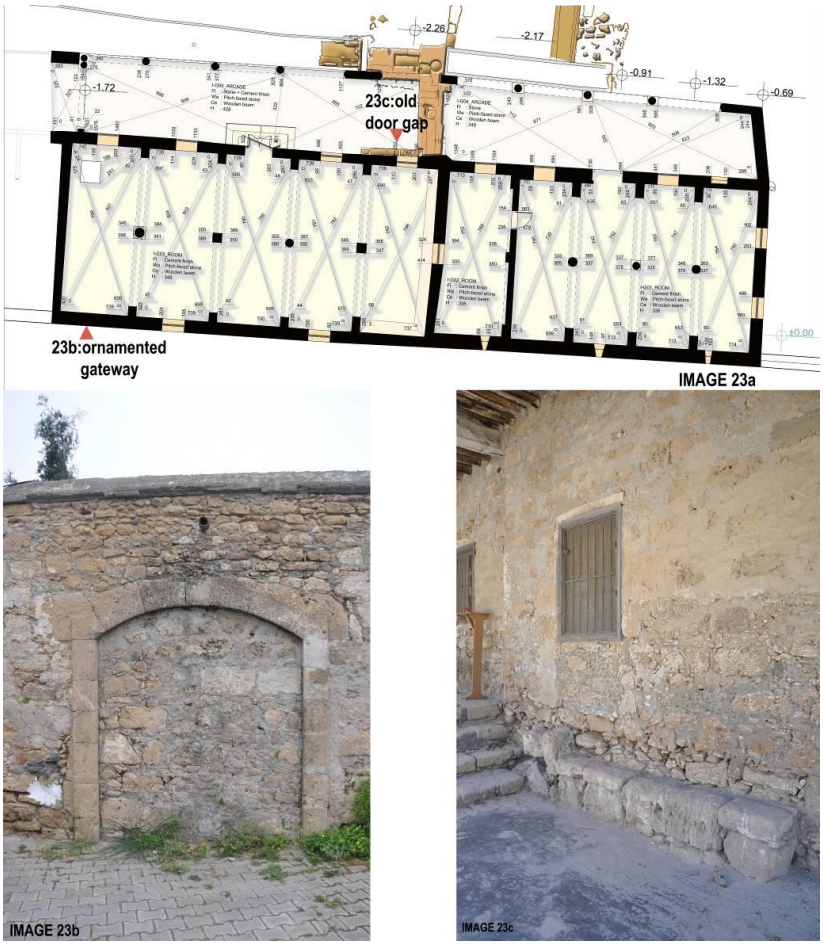

Figure 23. (a) Survey drawing of the south wing building, ground floor plan (b) Image of the ornamented gateway from south elevation (c) Image of the wall from arcade

The fourth layer of the site contains various concrete buildings that were added at the end of the twentieth century during the time it was used for military purposes. Two buildings were constructed to provide sanitary facilities in the complex, one for toilets and the other for showers. There is a further a single-roomed concrete structure, which stands next to the building on the north wing. Stones from older buildings on the site were reused as wall material. The material of the structural system, including the beams, floors and ceilings, is reinforced concrete but

the walls are composed of reused material, including antique column bases (Figure 5); for example, the concrete platform in front of the showers was built on a foundation formed by reused antique stones of the site. The base and body of a huge antique column can be seen in a large gap under the platform (Figure 24).

Figure 24. Image of the antique column base under the concrete platform

CONCLUSION: EVALUATION OF THE AGGLOMERATION PROCESS

With regard to evaluating the process of agglomeration within the monastery complex, two different terms have been used in this paper. The term layering has been used to describe the evolutionary process from the basilica to the current state of the church, which can be defined as a consecutive process of agglomeration with no interruption. On the other hand, the term accumulation has been used particularly in relation to the core section of the north wing.

I would argue that analytical research into the historical buildings and their processes of agglomeration must play a crucial role in the processes, methods and policies of conservation generally. The importance of identifying the processes of agglomeration, and their significance, can be illustrated with a specific example from the monastery I have been discussing: How can a conservation decision be made about a re-used antique column pedestal lying under a concrete platform as an inlay material? If the analysis of the process of agglomeration defines this as an accumulation then

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the choice of conservation methodology may well stem from such an interpretation. However, an alternative methodology, whereby objects are valued according to their perceived importance in a historical hierarchy, might lead to a conservation decision to remove the platform and preserve only the column basement, which would result in losing the accumulation value of the site. Another illustrative case, on a larger scale but within the same site, would be the difference between the significance given to the monumental medieval buildings and the contemporary concrete buildings. If a conservation decision were taken to remove the later buildings, this decision would be based on a particular reading of the past, and the accumulation value of the monastery complex would again be lost. Ridding the site of additional concrete buildings would result in the loss of the traces of military periods, which would be an important source of information for future historians. The historical value embedded in the names of soldiers or the numbers of remaining days for their release from military service that were scratched on the concrete surfaces would all be lost. For these reasons, this paper has attempted to interpret the objects and stages of the buildings for all time periods as having equal value, and has focused on the process of accumulation rather than on the individual objects and stages.

Analysing these kinds of multi-layered buildings without classifying them into distinct time zones is, of course, extremely difficult. In particular, additions, repairs and renovations make the critical reading of a historical building much more confusing. However, categorising this complex process of agglomeration into chronological segments carries the risk of creating artificial historical fragments and missing a more complete picture of a complex history. To overcome these potential pitfalls, therefore, analytical methodologies from the discipline of conservation should focus more on the processes of accumulation and the traces of overlapping periods rather than on individual objects of historical value.

In sum, this paper has argued that, reading the process of agglomeration from a chronological perspective is harmful for conservation practice. It may cause the theory and practice of conservation to fall into the trap of pushing the process towards putting the layers in hierarchical order. In some cases, this approach may even try to create a new layer. A contemporary layer may always be added during the process of accumulation, but creating a historical layer is the results of these kinds of chronological and hierarchical readings. If a spatial reading starts to make a distinction between objects from different periods

according to their ages or designs, the conservation process is then in danger of choosing which objects to conserve or to throw away. The recent past can also be of value whether due to social, cultural, historical or architectural characteristics. If the aim of the conservation process is to genuinely create a channel of continuity between the past, present and future, then each of these time periods has to be given the same value. Each building and each surface of this monastery is replete with traces of different periods. They therefore, all deserve a conservation process whereby they are treated as a palimpsest of surfaces.

Endnotes

1. The south wing, measuring 31 by 12 metres, defines the southern boundary of the monastery. The north wing, nearest to the coast, occupies an area of 59 by 13 metres. This latter building has two additions: on the eastern end, a single-storey mass of 11 by 11 metres, and on the western end a small room measuring 5 by 3 metres. The monastery church is at the centre of the site between the north- and south-wing buildings. The dimensions of the church measure 35 by 12 metres.

2. The church (interpreted as the second layer) is the oldest building (tenth-eleventh centuries) on the site. It was built on the remains of a basilica (i.e. the first layer, dating to the fifth-sixth centuries); the remains of the basilica can be seen inside the church as well as around the church. The social buildings of the monastery complex started to appear around the twelfth century, and they can be said to correspond to the third layer. The fourth main layer at the site consists of the concrete additions built at the end of the twentieth century.

3. For example, (Hanworth, R. & Pollock, 1992) date the building to the 12th century. As we understand from the literature and also from the ruins on the site, the church was built upon an older building, a basilica. In building the church, the basilica's floor and plinth wall must have been reused. As they overlap, the basilica's first layer may be defined as the base stratum, which is below the church's current layer. (Gallas, 1990) dates the basilica to the seventh and the church to the eleventh centuries.

4. A tombstone is also found in this area. The style of the tomb that is, situated at the end of the interior narthex dates to 1563, so the final additions are mostly dated back to the sixteenth century (Jeffery, 1918).

5. The placement of the beam on the ceiling and the window on the north side give clues about the size of the old room. The end point of the circular stairs, placed opposite rooms II-G 09 and II-G

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12 shows overlaps of different periods. A column stands in the middle of the top step of the stairs. The following argument can therefore be made: the small section within room II-G 10 shown in Figure 16 could have formed the exact border of the original stairwell and room II-G 09 could have ended at the line of the main beam. Previously, there must have been a wall here, which could have been demolished and replaced by the main beam to create a new room. The direction of the small wooden beams also verifies this assumption.

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Resume

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On The Nature of The Conceptual Schemata Development of Architecture Students

Hakan Anay*
Ülkü Özten**

Abstract

Embedded within the theoretical and conceptual frameworks implied by the schemata theory and studies on architectural precedent knowledge, the present study is based on a research that investigates and evaluates two major issues within the context of architectural education. First is the level and characteristics of the conceptual schema of the students of architecture have had just before their education in architecture starts, and second, the nature, and the characteristic of that precise conceptual schema's development and transformation throughout their formal education. This study, on the other hand, reports a comparative analysis and evaluation of two particular stages: 1st year, before their formal education starts, and 3rd year, as it was assumed by the study, as the stage when their disciplinary schemata is already roughly "formed." Findings showed that students not only developed their conceptual schemata and their existing schemata is transformed into a more specialized and field-specific one, but also they have developed a set of skills which might be called "designerly seeing," and "designerly thinking."

Keywords: *Education, architecture, conceptual schema, architectural precedent*

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PREAMBLE

Being its origins in Gestalt Psychology, schema theory was known to be principally conceived in the works of Frederic Bartlett, and Jean Piaget who is often recognized as the scholar who first coined the term "schema" in 1923. In general, schema theory deals with how knowledge was organized in one's mind, how it was processed, and how one's schema affects and conditions the acquisition of knowledge. In this conception schema refers to mental structures of chunks or units of knowledge stored in mind. In Rumerhart's words "Schemata can represent knowledge at all levels-from ideologies and cultural truths to knowledge about the meaning of a particular word, to knowledge about what patterns of excitations are associated with what letters of the alphabet. We have schemata to represent all levels of our experience, at all levels of abstraction." In this sense one's schemata is one's knowledge. (Rumelhart 1980).

As it was put by Paul DiMaggio (1997), perception, observation and cognition, are all dependent upon, and highly conditioned by one's pre-conceptions, namely her or his schemata. Schemata, indicates representations of knowledge, but also it is a means of one's faculty to process information. It works in various ways. For example, one's pre-conceptions might automatize her or his perceptions, make them easy, which in turn will make the phenomena disappear from her or his perception (one remembers Russian Formalists' duality of habitual and estrangement). One's schemata also condition the perceptions so that perception is almost always selective, and consequently understanding is non-objective; as once Goethe brilliantly put it "one only sees what one looks for. One only looks for what one knows." Even categories such as "attention," and "motivation," depend upon the preexistence of these structures, and so does "failure" (DiMaggio 1997). Without a pre-existing relevant basis, no new knowledge could register into one's mind, or it would be misrepresented.

Schema theory's application to the field of design and architecture is a well-known endeavor, as expected, it is particularly popular within the research concerning design knowing and learning (Webster 2008; Devlin 1990; Jacob, 1993; Minsky, 1997; Craig 2001; Akin 2001; Akin and Akin 1996; Lawson 2004; Kohls and Scheiter 2008; Oxman 2005; Oxman 1994). These applications might be interpreted as adaptation of the theory to the specificities of a domain that particularly deals with ill-defined problems and tacit knowledge, in this sense must be seen as an advance on the theory.

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THE CONTEXT OF THE STUDY

Within such a framework, (formal) education in any field could be interpreted as involving much of a development of a schema in students' minds, as well as transforming the existing one(s) to fit the needs and the specificities of the addressed field. This could be of course done in various and differing means and ways, with reference to the concerned field's epistemology and the nature of the involved knowledge, as well as the employed pedagogy since there might be competing or alternative, but equally effective and relevant pedagogical paradigms prevailing side by side in a field.

Schematic structures might be thought of as one of the primary indicators of education and cultivation of a student; in turn studying schemata of the students (its initial stage, its transformation, and change during their education) on the other hand might shed light on the nature and characteristics of the concerned development. Within this context, for example, studying freshmen's pre-conceived schemata would be particularly essential before any attempt to start their formal education, since everything would be developed starting from these existing structures of knowledge, namely the foundations upon which the education would be established, and everything would be pre-conditioned by these (Bartlett 1995; Piaget 1952; Piaget and Inhelder 1969). Particularly, understanding these would be essential since while educational models and their proposed schemata, is more situational, owing to the relatively isolated/controlled context of the educational environment. On the other hand students' pre-conceived schemata on the one hand is unpredictable and variable, influenced by many means, on the other ever changing, nowadays often with a fast pace owing to the influences of digital age and the social media.

In addition, comparative studies that focus various stages of schemata development might be used as a means of evaluation of the change and development in students' schemata, which in turn would shed light on the nature of the given education itself. That is to say, investigating these structures might give insights about not only the effect, potentialities and the characteristics of the employed model, but also about its possible flaws and shortcomings.

There exists a specific lineage of the application of schema theory to fields of design in general and architecture, that takes the theory with relation to studying past or existing works, namely precedents (Alan Colquhoun 1969; Hancock, 1986; Gero, 1990; Fabg, 1993; Caragonne, 1995; Zarzar 2003; Lawson 2004; Zarzar

& Guney 2008). This is no surprise, since design precedents (i.e. works of architecture) are the carriers or containers of knowledge, infused with all-types of (objective) knowledge, and analysis of these would help one to distill a special type of knowledge directly gained from its specific context. One could guess, this is an important way of learning and developing schemata, especially as far as ill-defined problems, and tacit knowledge is concerned this might sometimes be the best way to do so, one could evaluate it as a pedagogical device. However, reading, and a consequent understanding and evaluation, not only requires sufficient techniques or methodologies but also presupposes already existing schemata, developed to a certain level and also developed to "fit" the specificities of the examined phenomena. It is a clash of schema(s); the reader's versus the schema provided by the examined work itself, which in turn is an essentially creative act itself that would (expected to) yield (new) knowledge.

Viewed from another perspective, this framework also implies that one's ability to read a work is an indicator of state of the development of one's schemata and the level of "fitness" and overlap between her/his schemata and the schemata provided by the works of architecture under investigation. In design literature, there exists a number of similar studies investigating designers' or students' schemata using the schemata theory and content analysis (Craig 2001; Akin and Akin 1996; Akin 2001).

While the present study might be embedded within the abovementioned wider universal contexts, since it is an outcome of the tradition(s) of architectural education and related research lineages in Turkish context, and since the investigated material was actually a part of the this context it could also be embedded within this "local" research framework where various aspects of architectural design education were investigated (Aydınlı 2015; Ciravoglu 2003; Uluoglu 1990; Yurekli & Yurekli 2004; Özkar 2011; Bala and Arat 2013; Gür & Yüncü 2010; Önür 2004; Önür 2006).

PROBLEM AND AIM

This paper is an outcome of a larger research project that aims to investigate and evaluate two major issues within the context of architectural education. First is the level and characteristics of the conceptual schema of the students of architecture have had just before their education in architecture starts, and second, the nature, and the characteristic of that precise conceptual schema's development and transformation throughout their formal

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education. The concerned development is thought not to be merely about gaining a disciplinary conceptual vocabulary (i.e. a stack of concepts), but a whole mindset; a holistic organization also incorporating "designerly" (ways of) seeing and "designerly" (ways of) thinking (a la Nigel Cross') (Cross, 1982).

Embedded within the abovementioned theoretical/conceptual framework, and conceived as a part of this larger research, the present study, reports an individual assessment and a comparative analysis of two particular stages in the architecture students' formal education: the first year, and the third year (See *Table 1*)

The motivation behind such an undertaking is based on the assumption that these stages represent two important phases of their education, those have their own characteristics. First year, is above all a reference point, an departure point of any attempt to understand the nature of the education process, and also represents one side of a binary opposition, namely the "states" of "formal education not taken" and "formal education taken (after the graduation)". Second, focusing on this stage would give insights about the nature and state of the pre-existing schemata of students; "the material," that is to be processed and transformed by the formal education. Third year, on the other hand, is assumed to represent another essential stage, this time within students' formal education. It is assumed that now students formed a rough sketch of their schemata, to be expanded and advanced upon in their remaining years. At this stage, it has been two years since they were introduced to architecture culture, and embedded within the tradition of architecture. More important, it is a halfway along their formal education, a point when students were already introduced "all" of their introductory level courses, including theory, history, building science tracks, and they have already completed a number of architectural design courses as well. In turn, they were expected to be familiar with the basic notions and concepts of the field, and established a premature, but firm schema concerning architecture. The findings would indicate the effect of all the (f)actors, whether determinate or indeterminate, upon the cultivation of the student.

Table 1. Research on Characteristics and Development of Conceptual Schemata of Architecture Students. (Stages concerning the present study are highlighted)

ARCHITECTURAL EDUCATION: STAGES, VARIABLES, CONDITIONS, ASSUMPTIONS		
STAGE	**Description, variables and conditions.**	**Basic Assumptions**
1st year	**Formal education is about to start.** This Stage represents one side of the binary opposition (Formal education taken/Formal education not taken)	This stage represents the beginning phase of students' schemata prior to their formal education. It is a datum, a reference which could be used to measure and evaluate the development of their schemata throughout their formal edeucation. Conceptual schemata affacted by their informal previous experience i.e. Travel, their living environment, mass media, etc.
2nd year	It has been **one year since students were introduced to architectural culture and tradition**: basic design and introduction to architecture courses were taken. Two architecture culture courses and a number of introductory level building science courses were taken. No architecturl design, no history, no theory courses were yet taken.	Now, students are expected to **have developed a basic knowledge of architecture, and a set of concepts.** This is the first stage of their conceptual schemata development during their formal education. They were expected to utilize a number of basic architectural concepts to describe, interpret and evaluate works, but their schemata is assumed to be not yet formed since not all essentials were introduced to them.
3rd year	**It has been two years since they were introduced to architectural culture and tradition:** In addition to their first year experience in the academy, they now have copleted two architectural design courses, two art and architectural history courses, two theory and architectural culture courses, architectural representation and building science courses (all introductory level).	This stage is another datum, a reference point since students were now **completed all introductory level courses,** therefore almost every aspect concerning architecture, were introduced to them as a part of the formal education. Therefore it is assumed that **students' schemata is now more or less formed.** From now on they would be widening and deepening their knowledge and skills, departing from this "roughly" formed schemata, reshaping it or transforming it.
4th year	Graduation year. It has been **three years since students were introduced to architectural culture and tradition.** In addition to their previous experience, at this stage they have completed 2 more design courses, and all the common courses were already taken. Now the students are about to take various elective courses to orient their own path.	Since **all the common courses (both the introductory and the advanced level) were completed,** at this stage, **students are expected to have developed almost a "complete" and "advanced" architectural schemata,.** They were expected to show a more holistic and rigorous performance in describing, interpreting and evaluating works of architecture.
Graduation	**Formal education ends.** This Stage represents the other side of the binary opposition (Formal education taken/Formal education not taken)	**All the requirements of the formal education were fulfilled.** This is the final stage of students' scehmata development that could be developed by the formal education. This final stage could be be interpreted as the product and making of the formal education.

SCOPE AND METHODOLOGY

The data of the present study involves 1st year, and 3rd year architecture students' descriptions of visuals concerning works of architecture and built environment.

In total 141 students were voluntarily participated in the study where 89 of them were 1st year, and 52 of them were 3rd year. The data collection was conducted in a number of separate sessions, and students were shown visuals and asked to "describe" what they "saw" in the slide and write their report verbally down onto the provided sheet. Time was limited to 3 minutes for each slide and a limited space on the paper was provided for writing down their descriptions, to ensure the reports to be as concise as possible.

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In total, 20 visuals were presented (See Note). The selected examples were all well-known examples of well-known architects, from early 1900s (Modern Architecture) towards the present age (representing contemporary). The examples were selected to represent/carry differing aspects concerning issues such as formal and organizational aspects, style, scale, typology, usage, and the work's relation with the context, its symbolic meaning, etc. On the other hand, none of these categories was mentioned/given or imposed to students beforehand. It was all between students' schemata and the visuals.

As it was expressed in the introductory section, the collected reports were thought as the externalizations and written projections of student' schemata, formulated verbally, and as such became to be objective contents of thought (a la Popper) so that they could be investigated and analyzed.

The evaluation of students' written responses were subjected to so-called content analysis, which is widely used for analysis of visual (i.e. still images such as sketches, pictures, paintings, drawings, and video), verbal (i.e. recordings, sounds), as well as textual material of all types (Krippendorff 2004; Danilson 1977; Berelson 1952). As an extension of the method the present study employs "qualitative" analysis of "textual" material.

In total 1780 reports were individually assessed by two independent researchers, and subjected to quantitative and qualitative investigation to report down the observed patterns and motives. These reports were later evaluated as a whole and turned into a schemata map of each individual group (1st and 3rd year) representing overall portrait of their schemata. After the evaluation of each group, a comparative study is conducted between the reports of the individual groups.

FINDINGS AND DISCUSSION

Expressions Related to Spatial Aspects of the Observed Buildings/Built Environment

Although external views of the buildings were given, spatial aspects of the built environment and the buildings were expected to be referenced in many cases as a part of their architecture. The findings show that 1st year students were rarely referenced spatial aspects (0.36 references by student), if referenced these were attributed to notions such as "streets," or "squares." On the other hand, 3rd year students not only tend to emphasize spatial aspects of the buildings and built environment (3.17 references per student), their concepts were more "architectural." They used

Note:
Presented buildings/environments were, Burj al Arab in Dubai-aerial in context (Tom Wright), Residental and Office building in Ciani, Switzerland (Mario Botta), Fallingwater, Pennysylvania (Frank Lloyd Wright), Farnsworth House in Plano, Illinoi (Mies Van der Rohe), aerial photo of Habitat 67 in Montreal (Moshe Safdie), Berlin Free University -aerial (Candilis, Josic, Woods and Schiedhelm), Solomon R. Guggenheim Museum in New York City (Frank Lloyd Wright), CCTV Building in Beijing-aerial in urban context (Rem Koolhaas), Cube Design Museum in Kerkrade (Shift Architecture Urbanism), Port House in Antwerp (Zaha Hadid), La Sagrada Familia in Barcelona-aerial photo in urban context (Antoni Gaudi), Sydney Opera House (Jørn Utzon), Parc de la Villette in Paris (Bernard Tschumi), Allmannajuvet Zinc Mine Museum in (Peter Zumthor), Chichu Art Museum in Naoshima – aerial photo (Tadao Ando), Centre Georges Pompidouin Paris – aerial photo with urban context (Renzo Piano, Richard Rogers, Gianfranco Franchini, Peter Rice, Ove Arup, Mike Davies, Su Rogers), Guggenheim Museum in Bilbao – aerial phptp with urban context (Frank Gehry), The Jubilee Churchin Rome (Richard Meier), Beijing National Stadium (Ai Weiwei, Pierre de Meuron, Jacques Herzog, Li Xinggang)

concepts such as “space,” “interior space” “open space”, “semi-open space,” “closed space,” “square” and “courtyard.”

Description of Contextual Relations

Observed examples were given in context, with varying relations. Therefore, expressions concerning contextual relations were expected. Two groups differed radically from each other not only quantitatively but also qualitatively in this topic. 3rd year students used contextual references 2 times more than the 1st year students (7.4 to 3.5 references per student). However, when examined qualitatively, 1st year students’ contextual references were more of setting basic relations or locating the building (beside the…, in the middle of…) or context was used as a reference for the examined buildings (higher than…, different from.) In some cases context is described as something that is “around” the building. The term “context” was never used. On the other hand, 3rd year students’ expression of the context, with relation to building is quite complex and richer. First, the term context is widely used (1.1 per student), urban fabric and cities were cited as contexts, the building’s relation to the earth, and ground seemed to be an important contextual relation. Background of a building is sometimes referred to as a “context.”

Material and Construction System Mentions

Two groups’ references to material of the building only differ marginally (2.79 references versus 3.5 references per student) in terms of quantity. However, qualitatively they were quite different. First year students preferred to state “steel” possibly since it is an unfamiliar material, but referred generally as “iron.” Glass, if referenced, is generally interpreted as “cladding,” sometimes concrete and brick is referred as “cladding” showing that these materials were not seen as structural elements. The most important finding is that in 1st year students’ descriptions material is never expressed as a part of some type of construction system, but an isolated observation it itself. This is quite different from 3rd year students’ descriptions. In 3rd year students’ descriptions almost in every case, if a material is to be referenced, it is done with relation to the structure or construction system of the observed building. Another difference is 3rd year students’ interpretation of glass. Besides cladding, it was conveyed as a part of expressions such as “glass building,” “glass façade” “glass plane,” and “glass wall.”

Both groups radically differ in their references to construction system or structure of the buildings both quantitatively and qualitatively. For 1st year students, references to structure or construction system is almost non-existent (0.28 per student). If

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done, descriptions are quite naïve. On the other hand, structure and construction system seems to be an important part of 3rd year students' descriptions of the buildings (3.03 per student).

Descriptions through Unfamiliarity and by Contrasting with A Priori "Norm"

As the data was being investigated, a peculiar pattern was discovered in 1st year students' descriptions (1.43 references per student). Since such patterns were never seen in 3rd year students' descriptions the observation seemed unique therefore particularly important for the research. In this category of descriptions, students tried to describe the buildings and the build environment either by unfamiliarity or by contrasting with some a priori norm. In most obvious examples students directly stated that the buildings were "unfamiliar," "not normal," or even "weird" (For example, see *Figure 1* and *Figure 2*)

Figure 1. Fred and Ginger. Vlado Milunić and Frank Gehry Source: Wikipedia (Lena Sevcikova)

Figure 2. Notre Dame du Haut. Le Corbusier. Source: Wikipedia (Wladyslaw)

This seemed not to be due to a direct referential difference (which is actually a requirement by definition) but rather due to students assuming something a priori, which is supposed to be known to all, and accepted anonymously as a "norm." There are examples where the "norm" is stated such as "different from an apartment," "glass instead of walls," where for example, glass is actually is both conceptually and literally "is" a wall but apparently "wall" in students' conception seems to be too narrow to "see" the element as a wall. Interpretations such as "has no roof," "has no walls," "has no windows," did not point to an observation based on facts since actually observed buildings had such elements, showing that for example, "flat roof," "glass walls," or "openings" did not register in students' minds at all. For example stating that a building does not have a roof is characteristically different from same building described as "having a flat" roof. In is not that they did not have the concept "roof" but rather students' conception of roof referred to something too specific, too hardcoded that they could not be able to adapt or modify it to the newly observed phenomena.

Typological References in Descriptions

Similar to the previous category references to typologies were highly utilized in 1st year students' descriptions (3.06 per student) as compared to 3rd year students' descriptions which were virtually almost non-existent (0.8 per student). First year students used concepts such as "mass housing," "gated community," "apartment," "house," "stadium," "business center" and "luxurious house" or "palace." Among all, "shopping center" seemed to be a special typology that was often referenced. Almost none of the references except "stadium" were exact. Possibly, at least in some cases, typologies were used to describe the "size" or the "form" of the buildings rather than expressing their function. From another point of view, these might be seen as strong paradigmatic concepts gained from daily life and were projected onto the observed phenomena to "explain" it. It was notable not to see

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typologies or functional references such as "museum," or "art/cultural center." On the other hand, 3rd year students' reference to typologies seemed to be rather related with their "knowledge" of the observed building. For example, Sydney Opera house is referred to as "performing arts center," and La Sagrada Familia is referred to as "cathedral" as expected.

Expressions Concerning The "Bigness," "Size," and "Dimension"

It was interesting to observe none of the 1st year students used metric system to describe the size of the buildings or any other dimension such as level. Their expression of size or dimension is generally expressed in terms of some subjective expression such as "big," "small," or with some type of reference such as "higher than," "smaller than," etc. Stating the "Number of Floors" seemed to be frequently utilized (1.96 per student) possibly as an indicator of size even to the buildings that virtually have no floors at all ("it is 5 floors high"). On the other hand, while that barely referenced number of floors, 3rd year students' expressions concerning size and dimensions varied considerably. They used metric system frequently. The notion of scale is known (as compared to 1st year students where it is non-existent), other buildings are used for comparison, and perhaps most important in some cases "human scale" is referenced. The term "skyscraper" was generally used by the first year students to refer to vertical "highness," curiously the term "monumentality" have never been referenced while it was frequently used by the third year students.

Description of "Unknown" in Terms of "Known"

Similar to "typologies," first year students highly tended to describe buildings and built environment with reference to "resemblance" or "similarity" with some object (3.5 per student) as compared to 3rd year students (1.0 per student). This was interpreted first due to lack of conceptual vocabulary, second lacking skills to "describe" a building's form. Consequently they tend to describe or express their observations through presumably a universally "known" object, pointing to a universally "known" form (a ship, a melon, a cocoon, a shell, a cake, etc.), namely a shortcut to represent the observed phenomena. Complex forms were tried to be expressed in similarly organized "things," such as puzzle, tetris, lego etc.

Relative, Subjective Expressions, Evaluations

This category is also unique to 1st year students (2.28 per student) since 3rd year students never used any subjective, relative expressions to describe the buildings or the built environment. 1st year students, on the other hand, seemed to "evaluate" buildings

using expressions such as “nice,” “good,” “beautiful,” “boring” “ugly,” “weird,” or use subjective expressions such as “handsome,” “attractive,” “expressive” “artistic,” or “luxurious.” Relative references such as “not so big,” “not so high,” “quite rich,” are also widely observed.

Descriptions Providing General Information about The Buildings

Few of the students from both groups stated the name of the building or the environment they observe (0.23 for first year, 0.67 for third year students). For the first year, this was possibly due to lack of knowledge, for the third, due to the fact that stating the building’s name and its architect would not make any contribution to the building’s description. Similarly the period of the buildings were never attributed by the third year students in any way, while the term “modern” and “modernist” is frequently used by the first year students. However, qualitatively evaluated, they seemed to use these terms to denote “unfamiliarity,” a deviation from the “norm” or to state that the building is “new,” rather than to some era or style. Issues such as symbolic references, cultural motives, and meaning have never been addressed by the both groups.

Formal References in Description of the Buildings/Built Environment

Being at the core of the task, as expected, this category occupied an important place in overall descriptions. First observation was the use of basic geometrical references, such as basic shapes, to describe forms of the buildings. These were either three dimensional such as cylinder, cone, cube, or two dimensional such as square, rectangular, circular. First year students’ and third year students’ references to basic geometrical shapes did not differ much, being 9.83 and 9.96 respectively. Since basic geometry is not fully satisfactory to describe the buildings and the built environment completely and in detail, students used concepts those could be interpreted as “geometrical modifiers” or “transformative operations.” Such concepts might be expressing location and state transformation such as rotated, tilted, reversed, or raised, or some formal transformation of the initial geometry, such as divided, cut, sliced, carved, subtracted, separated, etc. As far as the geometrical modifiers or transformative operations are concerned, there is a noticeable difference between the two groups both quantitatively and qualitatively. First year students used such concepts far more less than third year students (1.49 per student versus 5.19 per student). In addition, the conceptual vocabulary of the third year students were not only more convenient but also richer. They used approximately three times more (2.96) number of different concepts regarding this category,

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and they used more "architectural" terms to describe modifications. In this category, terms such as plane, mass, solid, void, and modifiers such as chamfer, offset, dislocation, displacement, rupture, slot, opening, erosion, and such were never observed in the first group showing a deep difference.

Color information is widely given, especially if color is one of the dominant visual aspect of the observed building (3.85 per student for the first year students, and 2.6 per student for the third).

Beside the three dimensional morphology, third year students also tend to examine the "façades" of the buildings specifically, and they frequently seem to be using the term "architectural language" where in first year students' interpretations these two issues do not exist at all.

References to Architectural Elements and Details

References to architectural elements such as windows, doors, stairs, roofs, etc. were also given as a part of the description, used almost in same frequency for the both groups (1.77 and 1.75 per student respectively), but qualitatively, in a differing way. Third year students give such expressions as a part of their expression of the overall morphology, as a means of further detailing and elaborating their descriptions. For example, some openings are interpreted as carved out of the mass (*Figure 7*), and in some cases glass surfaces are related with transparency both as an effect and as an attribute (*Figure 4*). Rhythm and solid void relations were also given as a part of the interpretations concerning openings on the "façade" of the buildings.

Figure 3. Villa Savoye. Le Corbusier. Source: Wikipedia

Figure 4. Farnsworth House. Ludwig Mies van der Rohe. Source: Wikipedia

However, for the first year students, architectural elements and details were either taken as an isolated "pieces" in themselves and expressions regarding them were merely used to indicate that they exist, or, references to architectural elements were employed to convey an absence of an expected element. For example, a flat roof is indicated as "there is no roof," (*Figure 3*) and a building with no openings or having different type of openings were emphasized as "has no windows" or "has no doors." First year students also lack sufficient conceptual vocabulary in this category. For example all type of openings were referred to as "windows," projections were always referred to as balconies, and elements such as canopies, flat roofs seem to be not mentioned at all.

Expressions Regarding The Conception, Composition, and The Organization of The Buildings/Built Environment

This is one of the major categories that point to radical differences between the two groups both quantitatively and qualitatively. As first observation, first year students used concepts regarding conception, composition, and organization of the building less frequently, as compared to third year students (1.88 per student and 9.61 per student). It seemed that in their observation first year students either lacked to identify this content, ignored them or failed to describe rigorously. Apparently this is due to their lack of conceptual vocabulary regarding this issue, the number of different concepts used by third year students is almost 4 times more (3.8) than the first year students, and third year students' concepts are not only more specialized but also more sophisticated and complex. Buildings' and build environments' dominant organizational principles were generally to be

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described in terms of listing their basic elements, without trying to state the relation between the components. For example the grid structure of the Barcelona city (**Figure 5**) is never referenced, the phenomena is either as "many boxes" "a lot of squares" without any relation between the units, or by setting naïve relations such as "one next to another," "series of buildings." Contrarily, particularly in this case, not only all of the students in third year identified the grid structure, but also they did this at first by putting a special emphasis on it (**Figure 5**).

Figure 5. La Sagrada Familia and Barcelona. Antoni Gaudi. Source: Wikipedia

If they could be able to find a precedent, first year students seem to be using the strategy of explaining the "unknown" in terms of the "known" or through similarity. For example, Safdie's Habitat in many cases is likened to "tetris," "lego," "puzzle," while in third year students' interpretation, same complex is interpreted in terms of concepts such as "superimposition," "articulation," "overlapping," and "stacking" (*Figure 6*).

Figure 6. Habitat 67. Moshe Safdie. Source: Wikipedia

Third year students, if applicable, tend to see complex organizations as "compositions," while this is almost rarely seen in first year students' descriptions (6.73 and 0.88 respectively.) If done, first year students refer to compositions by setting simple relations, such as "combined," "side by side," while third year students seem to be utilizing a rich gamut of concepts, some of which are already mentioned above. While both vertical and horizontal, centroidal and amorphous organizations were visible to the third year students and particularly emphasized as such, first year students only emphasized verticality, in case a building is a skyscraper, and this is done in a naïve way by only giving the number of floors, i.e. not referring to building's compositional aspects. In third year, horizontal organizations were described by referring to complex concepts such as fabric and weaving together, as well as concepts such as grid, fractal, network, and hierarchy.

In addition to the abovementioned ones, in third year students' descriptions a lot of concepts concerning organization or order, which do not exist in first year students' descriptions, such as being radial and axial, linearity, rhythm, and repetition, were used. Unity and order seemed to be important concepts those were frequently find place in third year students' descriptions, so does solid-void relations, while all these are virtually nonexistent in first year students' expressions.

CONCLUSION

As a part of their education, since they've gained new concepts, third year students used three times (2.8) more different set of concepts than the first year students. In some concerns such as expression of organization or order of the buildings this ratio gets as high as four. It is observed that quantitative development is

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paralleled with qualitative development or change, since advanced students tend to use more field-specific notions or specialized notions to describe the buildings. Their descriptions were also structured as compared to the first year where freshmen students' interpretations were rather piecemeal and disorganized. This is also true for two group's view of the buildings, where third year students saw the buildings as a unity, as a whole organization, and tried to describe them as such, first year students tend to see entities parts and components rather than the whole. Evaluated qualitatively, first year students' schemata seemed not only premature but in some aspects incompatible with the specificities of architecture. They seemed to be based on their lifetime experience of not-so-architectural built environment and the students did not seem to be gained any specialized conceptual structure before their formal education starts. It is suspected that in built environments with better and richer architectural qualities would be influential on the students' pre-development.

Students' descriptions of buildings might be categorized under two major headings, as they were structured as top-down descriptions and bottom-up descriptions. This is in a great sense related with the observed phenomena's nature, for example a building conceived as an ideal platonic solid (i.e. Botta's solid cylinder, *Figure 7*), differs from a "mat" organization (i.e. Berlin Free University, *Figure 8*) both in terms of the way they were conceived or designed and also in terms of the methods (or the way) to describe them. First year students seemed not to be aware of this difference. This is particularly important that if the suggestion is assumed as true then level of schemata and the ability to apply it to describe buildings and built environment might be considered as an indicator of ability to design or the level of education. This needs further investigation, but still the present study raises this question as a starting point of a follow-up research.

Figure 7. Basel BIS building. Mario Botta. Source: Wikipedia (Julian Mendez)

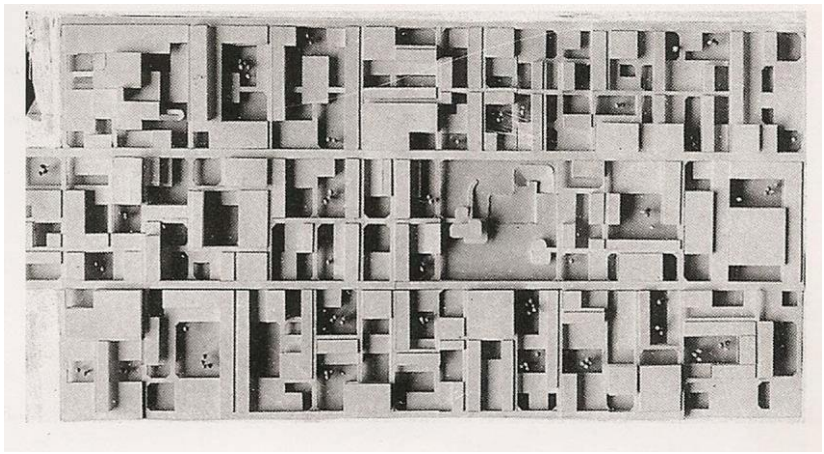

Figure 8. Berlin Free University. Candilis, Josic and Woods. Source: Tom Avermaete. Ed. NAi Publishers

Perhaps more important than the abovementioned issues, a notable change in students' way of thinking and their mindset. For example as they have reached third year, they tended to see all things in relation, in all their complexity: Building are usually considered as a part of their context, elements of the buildings were seen as a whole, with relation to each other, etc. The way first year students and third year students saw architectural works might be expressed as "things" versus "organizations," or "objects" versus "complexes," in respective order. In addition, third year students in a sense re-conceived the buildings, and tend to see and describe the processes and ways these were designed rather than trying to describe the buildings themselves. This might be interpreted as they have not only developed their conceptual schemata and their existing schemata is transformed into a more specialized and field-specific one, but also they have developed a set of skills which might be called "designerly seeing," and "designerly thinking."

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Resume

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Research Article

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Effects on Students' Perceptual Evaluations of The Wall Colors Used in Design Studios by The Virtual Reality Method

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Abstract

In this study, it was aimed to determine the perceived quality of three modeled virtual design studios which have the same characteristics but different colors (warm, cool and neutral) and to determine whether there was a difference between the real space and the evaluations made in the virtual space. Accordingly, it was assumed that the wall coloring of the virtual studio space models that were modeled could affect the perceptions of the students and that virtual space evaluations would be in parallel with real space evaluations. To test the assumption, the study modeled the environments of three design studios with different colors assumed to exist at a design studio of the Selçuk University and students were asked to evaluate these virtual spaces with the aid of virtual reality goggles. As a result, it has been determined that there was no difference between the perceptual evaluations of real and virtual spaces designed with the same features. In addition, according to the spatial scale, it was determined that the cool colored space were perceived as "more roomy" and "more inviting" by the students compared to the warm colored space and that the cool colored space was also evaluated more positively for the social adaptation and individual productivity scales.

Keywords: *Design studio, wall color; perception, virtual reality, interior design*

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INTRODUCTION

Human beings shape the environs in which they live according to their own wishes and these environs shaped affect the perceptions and behaviors of human beings (Sommer, 1969). In this context, when it is considered from the aspect of space-user relations, then it is expected that the user meets the personal needs of the space and constitutes satisfactory platforms. When designers design a livable and satisfactory space in accordance with these wishes of the users, then they are in the position of benefiting from various disciplines and from the techniques and methods set forth by these.

When space is treated within the scope of a three-dimensional spatial (environmental) order, then the physical environmental factors set forth the "spatial perception" concept and constitutes an environment that provides favorable conditions for the solution of order in the relationship between humans and environment (Aydinli, 1986). In the studies made on spatial perception, the individual differences in the perception and in the perception of different space organizations is a factor and it is observed that other than these factors, the effect of the internal space environmental factors is important to an extent that cannot be ignored. Many researchers in the literature have worked on the classification of environmental factors and it has been stated that a majority of these have been formed by taking the classification of environmental factors made by Baker (1986) as the basis (Muezzinoglu, 2018). In this study as well, the color variable, which is from the physical environmental factors classified by Baker (1986), was evaluated.

The design that was constituted in the three-dimensional virtual reality environments, which are a form of visual representation, set forth within the scope of the study the effects on the perceptual evaluations of students for the wall colors in design studios. The use of color in the educational spaces and the contribution provided to education are an important field of study. The studies that research the effects of color on physiological and psychological perception show that the color of the environment is effective on the creativity of the user, the emotional mental status, motivation, concentration and performance, environmental communication and behaviors (Cagatay, Hidayetoglu, & Yildirim, 2017; Engelbrecht, 2003; Hathaway, 1987; M.L. Hidayetoglu, 2010; Muezzinoglu, 2018; Stone, 2003; Stone & English, 1998; Wang & Russ, 2008; K. Yildirim, Cagatay, & Ayalp, 2015; K. Yildirim, Hidayetoglu, & Capanoglu, 2011). Even if there have been guiding, significant findings obtained in this field,

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the studies related to the effects on perceptual evaluations of the users of wall colors in educational spaces are still insufficient.

Theoretical Background and Hypothesis Development

In the studies made especially in the educational spaces, it was observed that a need was felt for more experimental studies on organizations that could be made for students to adopt the spaces where they receive education and for providing for them to be pleased from being in these spaces. Since the use of conscious color in the space is important in the formation of healthy environments, color should be thought of as a design element in the perception of spaces and a conscious use should be provided with the correct color information.

It has been shown in the literature studies related to color that classroom wall color could have positive and/or negative influences on the behaviors and learning performan. NN M JCJKJKDJHces of students. Of these, it was stated in the studies by Hathaway (1987) and Engelbrecht (2003) that the mental stimulus obtained passively with the color of the classroom assists students and teachers in focusing on their duties. In a survey made on the feelings and thoughts of students who followed the environment in the work environments by Stone (2003), it was expressed that the students announced that they felt quieter and better within a blue room in comparison with a red room. Furthermore, in the study, since blue was calming from the aspect of environmental relations, whereas, red was a color that was inciting, they also emphasized that it was necessary to select the environmental colors that were appropriate for the attributes of the work.

In the study made by Nelson, Pelech & Foster (1984) with the objective of determining which wave length colors were preferred in the preference of colors of people who were extroverts and introverts, it was observed that persons who had an impulse to high activity preferred red and persons who had an impulse to low activity preferred blue (Grangaard, 1993; Nelson et al., 1984).

In the studies by Camgoz, Yener & Guvenc (2004) that examined the effects on the attention of users for color tone, satisfaction and brightness, it was stated that in the situations where the colors were the brightest and most satisfactory, also increased their attractiveness. It was stated in the study that the most attractive colors were yellow, green and turquoise and that red and purple came later. In the studies by Wang & Russ (2008), it was claimed that the cool colors in the Master Palette Color System were preferred more compared to the other colors for the wall colors in

a computer classroom. In addition to this, in the studies by Moore, McCarty & Jelin (1995), it was emphasized that the use of warm color tones would be appropriate to use for creating a quieter environment. On the other hand, Olds (1989) proposed the use of warm tones for controlling the movement in moving areas and the use of cool tones for quiet and calming areas (Read, Sugawara, & Brandt, 1999).

In the study by Read, Sugawara & Brandt (1999) they determined that the wall colors of the classrooms strengthened the cooperative behaviors of the students. Whereas, in the study by Hamid & Newport (1989) that examined pink and blue colored spaces, they reported that the mental statuses of the students were more positive in warm colored spaces.

In the study by Hidayetoglu (2010), it was stated that warm colors had an attractive feature and ability to be remembered and were higher compared to the other colors. In the study by Yildirim, Cagatay & Ayalp (2015), it was claimed that blue classrooms were perceived more positively compared to cream and pink classrooms by male students and furthermore, classrooms with different colors were evaluated by being perceived as more positive by students. In the study by Cagatay, Hidayetoglu & Yildirim (2017) of school corridors in which different colors were used, it was stated that the cream-colored corridors were perceived more positively compared to blue- and green-colored corridors. In the doctorate dissertation by Muezzinoglu (2018), it examined the effects on the perceptual evaluations of test specimens for three different colors (warm, neutral, cool) used in educational spaces according to the spatial quality, social adaptation and individual productivity scales. A total of 113 students from universities who did or did not receive design education participated in this study. In the study used real spaces controlled by all environmental factors as a working environment. In the study, it was stated that the warm colored spaces were perceived as “warm” to a definite extent compared to the neutral and cool colored spaces; the cool colored space were perceived as more “inviting” and “roomy” compared to the warm and neutral colored spaces; and on the other hand, the cool colored space was perceived as facilitating communication more easily and as putting one at ease compared to the warm colored spaces. Whereas, the neutral colored space was perceived as more negative compared to the warm and cool colored spaces from the aspect of social adaptation; and the cool colored space was evaluated more positively compared to the other spaces from the aspect of individual productivity.

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According to the color literature given above, the effect of color on the perception of design studios formed in virtual reality environments was examined in this study and was tested with statistical methods on whether the wall color had a significant effect on the perception of spaces. Within this scope, by taking as a reference the study by Muezzinoglu (2018), which previously examined the evaluations by students of the colors of the design studios at the School of Fine Arts of the Selçuk University, the research hypotheses formed have been given below.

Hypothesis 1. The warm colors used in the design studios experienced with the virtual reality method positively affect the evaluations of "spatial quality" of the students.

Hypothesis 2. The cool colors used in the design studios experienced with the virtual reality method positively affected the "social adaptation" evaluations of the students.

Hypothesis 3. The cool colors used in the design studios experienced with the virtual reality method positively affected the "individual productivity" evaluations of the students.

The change in the perception of internal space by the users with the start of the digital age and the increase in the expectations from internal spaces has been the cause of the onset of new searches in the field of interior architecture. This situation has made widespread the thought that the concept of reality could be a new means for meeting the expectations of the users from the aspect of designers (Wolbers & Hegarty, 2010). However, it is important to assess similarities and differences between knowledge obtained in real life and that obtained in virtual environments (VE) (i.e., to verify that the best transfer of knowledge from the VE to the real situation is obtained). Transfer studies make a distinction between transfer of skills (from one sensory modality to another) and transfer of spatial knowledge (knowledge conservation from learning to test situation). Several studies have demonstrated an effective transfer of skills and/or spatial knowledge from virtual to real environments (virtual/real transfer), indicating that the spatial knowledge acquired in virtual environments is very similar to that acquired in real environments (Wolbers & Hegarty, 2010). It was reported in the study by Kuliga, Thrash, Dalton & Hölscher (2015) that virtual environments could be used as controlled laboratory environments and that the data obtained was compatible with the data obtained from real spaces. Bozdag (2018) expressed that in three-dimensional virtual reality environments, architectural spaces can be comprehended in the third dimension with the aid

of digital goggles and due to the fact of the perception that the user himself/herself moves, not the image, it can come to a static state like the real world and the togetherness and continuity of time-space can once again be provided. The studies by Gobbetti & Scateni (1998) as well, just like many researchers, adopted the view that virtual reality created or could create a satisfying visual and auditory perception. It was observed in the literature studies that the virtual environments can be used with trust in the scientific studies (Nur Ayalp, Yildirim, Bozdayi, & Cagatay, 2016; N. Ayalp, Yıldırım, & Çağatay, 2017; Hwang, Yoon, & Bendle, 2012; Tlauka, Brolese, Pomeroy, & Hobbs, 2005; Tsunetsugu, Miyazaki, & Sato, 2005; Wallet, Sauzéon, Larrue, & N'Kaoua, 2013; K. Yildirim, Akalin-Baskaya, & Hidayetoglu, 2007; Kemal Yildirim, Ayalp, Guner Aktas, & Lutfi Hidayetoglu, 2014; Yıldırım & Oğuzhan, 2010). According to this determination, it is of great importance in the present-day to set forth whether there are similarities or differences between the findings obtained from virtual spaces with the findings obtained from real educational spaces. According to the color literature given above, the research hypotheses formed have been given below. In the study by Muezzinoglu (2018) for testing this hypothesis, virtual copies were formed in a manner that would have all the characteristic features of the real spaces used. The experimental process, questions and evalution methods used in this reference study were also used the same in this study. In conclusion, the data obtained from this study will be compared with suitable statistical methods with the data obtained by Muezzinoglu (2018).

Hypothesis 4. There is no difference between the perceptual evaluations of the students for the real and virtual design studios, which were designed having the same spatial features.

MATERIAL AND METHOD

Participants

A total of 61 test students, 31 females (50.8%) and 30 males (49.2%), who were receiving design education at the School of Fine Arts of the Selçuk University, participated in this research. Participants were selected from students with normal color vision and no visual impairment. Students' ages ranged from 20 to 23, with an average age of 21.7 for all students. The students in the research were measured with the semantic differential scale, composed of three perceptual evaluation groups for the design studios by using virtual reality goggles (Figure 1).

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Figure 1. Evaluations of spaces by the students using virtual reality goggles (It was taken by the authors)

Design of the Questionnaire

The questionnaire form used consisted of two parts: the first part asked for general information such as the age, gender and visual defects of the students. The second part consisted of the semantic differential scale which measures students' moods about the perceptual evaluations of the virtual design studios. Moods are subjective experiences and, therefore, must be measured through self-report. A number of questionnaires have been developed to measure moods (McAdrew, 1993). Some of the measures that have been widely used in research include the Mood Adjective Checklist (MACL) developed by Nowlis (1965), the Profile of Mood States (POMS) (McNair, Lorr, & Droppleman, 1971). Curran & Cattell's (1976) Eight State Questionnaire (8SQ), and the Multiple Affect Adjective Checklist (MAACL) (Zuckerman & Lubin, 1985). Many measures of mood employ some form of the semantic differential developed by Osgood, Suci & Tannenbaum (1957). The semantic differential consists of pairs of bipolar adjectives, or adjectives that are opposites of each other. For example, good / bad or pleasant / unpleasant are typical pairs of bipolar adjectives (McAdrew, 1993).

The evaluation of the virtual design studios experienced was made by the students for testing the research hypotheses that were previously developed by Muezzinoglu (2018) and whose validity and reliability were found in the studies made by Hidayetoglu (2010), Yildirim et al. (2014), Berlyne (1974), Imamoglu (1975), Erturk (1983) and Yildirim, Akalin-Baskaya & Hidayetoglu (2007). The students then had to evaluate the importance of each of the bipolar adjective pairs on a 1–7 semantic differential scale where 1=roomy and 7=cramped. A total of fifteen bipolar adjective pairs were evaluated by the students after familiarizing themselves with the items, five of which dealt with spatial quality, five of which with social adaptation, while the rest measured individual productivity. The Likert-type scales of spatial quality (warm / cool, light / dark, stimulating / drowsy, inviting / uninviting, roomy / cramped), social adaptation (facilitates communication / prevents communication, sincere / formal, relaxing / disagreeable,

encouraging / pacifying, open to cooperation / closed to cooperation) and individual productivity (motivating / boring, provides concentration / disrupts concentration, peaceful / unpeaceful, useful / useless, open to creativity / closed to creativity) were used.

Research Setting and Procedure

The modeling of the virtual design studios used in the experimental environment of this study were formed especially for the previous study by Muezzinoglu (2018) and were made use of from the design studios that were evaluated in the process of use. This design studio is a space with a size of 62 m^2 (12.8 x 4.85 m) where design classes are held at the School of Fine Arts of the Selçuk University. In the illumination of the virtual design studio, six quadruple group fluorescent lamps were used, giving daylight (about 5000 Kelvin). All the spatial features such as size, height, material, wall colors, lighting, reinforcement styles of the studios used in Muezzinoglu's (2018) study have been transferred to the digital studio in a proper manner. Subsequently, the studios that would be made in the experiments were modeled in global spaces with the override field of view of 360º in the 3Ds Max program in a manner in adaptation with the virtual reality goggles (Figure 2).

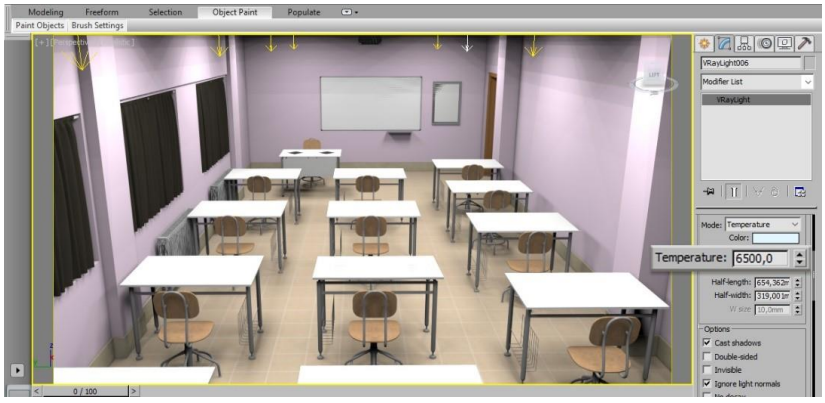

Figure 2. Modeling of the experimental environments (Drawing by authors)

In the experimental study made for being able to determine the effects on the spatial perception of the color factors in the study, three each design studios drawn with the 3Ds Max program according to warm, cool and neutral colors, were modeled as the experimental environment of the design studio. The values used by Muezzinoglu (2018) were benefited from in the determination of the design characteristics and space color tones of the equipment used in forming the virtual space with the objective of providing an opportunity for being able to make an objective comparison of the virtual and real space experiments. In the study by Muezzinoglu (2018), 113 students were asked to show 6 different color combinations and to evaluate the color combinations according to the “warm and cool” adjective pairs for

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determining objectively the colors to be used in the design studios and for evaluating as warm, cool and neutral. The students evaluated the colors shown to them as 1-Warm and 7-Cold. As a result of this process, the warmest evaluated color combination with an average of 1.75 and the coolest evaluated color combination with an average of 6.22 were determined. An achromatic color was determined as neutral color. The wall colors and the RGB color codes used in the experiments have been given in Table 1.

Table 1. Wall colors used in the experiments

Colors	NCS and RGB Color Codes	Visual
Warm Color (Red)	Light: S 0515-R40B R:239 G:218 B:235	
	Dark: S 2040-Y90R R:209 G:126 B:120	
Cool Color (Blue)	Light: S 0515-B R:201 G:225 B:235	
	Dark: S 3040-B10G R:49 G:141 B:166	
Neutral Color (Off-white)	S 0500-N R:240 G:237 B:232	

Note: NCS: Natural Color System; RGB: Red, Green, Blue Colour System.

In these spaces modeled, other than the wall color, which would be evaluated as an independent variable, all the other physical features were taken under control by being fixed. At the test stage that used the virtual spaces modeled, after giving information for approximately 10 minutes on the aims of the study, the students answered the survey that also included within it the adjective groups by making observations with a 360-degree viewpoint at a fixed point in the space by using the virtual reality goggles (Figure 3). The survey was implemented for a period of 1 week in 2017.

Warm space rendering *Cool space rendering* *Neutral space rendering*

Figure 3. Modeled design studios according to warm, cool and neutral colors (Drawing by authors).

Evaluation of the Data

The effects on the perceptual evaluations of the students were examined in this study for different wall colors used in the design studios formed in a virtual environment. Accordingly, the evaluations of the students for the wall colors of the design studios were accepted as dependent variables, whereas, the wall color was accepted as an independent variable. SPSS package program was used in the evaluation of research data. The percentage

values, arithmetic averages and standard deviation values of the data obtained in the study were calculated, the Cronbach Alpha reliability tests of the data were made and finally, the statistical aspect of the differences between the dependent and independent variables were tested with the one-way analysis of variance (ANOVA) technique on whether they were statistically significant at a level of $p<0.05$. The Tukey's Honest Significant Difference (HSD) Test was made for being able to compare with each other the variables found to be significant in the ANOVA and the data was stated graphically for being able to compare the averages of the variables with each other.

RESULTS AND DISCUSSION

It was aimed in this study to reach information that would assist designers in designing perceptible high-quality spaces. On the other hand, it was also determined whether there was a difference between the evaluations made on real spaces and virtual spaces. With this purpose, the effects on students of different wall colors used in design studios for developing in a positive manner the evaluations of the spatial quality scale, social adaptation scale and individual productivity scale of students and for increasing the conditions of comfort and satisfaction. As a sampling, a design studio located at the School of Fine Arts of the Selçuk University was modeled by drawing it in a digital environment and it was transformed into an experimental environment. The data obtained from the virtual spaces modeled were tested with statistical methods and the results reached have been given in a systematic listing below.

The reliability of the data obtained from this study was tested with the Cronbach Alpha Test and the results have been given in Table 2. According to the results of the Cronbach Alpha reliability analysis, it was determined that the reliability coefficient of the spatial quality scale, which includes the color evaluations, was 0.69, the social adaptation scale was 0.78, whereas, the individual productivity scale was 0.80. In the studies made previously by Cronbach (1951), McKinley, Manku-Scott, Hastings, French & Baker (1997), Kaplan & Saccuzzo (2009) and Panayides (2013), it was reported that when the alpha reliability coefficients for all elements is above 0.60, then it could be accepted to be "reliable". It was observed that the Cronbach alpha coefficients obtained in this study were above the specified value. Accordingly, the data obtained can be accepted to be "reliable".

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Table 2. Cronbach alpha reliability analysis results

Scale Group	Adjective Pairs	Scale Reliability
Spatial Quality	Warm / Cool, Light / Dark, Stimulating / Drowsy, Inviting / Uninviting, Roomy / Cramped	0.69
Social Adaptation	Facilitates communication / Prevents communication, Sincere / Formal, Relaxing / Disagreeable, Encouraging / Pacifying, Open to cooperation / Closed to cooperation	0.78
Individual Productivity	Motivating / Boring, Provides concentration / Disrupts concentration, Peaceful / Unpeaceful, Useful / Useless, Open to creativity / Closed to creativity	0.80

The main research topic of this manuscript is on whether or not the virtual space experiences obtained similar results as the real space experiences. The validity of Hypothesis 4 (There is no difference between the perceptual evaluations of the students for the real and virtual design studios, which are designed having the same spatial features) formed for testing this was analyzed by establishing ties with the other hypotheses treated as follows below.

The categorical averages, standard deviation values and the Tukey HSD test results for the data obtained for the effects on the perceptual evaluations of the students according to the spatial quality of the colors used in the virtual design studios have been given in Table 3.

Table 3. The average, standard deviation and Tukey HSD test results of the adjective pairs formed by the spatial quality scale connected to wall color

Spatial Quality Scale	Colors of Space									ANOVA Results		
	Warm			Cool			Neutral					
	M	SD	HG	M	SD	HG	M	SD	HG	F	df	Sig.
Warm / Cool	2.84[a]	1.31	A	4.72	1.59	B	4.34	1.66	B	25.869	2	0.000*
Light / Dark	2.54	1.36	A	2.34	1.36	A	1.95	1.53	A	3.024	2	0.050*
Stimulating / Drowsy	3.39	1.56	A	3.18	1.24	A	3.64	1.89	A	1.271	2	0.283
Inviting / Uninviting	4.43	1.59	B	3.08	1.61	A	4.03	1.60	B	11.317	2	0.000*
Roomy / Cramped	4.57	1.73	B	2.7	1.68	A	2.93	1.88	A	20.175	2	0.000*

*Note: Tukey HSD: The differences among the homogenic groups is significant at the level of *p<0.05. M: Average value, SD: Standard deviation, HG: Homogenic group, F: F value, df: Degree of freedom. a: Variable averages have been listed from 1 to 7. A high value shows negative responses.*

It was observed in Table 3 that there were statistically significant differences among the perceptual evaluations of the students according to the spatial quality scale for the wall colors used in the design studios for the adjective pairs of "warm / cool" (F=25.869, df=2, p=0.000), "light / dark" (F=3.024, df=2, p=0.050), "inviting / uninviting" (F=11.317, df=2 p=0.000) and "roomy / cramped" (F= 20.175, df=2, p=0.000). However, for the "stimulating / drowsy"

(F=1.271, df=2, p=0.283) adjective pair a statistically significant difference was not found at the level of p<0.05. According to the Tukey HSD test, when comparing the warm colored space with other cool and neutral colored spaces for a warm / cool adjective pair, it was observed that there were statistically significant differences between the group mean values of the warm colored space with the cool and neutral colored spaces at the level of p<0.05. The significance values of the Tukey HSD test results for other adjective pairs have been given in Table 3. In conclusion, it can be stated that the three different colors used in the design studios had significant effects on the perceptual evaluations of the students according to the spatial quality scale. The graphical expression of these results has been given in Figure 4.

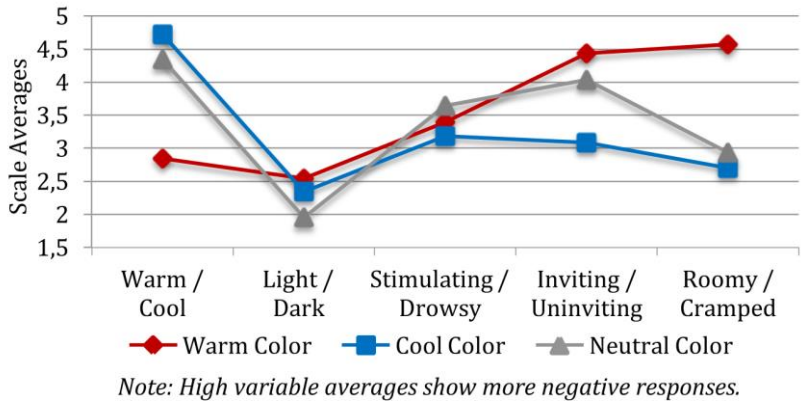

Figure 4. Evaluation according to the spatial quality scale of different colored studios (Drawing by authors).

According to Figure 4, the average values of the spaces having the warm, cool and neutral wall colors were rather close to each other for the "light / dark" and "stimulating / drowsy" adjective pairs. It was understood from the figure that the cool colored space were perceived as more "roomy" and "inviting" compared to the warm colored space. This result did not support the H1 hypothesis, which asserts "*The warm colors used in the design studios experienced with the virtual reality method affects positively the "spatial quality" evaluations of the students.*" This same hypothesis was not supported in the study by Müezzinoglu (2018), which forms the basis of this study. In the study by Müezzinoglu, these values have been reported for the adjective pairs "warm / cool" (M=2.35, SD=1.45), "light / dark" (M=2.94, SD=1.46), "stimulating / drowsy" (M=3.09, SD=1.55), "inviting / uninviting" (M=3.15, SD=1.7) and "roomy / cramped" (M=3.01, SD=1.76) in the warm colored space and the adjective pairs "warm / cool" (M=4.53, SD=1.91), "light / dark" (M=2.76, SD=1.68), "stimulating / drowsy" (M=2.92, SD=1.72), "inviting / uninviting" (M=2.95, SD=1.68) and "roomy / cramped" (M=2.51, SD=1.51) in the cool colored space. In both studies, cool and neutral colored spaces gave the same result, except for the roomy / cramped adjective pair. However, compared to the digital space, the warm colored

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real space was evaluated positively for the other adjective pairs except the light / dark adjective pair. In this respect, the results obtained from the two studies support each other.

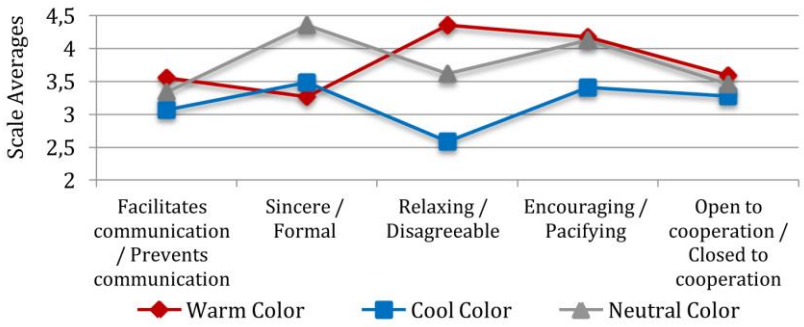
The categorical averages, standard deviation values and the Tukey HSD test results of the data obtained for the effects on the perceptual evaluations of the students according to the social adaptation scale of the colors used in the virtual design studios have been given in Table 4.

Table 4. The average, standard deviation and the Tukey HSD test results of the elements forming the social adaptation scale connected to wall color

Social Adaptation Scale	Colors of Space									ANOVA Results		
	Warm			Cool			Neutral					
	M	SD	HG	M	SD	HG	M	SD	HG	F	df	Sig.
Facilitates Communication / Prevents Communication	3.56[a]	1.17	A	3.07	1.45	A	3.34	1.52	A	1.905	2	0.152
Sincere / Formal	3.27	1.70	A	3.49	1.59	A	4.36	1.63	B	5.176	2	0.007*
Relaxing / Disagreeable	4.36	1.63	C	2.59	1.57	A	3.62	1.61	B	18.670	2	0.000*
Encouraging / Pacifying	4.18	1.56	B	3.41	1.41	A	4.13	1.53	B	4.998	2	0.008*
Open to Cooperation / Closed to Cooperation	3.59	1.54	A	3.28	1.49	A	3.46	1.39	A	0.366	2	0.694

*Note: Tukey HSD: The differences among the homogenic groups is significant at the level of *p<0.05.*
M: Average value, SD: Standard deviation, HG: Homogenic group, F: F value, df: Degree of freedom.
a: Variable averages have been listed from 1 to 7. A high value shows negative responses.

It was observed in Table 4 that there were statistically significant differences among the perceptual evaluations of the students according to the social adaptation scale for the wall colors used in the design studios for the adjective pairs of "sincere / formal" (F=5.176, df=2, p=0.007), "relaxing / disagreeable" (F=18.670, df=2, p=0.000) and "encouraging / pacifying" (F=4.998, df=2, p=0.008). However, for the "facilitates communication / prevents communication" (F=1.905, df=2, p=0.152) and "open to cooperation / closed to cooperation" (F=0.366, df=2, p=0.694) adjective pairs a statistically significant difference was not found at the level of p<0.05. According to the Tukey HSD test, when comparing the warm colored space with other cool and neutral colored spaces for the "facilitates communication" and "open to cooperation" adjective pairs, it was observed that there were no statistically significant differences between the group mean values of the warm colored space with the cool and neutral colored spaces at the level of p<0.05. The significance values of the Tukey HSD test results for other adjective pairs have been given in Table 4. In conclusion, it can be stated that the three different colors used in the design studios had significant effects on the perceptual evaluations of the students according to the social adaptation scale. The graphical expression of these results has been given in Figure 5.



Note: High variable averages show more negative responses.

Figure 5. Evaluation according to the social adaptation scale of different colored studios (Drawing by authors).

It was observed in Figure 5 that the cool colored space was evaluated more positively compared to the neutral and warm colored spaces for social adaptation. However, the warm colored space was perceived as more sincere compared to the cool and neutral colored spaces. When it was considered as of the results in general, the "social adaptation" evaluations of the cool colored spaces by the test subjects had a more positive effect. This result supports the H2 hypothesis, which claims, "*The cool colors used in the design studios experienced with the virtual reality method positively affected the "social adaptation" evaluations of the students.*" This same hypothesis was supported in the study by Müezzinoglu (2018), which forms the basis of this study. In the study by Müezzinoglu, these values have been reported for the adjective pairs "facilitates communication / prevents communication" (M=3.38, SD=1.54), "sincere / formal" (M=2.57, SD=1.61), "relaxing / disagreeable" (M=3.03, SD=1.71), "encouraging / pacifying" (M=3.37, SD=1.8) and "open to cooperation / closed to cooperation" (M=3.31, SD=1.51) in the warm colored space and the adjective pairs "facilitates communication / prevents communication" (M=2.76, SD=1.51), "sincere / formal" (M=3.12, SD=1.76), "relaxing / disagreeable" (M=2.60, SD=1.59), "encouraging / pacifying" (M=3.08, SD=1.73) and "open to cooperation / closed to cooperation" (M=3.04, SD=1.53) in the cool colored space. In both studies, cool and neutral colored spaces gave the same results. However, the warm colored real space was evaluated positively for all adjective pairs compared to the digital space. These results, it was seen that cool colors had positive effects for "social adaptation" except for the sincere / formal adjective pair.

The categorical averages, standard deviation values and the Tukey HSD test results of the data obtained for the effects on the perceptual evaluations of the students according to the individual productivity scale of the colors used in the virtual design studios has been given in Table 5.

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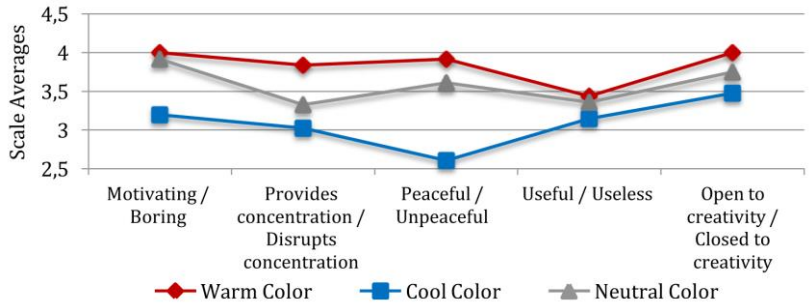
Table 5. The averages, standard deviations and Tukey HSD test results of the elements formed by the individual productivity scale connected to wall color

Individual Productivity Scale	Colors of Space									ANOVA Results		
	Warm			Cool			Neutral					
	M	SD	HG	M	SD	HG	M	SD	HG	F	df	Sig.
Motivating / Boring	4[a]	1.35	B	3.2	1.57	A	3.92	1.61	B	5.154	2	0.007*
Provides concentration / Disrupts concentration	3.84	1.46	B	3.03	1.41	A	3.33	1.77	AB	4.141	2	0.017*
Peaceful / Unpeaceful	3.92	1.62	B	2.61	1.64	A	3.61	1.82	B	9.881	2	0.000*
Useful / Useless	3.44	1.51	A	3.15	1.62	A	3.36	1.75	A	0.532	2	0.388
Open to creativity / Closed to creativity	4	1.74	A	3.48	1.54	A	3.75	1.68	A	1.530	2	0.219

*Note: Tukey HSD: The differences among the homogenic groups is significant at the level of *p<0.05.*
M: Average value, SD: Standard deviation, HG: Homogenic group, F: F value, df: Degree of freedom,
a: Variable averages have been listed from 1 to 7. A high value shows negative responses.

It was observed in Table 5 that there were statistically significant differences among the perceptual evaluations of the students according to the individual productivity scale for the wall colors used in the design studios for the adjective pairs of "motivating / boring" (F=5.154, df=2, p=0.007), "provides concentration / disrupts concentration" (F=4.141, df=2, p=0.017) and "peaceful / unpeaceful" (F=9.881, df=2, p=0.000). However, for the "useful / useless" (F=0.532, df=2, p=0.388) and "open to creativity / closed to creativity" (F=1.530, df=2, p=0.219) adjective pairs a statistically significant difference was not found at the level of p<0.05. The significance values of the Tukey HSD test results for other adjective pairs have been given in Table 5. In conclusion, it can be clearly observed that there were significant effects on the perceptual evaluations of the students according to the individual productivity scale. The graphical expression of these results has been given in Figure 6.



Note: High variable averages show more negative responses.

Figure 6. Evaluation according to the individual productivity scale of different colored studios (Drawing by authors).

As it can be observed in Figure 6, although the cool colored space was evaluated more positively compared to the other spaces for the individual productivity scale, whereas, the warm colored space was evaluated more negatively compared to the other spaces. It is understood from the figure that the cool colored space was found to be more motivating and peaceful compared to the other spaces. This result supports the H3 hypothesis, which asserts, "*The cool colors used in the design studios experienced with*

the virtual reality method positively affected the "individual productivity" evaluations of the students." Accordingly, it can be stated that the cool colored space had a positive effect on the evaluations of the students on the individual productivity scale. In the study by Müezzinoglu (2018), which is the basis of this study, the same result emerged that cool colors had positive effects for "individual productivity". In the study by Müezzinoglu (2018), these values have been reported for the adjective pairs "motivating / boring" (M=3.07, SD=1.66), "provides concentration / disrupts concentration" (M=3.58, SD=1.72), "peaceful / unpeaceful" (M=2.76, SD=1.61), "useful / useless" (M=3.2, SD=1.63) and "open to creativity / closed to creativity" (M=3.1, SD=1.89) in the warm colored space and the adjective pairs "motivating / boring" (M=2.7, SD=1.56), "provides concentration / disrupts concentration" (M=2.73, SD=1.61), "peaceful / unpeaceful" (M=2.37, SD=1.54), "useful / useless" (M=2.56, SD=1.54) and "open to creativity / closed to creativity" (M=2.77, SD=1.68) in the cool colored space. In both studies, cool and neutral colored spaces gave the same results. However, the warm colored real space was evaluated positively for all adjective pairs compared to the digital space. These results, it was seen that cool colors had positive effects for "individual productivity".

On the other hand, the results of the H1, H2 and H3 hypotheses of this study showed parallelness with the data obtained previously in a real space by Müezzinoglu (2018). In both studies, the same hypotheses were tested by creating the same indoor environmental factors, with the same adjective pairs, one being the virtual realm and the other being the real one. These comparative results support the H4 hypothesis, which claims, "*There is no difference between the perceptual evaluations of the students for the real and virtual design studios, which are designed having the same spatial features.*" Accordingly, it can be stated that in the scientific studies of the virtual spaces, correct results were reached and that they could be obtained with much less expense than from the real environmental scenarios.

CONCLUSIONS

It was focused in this study on the determination of the perceptual quality of three each modeled virtual design studios having the same characteristic features, but different wall colors (warm, cool and neutral) and on the determination of whether there was a difference between the evaluations made on real spaces and virtual spaces. With the data obtained from this study, it was aimed to design interior spaces that could be perceived by the users with high quality spaces and by using different colors. The

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data obtained from this study have been treated in a systematic listing below.

In general, results support the results obtained previously by Muezzinoglu (2018) in real spaces with the same features. In other words, these results obtained with the VR 360 reality technology in the virtual design studio support each other with the results obtained in the real design studios having the same features. Supportive results were also reached in the study by Witmer, Bailey & Knerr (1996). These significant results showed that the virtual space scientific studies provided for reaching the correct results and that they could be obtained with much less expenditure than the real environmental scenarios. It was observed that there were different effects on the perceptual evaluations of the students according to the spatial quality scale of the colors used on the walls of the design studios modeled. Accordingly, perceptual evaluation results that were rather close to each other were found in the studios having warm, cool and neutral wall colors for the adjective pairs of "light / dark" and "stimulating / drowsy". On the other hand, it was determined that the neutral and cool colored studios were perceived as more "roomy" and "inviting" compared to the warm colored studios. These results also showed parallelness with the studies by Hidayetoglu, Yildirim & Akalin (2012). Furthermore, it was determined that the different colors used in the design studios had different effects on the perceptual evaluations of the students according to the social adaptation scale. Accordingly, it was observed that the cool colored studio was perceived more positively compared to the neutral and warm colored studios from the aspect of social adaptation except for the sincere / formal adjective pair. In a similar manner, it was also observed that the perceptual evaluations of the students for the colors used in the design studios for the individual productivity scale had different effects. From this result, it was understood that the cool colored studio was found to be more motivating and peaceful compared to the other studios. It was emphasized in many studies, among which were the studies by Stone & English (1998) and Helvacıoglu (2007), that cool colored spaces were evaluated as peaceful and calming. Similar studies that would be made later can also benefit from the virtual reality technology.

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Resume

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Architectural Hybridity in Contextual Representations for The Moment of Synchronic Essence

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Abstract

Hybridization can be described briefly as the encountering of two different situations, the positioning together rather than destroying each other. Many situations can be defined as ''hybrid'' if it can relate to its surroundings or previous periods in a cultural or physical sense. The study aims to explain that using the hybrid systems while transforming is an important method to construct the essence of place. Within the scope of the study, a methodological discussion with the questions on hybridity in design has been developed on examples selected as ''contextual representations''. Along with this theoretical framework, four different hybrid approaches considered as the main theme of the study are: mixed / merged (antique vernacular architecture of Çavdarhisar), front / rear (Zvi Hecker, Palmach Museum of History, Tel-Aviv, Israel, Amateur Architecture Studio, Ningbo Historic Museum, Ningbo), side by side combination of different centuries (LMO, Evangelist Educational Centre Hospitalhof) and lower / upper (Peter Zumthor, Art Kolumba Museum, Cologne). Considering the examples, the

Keywords: *Architectural hybridity, contextual representations, perpetual essence, moment of synchronic essence, transformation.*

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common goal of hybrid systems was to reach the "spiritual moment of synchronic essence" or a ''perpetual essence''.

INTRODUCTION: THE CONCEPT OF HYBRIDITY AND THIRD SPACE OF ENUNCIATION

It would be useful to understand where the concept of hybridity is derived from and to which conditions it has been used. All through the time the coexistence of cultures remodels the time and space by distorting its monolithic being. Colonization is a bare milestone on this flow with the approaches it provoked. Until the colonization period, since demonstrating the power of the governments takes places within their boundaries, the cultural competition of civilizations was experienced inside their boundaries. Together with colonization, invasions changed the colour of the cultural environment in a devastating mode. Being colonized meant to be subordinated so the term degeneration was used instead of hybridization. The colonized societies thus sought to remove the influence of the ''other'' from their own culture, and this belief continued until the 19th century (BHABHA, 1994, p. 32). These tensions also formed the basis for the formation of a new understanding. The negative approach to hybridity begun to lose its validity together with the superior thought of colonial period. In terms of postcolonial discourse being culturally hybridized represents strength instead of weakness. The discourse of culture is accepted to be developing and changing in the practice of life and transforming into hybrid cultures. In postcolonial discourse hybridism is defined as a complex cultural palimpsest and the identities exist with their opponents, described as being something also not being something other.

Today hybridization has many meanings in the area it is used. Encountering of two or more different situations, taking position together rather than destroying each other and many situations can be defined as ''hybrid''. At the basis of the definition of hybridity is a ''self'' encounter with an ''other''. At that point when ''self'' or ''local'' is confronted or shifted through the ''other'' or ''new'' situation, hybridity is not only a consequence of local and new merging, but it is the result of the entire process and conclusion. So, many definitions are available to discuss hybrids positively and negatively from different perspectives. The concept of hybridity in architecture encounters, a new formation that occurs between at least two different states points to the third space, neither nor that. Similarly, Homi Bhabha, a culture theorist, refers to an intermediate ''third space'' in which cultures emerged from contradictory identities, not being a colonial-exploited synthesis but formed by a mutual transformation. In his book

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''The Location of Culture'' he says a meaning between the two systems is formed in a third space of enunciation (BHABHA, 1994, p. 37) produces the encountering points. When one is compared with another culture, the formation of a different structure from itself, that is, ''neither one nor the other'' (BHABHA, 1994, p. 125) becomes clear with the concept of the third space. As Bhabha mentions the intervention of the third space of enunciation, which makes the structure of meaning and reference an ambivalent process, destroys this mirror of representation in which cultural knowledge is customarily revealed as an integrated, open, expanding code. Such an intervention quite properly challenges our sense of the historical identity of culture as homogenizing, unifying force, authenticated by the original past kept alive in the national tradition of the people.

In architecture, forms and the concepts always grow and retract, and different periods has their unique characters. Until modernization, cities develop using former knowledge, by overlapping or by adding new layers, but with the industrial revolution, increase in population and lack of planning caused traditional features to disappear. While living in an era of homogenization of needs and consumption of patterns (AUGE, 1992, p. 5), maintaining the essence of a place was omitted or thought that it was out of date. Moreover, confronting historical areas has always a conflict even if it ends with synchronisation. Continuing the basic characteristics in the meeting of the old one with the new is not defined as the dissolution in the main source, neither the existence of unrelated additions or components. Within the scope of this study, the hybridity is discussed to which the components themselves do not deteriorate in their integrity but at the same time their getting into a different process by contact with the other. Thus, it is expected that hybridization is a new method through the cross fertilization of the ideas and principles, and their contribution towards the moment of synchronic essence of the place or creating spaces having a soul. Inheriting the genius loci, the space especially the architectural heritage is mixed with innovative ideas or techniques.

Within the scope of the study, a methodological discussion with the questions on hybridity in design has been developed on examples selected in four categories: mixed/merged, front / rear, side by side and lower / upper combination of different centuries.

Possessing Assets: Mixed/merged

Hybridism is synonymous with using previous information in the continuation of the viability. It is a widespread practice to use the robust parts of structures that have lost its function or fragmented

over time for a variety of reasons in the ongoing process through necessary deformation and displacement. In this practice, the complete spiritual continuity can hardly be achieved, but the proportions of the structure produced by the use of the parts, such as ornamentation or material, become part of the architectural character of the new structure. This means that in one aspect, the vitality of the structure is ensured using previous parts. However, the mixed / merged pieces provide instant notices and remain superficial since there is no continuity. Some examples of mixed/merged hybridization of different centuries can be given from the vernacular architecture of Çavdarhisar. Settled over the Aizanoi, ancient city of Phrygia, Çavdarhisar in the district of Kütahya Province in the Aegean region of Turkey uses the ruins of that period as a genuine part of their newly built structures (Figure 1).

Figure 1. Çavdarhisar (Photos by A. Akalın)

Ideas Behind The Forms: Front / Rear

A priori feature of the tradition is that it develops slowly and follows a transformation that cannot be easily noticed through the process. Only within the critical cases like wars, the durability of the tradition could be destroyed or reclaimed. In traditional process the next step is determined from the previous step. In the critical points of the time, the future is also re-defined. The wrinkles of time also re-create the course of events which creates the ideologies and techniques in a new way. Hybridity of the

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techniques and the character could form the new step for the new era.

As Zvi Hecker believes the cities can be nourished from the ruins taking roots from the dreams in people's mind; memory is the soil of the architecture (URL-01). When he was asked to design a museum of Palmach with Raffi Segal he was profoundly used the ideas of Israel dream as well as the opportunities that the site offered to him. Palmach was very important in it is the backbone of army force of Israel revolution. The Palmach, an acronym for ''Pelugot Hamahatz'', meaning striking force, was established as part of the Haganah on May 19, 1941, due to fears of a German invasion of Palestine (URL-02). It played a central role during the War of Independence (URL-02). Initiating with underground volunteer groups of sabotage, Palmach became the main commander of the Independence War afterwards established the country. For that reason, building a museum for Palmach was not just design a structure, the museum had to be the form of dreams and the fights that Israel had encountered. Designing mostly in the bare modernist style, Hecker added a poetic approach to the circulation raised from the Jewish history. The stone excavated from the site is used as a part of the facades and this material use symbolizes the soul of Israel within a traditional approach. This is the technique that old traditional cities generally apply, but in this example, it is the representation of Palmach ascending in cascades down below the ground up to the present symbolizing the historical progress of Israel (URL-03). Finally, The Palmach Museum of History is essentially a landscape of the dreams that have made Israel dream a reality. The form of this landscape is homage to the ideals that Palmach stood and fought for. They are also the invisible foundations that carry the load built in fifty years of Israel independence (Figure 2).

Figure 2. Palmach Museum (URL-04)

Ningbo History Museum in China can be given as another example of front / rear combination of different centuries. During the Chinese Cultural Revolution sustaining the essence of Chinese culture created an undesirable image and the term ''region al'' thought to be guilty. Being regional has become synonymous with limited, local and provincial. In opposition to this approach adopting the local senses and knowledge a new generation of architects emerged. Some of them, like Wang Shu and Lu Wenyu, dare to emphasise ''placeness'' once again (URL-05). Kenneth Frampton indicates the juggernaut they witnessed to run a studio in Hangzhou, a small country town, from Chinese modernization leaps and their impact on their own city (URL-06). Hangzhou used to be a harmonious city full of traditional features and nature, away from the conflicts of the metropolis, so was very suitable for them to live and work (URL-07) .

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Ningbo was initially an agricultural land surrounded with mountains. With its deep-water port and long history Ningbo used to be the trading centre of China's east-coast. Today in China an attitude of tearing down for municipal reasons is adopted. Ningbo took the piece of her own. For two new government administration buildings announced with a competition in 2003 – a culture centre and a park- dozens of old villages were razed. In Wang Shu's point of view this razing of old traditional villages was destroying the roots at the same time. While visiting competition area he focused on lost memories instead of a flat extending area to settle. All through the design period he tried to touch the feelings and traditional techniques that created the site. Ningbo History Museum (Figure 3) has brought Amateur Architecture Studio the Pritzker Prize with the ideas of conveying the traditional arts to today. The museum is an encouraging experiment composing the traditional Chinese culture and modern through the continuity of Chinese soul. In Iwan Baan's words the concept of the museum design is a combination of mountain, water and ocean, as the East China Sea has played a key role in the history of Ningbo (URL-08). As Wang Shu from Amateur Architecture Studio claims ''A mountain represents the place for Chinese people to find their lost and hidden culture''. But Wang's notion of the mountain also responds to Ningbo's people to find their lost and hidden culture place to hide, explore and feel through the holes, caves and valleys. That mountain metaphor is a conflict that Shu lives with the nature and the new. Prominent forms of decisive, sharp cuts and the layered facade symbolizes the man's footprint on the mountain. The mountain presents people to walk into an 'archaeological' trail contrary to its strong rigid image. Just like a mountain the museum has valleys and courtyards waiting to be explored. Evidently the upper part defines a big plateau for observing the city and its mountains, fields, etc. (URL-09)

Demolition of traditional buildings is negatively criticized by Amateur Architecture Studio and to keep remaining parts of the traditional parts hundreds of bricks from the farmers' razed homes all over the city composed in depicting another ''archaeological'' layer with ''wapan'' style. The wapan style is a system of traditional Chinese architecture used in building after typhoons (Figure 4). To keep the spiritual images of the China, Amateur Architecture Studio sticks to craftsmanship and the resources they've found in the history and the rural area. Guiding craftsmen on how to apply these traditional construction techniques Shu tries to encourage the craftsman to create as their own. Wang Shu emphasize architect's mission in a ''free-way'' which means creating the whole together which becomes a part of

the process not fully controls every detail. In this manner Wang Shu composes the hybridity of historical techniques and soul with modern facilities.

Figure 3. Ningbo History Museum (URL-10)

Figure 1. Facade detail from Ningbo History Museum (URL-10)

Contacts in Juxtapositioning: Side by Side

Touching each other and getting into a communication could demonstrate the side by side positioning of two different being. Founded by Arno Lederer, Jórunn Ragnarsdóttir and Marc Oei in 1979, the LRO always on the chase of creating localities and idiosyncratic spaces. The LRO team is not pursuing a way to fundamentally ''better'' or ''worse'', but rather a difference in how they see the world and the way they want to see it altered (URL-11).

Evangelist Educational Centre Hospitalhof in Stuttgart (Figure 5) is the first prize in a competition in 2009 and constructed in 2014. During the fifteenth century, a Dominican monastery was built on

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the site; following the Reformation it was transformed into a Protestant church with accompanying hospital. The ensemble was destroyed completely during the Second World War. Only the altar and the south wall of the nave survived. Because the Protestant administration and meeting centre that had been built on the foundations in 1961 was no longer able to fulfil contemporary requirements, the decision was made to replace it with a new building (URL-12). The new complex readopts the historic pattern of the old monastery complex and the new building is connected to the surviving part of the south facade of the original church. On ground level, generously dimensioned corridors with French windows refer to the former cloister, while the six fastigiated beech trees mark the piers that once stood in the nave (URL-13) . Exposed masonry of light-coloured brick masonry cloaks all the facades, bestowing a sense of familiarity. Today the Hospitalhof Stuttgart is the centre of the Protestant Church in Stuttgart for adult education, art, culture and music (URL-14).

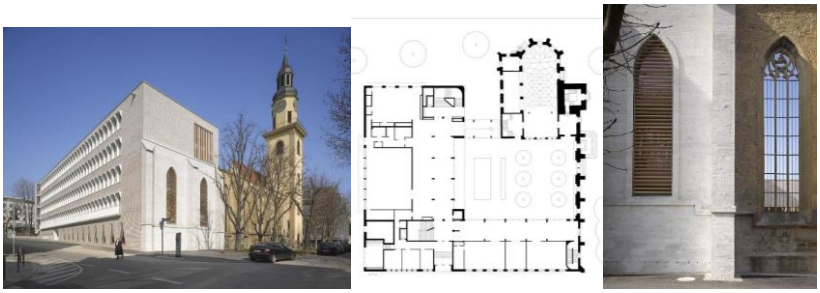

Figure 2. Evangelist Educational Centre Hospitalhof in Stuttgart (Main façade (URL-12); Main Floor Plan (URL-13); Façade detail: old & new (URL-13))

Penetrating Through The Interstices: Lower / Upper

The overlapping of the successors in the colonial period can be summarized as neglecting the spatial image of the former and establishing pragmatic relations only as a physical form. In hybridism perspective, these physical relationships begin to recognize the previous assets and try to unite with it. Art Kolumba Museum designed by Peter Zumthor is an example of this.

The city of Cologne was exposed to air bombing during the Second World War which caused a huge loss of lives and property. Up to the Second World War, Saint Kolumba Parish is widely considered to be the largest and leading church in the city. Being hit by an air strike in 1943 the church catastrophically demolished totally except a Virgin image from the Gothic period on a pillar. That image was accepted as the message of hope for the city. The ruins of the site were kept untouched in remembrance of the devastating bombing with an exception of a small chapel built in 1949 by Gottfried Böhm (Figure 6). By the time, the archaeological excavations were held in 1973 the site has taken an additional

importance of having Roman, Gothic and medieval remnants. In 2007 Peter Zumthor the Swedish architect won the competition to create a museum of keeping the site as it is used to be (URL-15).

Peter Zumthor approved the site's astonishing features of being a symbol as a historical monument. In his design process conserving the ruins was the key phrase. Zumthor's design was generally formed in thin, textured, grey handmade brick by Tegl Petersen of Denmark. Respecting the site's history and preserving its essence Zumthor omitted his autograph to become a part of the historical timeline with this delicate brick cover in Art Kolumba Museum (URL-16) (Figure 7).

Figure 3. Madonna in the Ruins Chapel designed by Gottfried Böhm (URL-17)

Figure 4. Kolumba Museum façade (URL-16)

Zumthor explained at the museum's opening "*this project emerged from the inside out, and from the place*". Taking part of his own the Museum becomes a new part and also an actor of the historical

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line. Kolumba Museum sits atop of all ruins of history, chapel of Böhm and the Saint Columba Parish Church. Museum is a comprehensive laboratory of all times and spaces reigned in here. Instead of perceiving the history as a fragile metaphor and afraid of facing it Zumthor's trying to merge with all the Sophia and take a step to be a part of her. Zumthor's idea penetrates the site of all means and entirely combines with them. The fusion between new and old creates the success and influence of the Kolumba museum. In addition to blank wide windows the bricks in soft grey tones constitutes the material choose of façade. However, the museum is far beyond being bold in a heavy structure. Pores and d textures of walls lightens the effect of three-storey museum and its massive effect. Soft grey bricks penetrate through the interstices of the facades exploded in the war means to go into the deep historical background of the site simultaneously. The deific flowing of the light through the pores is the main point creating the essence of the space. That light creates the essence of the space that gathers every period of time, every piece of material, every different function together. Mutuli states the connection between thSe colour of the material, form and the ruins are the art of simplicity. In his point of view the new building's facade feels intensely silent with the soft grey brick material and patches of windows here and there for lighting (Figure 8) (URL-18).

Figure 5. Kolumba Museum porus walls and transition details (URL-18, 2019)

CONCLUSION

As shown above, hybridity is realized within the conceptual ideas of the designs and chasing the memories as a start line for perpetuating or recreating the city's character. Sorting out of conventional approaches like possessing previous assets of mixed/merged combination, all these examples show that the common goal of hybrid systems of using local examples blended with different centuries (front/rear, side by side or lower/upper) was to reach the ''spiritual moment of synchronic essence'' or a ''perpetual essence''.

In terms of the front / rear combination of different centuries in both Palmach Museum and Ningbo Museum, there is a kind of makeup applied by means of the materials used and in such a temporariness constant essence is not the case be obtained perfectly. In the first example, the whole form is created with an intangible metaphorical expression, but the outside is unconscious from inside. Besides, in Ningbo Museum the creation of the form as an analogical expression (a huge mountain) does not help the continuity of the essence outside through the inside (Table 1). At the side by side combination of different centuries at Evangelist Educational Centre Hospitalhof, due to the tangible use of the elements on the façade, the contradiction between old and new is questioned with less spiritual effect (Table 1). Regarding the lower and upper combination of different centuries in Kolumba Museum, Peter Zumthor does not just define the new through the old, but when he builds a new old over the old, he brings a strong break in memories by incorporating time, space and faith simultaneously into the m. Old and new concepts are experienced through a synchronic fiction, stripped of any existentialism in the museum. This strange temporal situation created in the mind of the visitor is a result of unexpectedly combining the known items. This unexpected coincidence not only synchronizes all the layers of time, but also slows down the current time that has flowed out quite quickly. In fact, the most prominent example of this unexpected synchronicity is the Kolumba Church's stone remains of Roman and medieval times and the octagonal Madonna in the Ruins chapel built by Gottfried Böhm in the 1950s.

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Table 1. Hybridity in different uses

	Material use					**Form use**					**Element use**				
	Tangible ⟷ Intangible					Tangible Analogy ⟷ Intangible Metaphor					Tangible ⟷ Intangible				
Palmach Museum front/back	√									√	--				
Ningbo Museum front/back	√					√					--				
Edu. Centre Hosp. side by side				√		--					√				
Kolumba Museum upper/lower					√	--									√

Finally, Laplaceine and Nouss (LAPLANTINE & NOUSS, 2010, p. 13), as noted, it is not a fusion; but it is a dialogue. It meets between the old and the new, between the local and the global, between the spontaneous and the strategic, between the open and the private, between the inside and the outside (BHABHA, 1994, p. 3). The condition (BOURSE, 2009) describes as a group of different subjects refers to the fact that different situations can defend their qualities when they meet. Therefore, the emerging subjectivism or ‘‘interculturalism’’ is a meeting point of both subjects rather than a union (BHABHA, 1994, p. 125). As Ayşe Şentürer mentions, different structures (referred to as borderline potentials) in the moments of confrontation have the possibilities of a heterogeneous environment with overlapping, back-to-back, side-by-side stance and this allows for potentials with different transition ranges (URL-19). As she mentions, the transition ranges, defined as ''expansionary powers'', does not have a specific identity, form, or specific definition, since the boundary is not in its own boundaries, but it has clues for new connections (URL-19). Perhaps capturing a refined angle of view for the conditions of hybridity, offers a clue to the protection of the spirit of architecture. When an understanding of the potentials of this environment arising from hybridity in the architectural design process is recognized and attempted to revealed, free restrictive patterns and as a result free designs will emerge.

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Resume

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The Necessity of Integration of Flood Risk Reduction Strategies with Spatial Planning Decisions in Turkey, by Comparing Exemplary Practices in Developed Countries

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Abstract

In recent years, floods have obtained a predominant position among natural disasters worldwide, due to their rising number of occurrence and negative impacts. Flood and flash flood events affected many places adversely and caused serious human and material losses in Turkey. The search for a solution related to this problematic issue has become the starting point of the research. Noteworthy factors that increase the risk of flooding in Turkey include the effects of global climate change, increasing number of urban areas, changes in landscape, wrong land use decisions, spatial planning approaches disregarding natural thresholds and the phenomenon of natural risk. In this context, spatial planning approaches are needed to reinforce settlements against flooding disasters and ensure sustainability.

Keywords: *Flood risk, integrated flood risk management, water basin planning and management, risk-based spatial planning, sustainability.*

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In this study, international conferences and approaches of developed countries (United States, European Union and Switzerland) to reducing flood risk were investigated. In this context, this study describes existing legal-administrative structures and practices for the solution of problems caused by floods in Turkey and examines their relationship with spatial planning studies.

The objective of this study is to demonstrate that the key to success in all efforts to prevent damages to property caused by floods in Turkey is *"the need for ensuring integration of such efforts with spatial planning decisions at all scales",* by comparing exemplary practices in developed countries to those in Turkey. In this sense, suggestions are made in relation to the spatial planning regulations and to organizational structure based on the findings of the research in relation to the application in Turkey.

INTRODUCTION

Increasing Number of Floods in The World

The United Nations (UN) Office for Outer Space Affairs, the International Red Cross and Red Crescent Movement announced the *"2016 World Disaster Report"* to the public at a press conference held at the UN Office in Vienna. According to the report, in which disasters are described in two categories, i.e. *"natural"* and *"technological",* 371 natural and 203 technological disasters occurred worldwide in 2015. The number of deaths caused by 574 disasters worldwide was 32,550. According to the report, 410 people were killed and 6,768 people were injured as a result of disasters in Turkey in 2015. Among natural disasters, floods were in the first place with 154 occurrences, followed by storms in the second place with 114 occurrences, droughts in the third place, which increased by 38 percent, the climax in the last decade. The report emphasized that natural disasters were caused by climate change, and the number of people reportedly affected by natural disasters was noted to be about 108 million (World Disaster Report 2016 Published, 2016). According to the map of Munich Re, NatCatSERVICE (2018) (Figure 1), which shows the worldwide distribution of natural disasters that occurred in 2017, *"floods"* have a predominant share in terms of number of occurrences and number of deaths.

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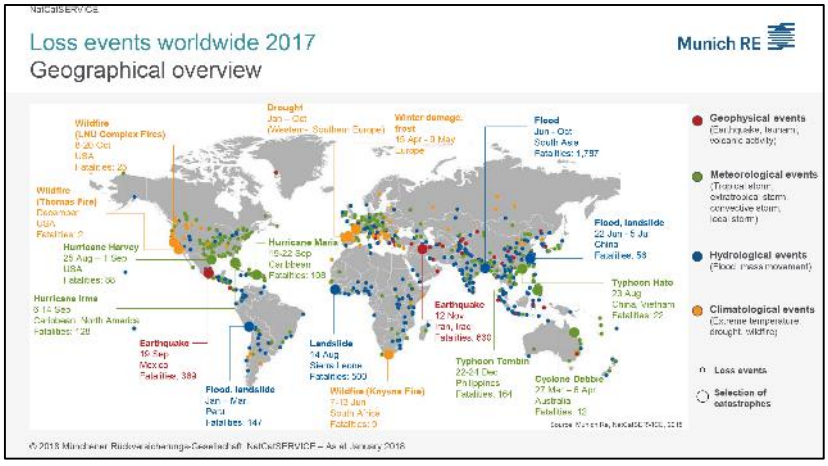

Figure 1. Loss events worldwide 2017, geographical overview. Reference: Munich Re, NatCatSERVICE, 2018.

It is stated that losses due to natural disasters increased in every cycle between the years 1980 and 2017, and floods accounted for 47% of loss events. 93% of all events were weather-related (contributing US$ 320bn). 2017 was the costliest year ever in terms of global weather disasters. Reported flood events are increasing over time (Faust, 2018).

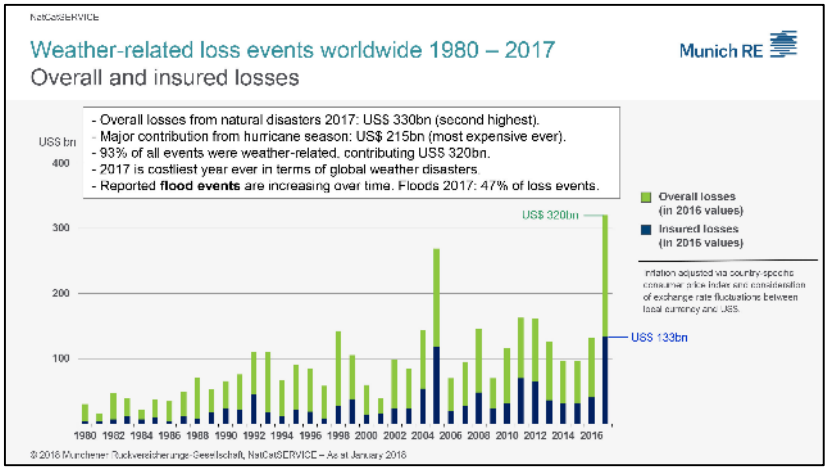

Figure 2. Weather-related loss events worldwide 1980-2017. Reference: Faust, 2018.

According to United Nations' resolution; 1990-2000 International Decade for Natural Disaster Reduction (IDNDR) were programmed to be the decade to reduce the effects of natural disasters in the World. During the decade, new strategies and principles were defined at the Yokohama Conference (1994) and International Strategy for Disaster Reduction (ISDR) was founded in 2000 as a new organ of UN to realize the strategies. ISDR organized the Kobe Conference in 2005, and as a result of the decisions taken during the conference; a new decade of activities (2005-2015) Hyogo Framework for Action (HFA) was projected (Balamir, 2007). Hyogo Framework Action Plan, which features a road map prepared for years between 2005-2015 and originated from United Nations' Reduction of Disaster Damages, creates a master framework for approaches to flood disaster issues. Hyogo

Framework Action Plan recognized by 168 United Nations member countries, targets to reduce social, economic and environmental losses and notably loss of life caused by disaster damages in world scale; emphasizing the importance of international cooperation. The importance of assessment and mapping of risk reduction strategies in an integrated sense was highlighted by providing integration with spatial planning within technical and corporate inter-capacities information sharing and cooperation. In this context, creation of National Platforms is important (Kuterdem, Akın & Nurlu, 2009). In addition, new concepts entered the literature through these developments, as *"risk management, disaster sensitive planning, contingency plan, mitigation, mitigation planning," etc.* (Kadıoğlu, 2012).

Figure 3. Flood Disaster in Louisiana, 2016 (left). Reference: URL 1.

Figure 4. Flood Disaster in Hiroshima, 2018 (right). Reference: URL 2.

Figure 5. Flood Disaster in Paris, 2016 (left). Reference: URL 3.

Figure 6. Flood Disaster in Switzerland 2018 (right). Reference: URL 4.

The Sendai Framework for Disaster Risk Reduction 2015-2030 is the first major agreement of the post-2015 development agenda, with seven targets and four priorities for action. It was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR). The Sendai Framework is a 15-year, voluntary, non-binding agreement which recognizes that the State has the primary role to reduce disaster risk, but that responsibility should be shared with other stakeholders including local governments, the private sector and other stakeholders. It aims for the following outcome: The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA)

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2005-2015: Building the Resilience of Nations and Communities to Disasters (UNISDR, 2015).

Increasing Number of Floods in Turkey

According to the report of *"Meteorological Characteristic Natural Disasters in Turkey in 2017",* meteorological characteristic natural disasters observed in 2017 in Turkey primarily included storms (36%), heavy rains/floods (31%) and hails (16%). Turkey has a wide geography and various climate regions. Due to its geographical position and sensitivity to atmospheric conditions, meteorological and hydrological disasters, primarily storms, floods, droughts, hail and heavy snow, occur quite frequently, leading to considerable death and loss of property (Turkish State Meteorological Service, 2018).

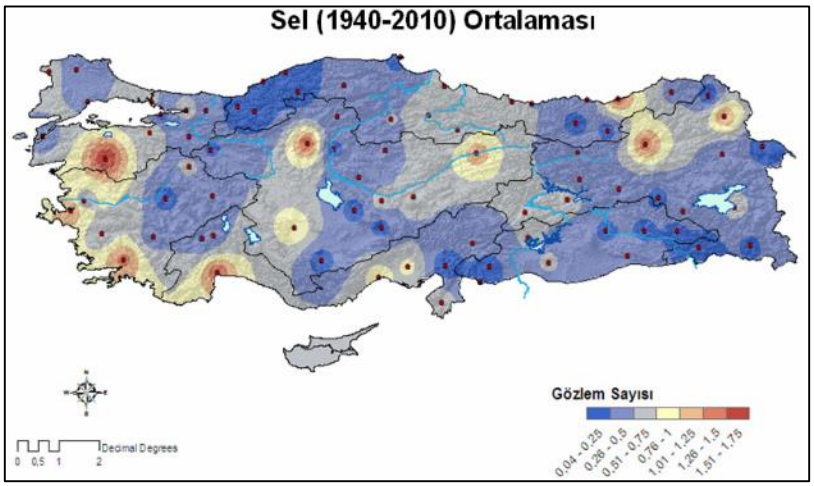

Figure 5. The Average of Floods-Heavy Rainfall Disasters Reported in Turkey between 1940 and 2010. Reference: Kadıoğlu, 2012, P. 89.

According to the *"Meteorological Characteristic Natural Disasters in Turkey-Floods"* data, all flood disasters which occurred in Turkey between 1940 and 2010 took place particularly between May and July. The sites which were affected the most from floods are situated in the Black Sea, Mediterranean and Western Anatolia regions. When the distribution of floods that occurred between 1940 and 2010 was examined, it was seen that summer months were in the first place with 39%, followed by spring months with 25% in the second place and autumn in the third place with 18%. Seasonal distributions may vary locally. In Turkey, particularly coastal areas, deltas and valleys are prone to flooding risk due to heavy rainfall. Although heavy rainfall is the trigger factor in flood disasters that may occur in the abovementioned areas, other factors such as geomorphologic structure, unplanned urbanization and construction of houses in flood beds also play an important role (Turkish State Meteorological Service, 2017).

The rural population accounted for 75% of the population of the Republic of Turkey in 1927 and then the Country entered into a rapid urbanization process, particularly after the 1950s. Industrialization and mechanization of agriculture process, which decreased the availability of agricultural jobs, triggered a migration from rural areas to big cities. The percentage of rural population, which fell to 65% in 1970, declined further to 47% in 1985 and in 2017, urban population accounts for 92.5% of Turkey's population, which is estimated to be 80 million 81 thousand 525 people (Turkish Statistical Institution).

Figure 6. Flood Disaster in Istanbul Ekspres Road, 2009 (left). Reference: URL 5.

Figure7. Flood Disaster in Silivri, Istanbul, 2009 (right). Reference: URL 6.

Figure 8. Flood Disaster in Edirne (historical bridge), 2015(left). Reference: URL 7.

Figure 9. Flood Disaster in Bodrum, 2015 (right). Reference: URL 8.

Figure 10. Flood Disaster in Rize, 2015 (left). Reference: URL 9.

Figure 11. Flood Disaster in Ordu, 2016 (right). Reference: URL 10.

There are 30 metropolitan cities, home to the majority of Turkey's population. During that rapid urbanization process which took place in a legal-administrative structure that lacked spatial planning legislation, segregation of duties and communication between institutions and organizations, etc., wrong land use decisions were taken under the pressure of intensive construction activity. The resulting built environment prevented the absorption of water by soil and lead to an increased surface flow coefficient. Combined with urban technical infrastructure deficiencies and the effects of climate change, these factors led to an increase in the number of flood disasters in urban areas as well as a rise in material and moral losses particularly in the recent years. Floods and river flooding disasters still occur in various geographical regions of Turkey.

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APPROACHES TO REDUCING FLOOD RISK ADOPTED WORLDWIDE BY DEVELOPED COUNTRIES

Main Approaches to Reducing Flood Risk in European Union Countries

"Water basins" stand out as priority and strategic units in planning and management to strike a balance between integrated *"conservation and use"* of natural resources on a regional scale and sustainable development in the European Union countries. The Member States, the European Parliament and the European Commission have reached a consensus on the idea that an integrated approach to water should be adopted in the future. The EU Water Framework Directive (EU Directive 2000/60/EC) entered into force on 22 November 2000 with a view to establishing a framework for integrated water management across Europe. EU Directive 2000/60/EC stipulates establishment of "*river basin management plans*" to ensure sustainable development, and establishes it as the most important key point to ensure integration of such plans with land use decisions. It is reported that river basin management plans are important tools in implementing sustainable development.

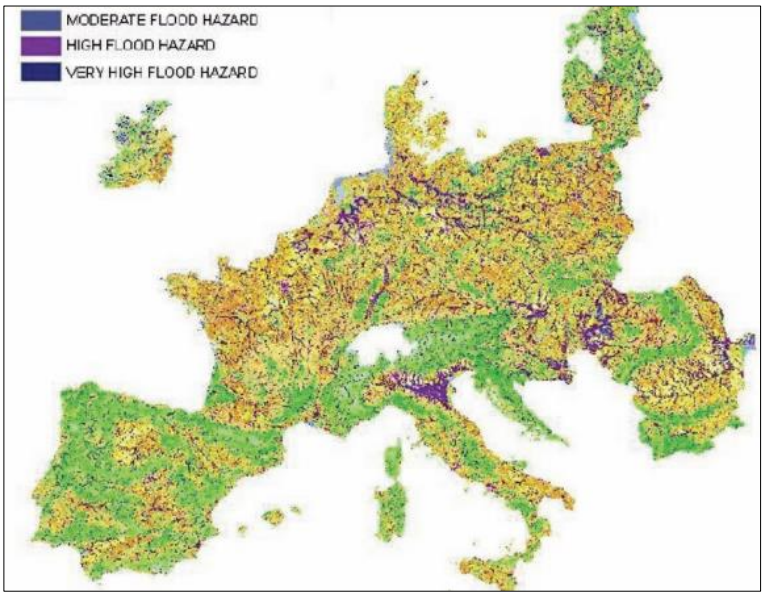

Figure 12. Overlay of the Corine land cover map and European flood hazard map. Reference: Martini & Loat (Ed.), 2007, P.149.

EU Directive 2007/60/EC of the European Parliament and of the Council on the Assessment and Management of Flood Risks, which is an extension of EU Directive 2000/60/EC and focuses on floods, was published in EU Official Journal and approved on 23 October 2007. The aim of that directive is to establish a framework for reducing negative effects of floods on human health, environment, cultural heritage and economic activities by evaluating and managing flood risk. Flood risk management is an integral part of

the integrated river basin management, so it is coordinated with the Flood Directive and the Water Framework Directive. The Flood Directive sets out the requirement for the EU Member States to develop a preliminary flood risk assessment, flood mapping (flood hazard maps & flood risk maps) and flood risk management plans. In this context, flood risk is described as the combination of the probability of a flood event and of the potential adverse consequences for human health, the environment, cultural heritage and economic activity associated with a flood event. Development of flood risk maps requires multi-layered and complex inquiries. Flood hazard maps show studies of flow velocity, water flow, water depth, water level and the flood extent, primarily the flood impact area. Flood risk management aims to reduce the likelihood of floods and their adverse impacts. Flood risk management focuses on taking precautions before natural risks turn into a disaster, development of early warning systems, etc. and the need to reinforce this process with *"disaster management"* studies. Another issue that has been agreed upon is the integration of flood risk management and disaster management studies with land use decisions and spatial planning activities.

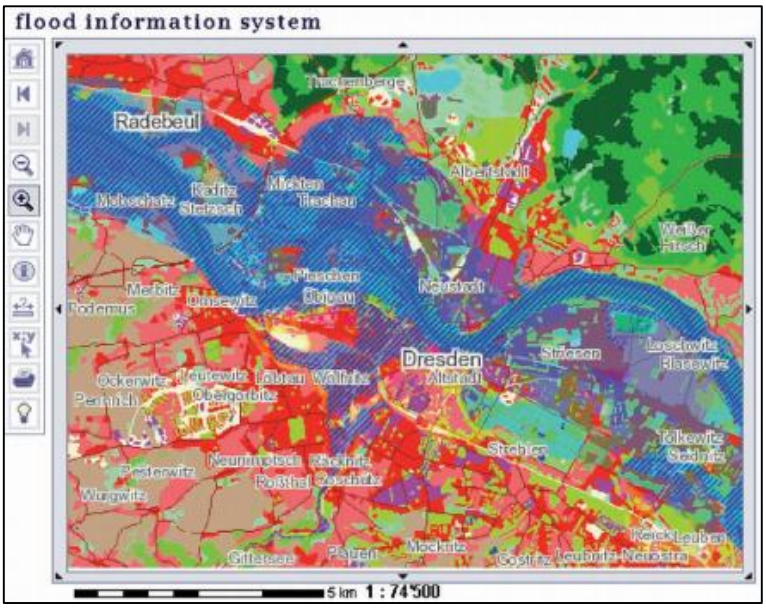

Figure 13. Combination of flood extension and land use map for the city of Dresden (ELLA Project) Reference: Martini & Loat (Ed.), 2007, P.154.

Each EU state devoted to implementing EU common principles revises its own legislation and implementation approaches. All EU member states are required to develop their spatial strategies and policies specific to the conditions of each basin of flood map studies and prepare works based on desired level of international co-operation. In this context, information is shared by publishing guides on good practices (Handbook on good practices for flood mapping in Europe, etc.) on the web site of the European Commission about Environment. Scientific research projects on

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flood risk in river basins in the EU, supported by EU funds are also important for sponsoring such studies (River Rhine Flood Information System, etc.). According to EU Directive 2007/60/EC on the assessment and management of flood risks, member states have to ensure that the flood hazard and flood risk maps are completed by 22 December 2013, flood risk management plans are completed by 22 December 2015, flood hazard and risk maps are reviewed, and if necessary updated by 22 December 2019 and every six years thereafter and flood risk management plans are reviewed by 22 December 2021.

Main Approaches to Reducing Flood Risk in The United States of America

The foundations of integrated management of water resources and water basin planning in the United States date back to the 1930s, and the first example is the Tennessee Valley Project. In addition to the solution of flood problems in the region, the Tennessee Valley Authority (TVA) which was established with a view to utilizing the region's water potential and energy production, carried out water basin planning studies and achieved socio-economic development on a regional scale. Today, although TVA continues to exist independently in an exceptional way, the Environmental Protection Agency (EPA) is responsible for planning and management of water resources on a basin scale throughout the USA, whereas Federal Emergency Management Agency (FEMA) is responsible for conducting studies to reduce flood risk. Within the scope of *"National Flood Insurance Program"*, FEMA conducts operations including raising awareness among all stakeholders, especially citizens, about flood risk and promoting insurance in regions subject to flood risk. In this context, it prepares flood risk maps, flood hazard maps, flood insurance maps, flood management plans, which also provide guidance to spatial planning activities, communicating with all stakeholders.

As indicated by FEMA official resources; by means of "Risk Matching, Assessment and Planning (Risk MAP), a flood hazard mapping program, FEMA identifies flood hazards to prevent flood disasters. Constituting the basis of National Flood Insurance Program (NFIP) regulations and flood insurance requirements, Flood Hazard Mapping is an important part of the National Flood Insurance Program (NFIP). FEMA maintains and updates data through Flood Insurance Rate Maps (FIRMs) and risk assessments. Statistics such as river flow, storm waves, hydrological analyses, precipitation and topography surveys: FEMA supports conscious planning and development practices to

identify flood risk in the Risk MAP project and mitigate the risk through identification, assessment and planning. In this context, it works with federal, state and local partners. Each Risk MAP flood risk project is tailored to the unique needs of each community. FEMA has also initiated the *"Coastal Flood Insurance Studies"* of the USA in order to prevent damages of disasters such as tsunamis, etc. that may occur in coastal settlements due to climate change. FEMA has been updating Flood Insurance Studies (FISs) and Flood Insurance Rate Maps (FIRMs) with Risk MAP studies for the USA and publishes new FIRMs in densely populated areas which have not been previously matched.

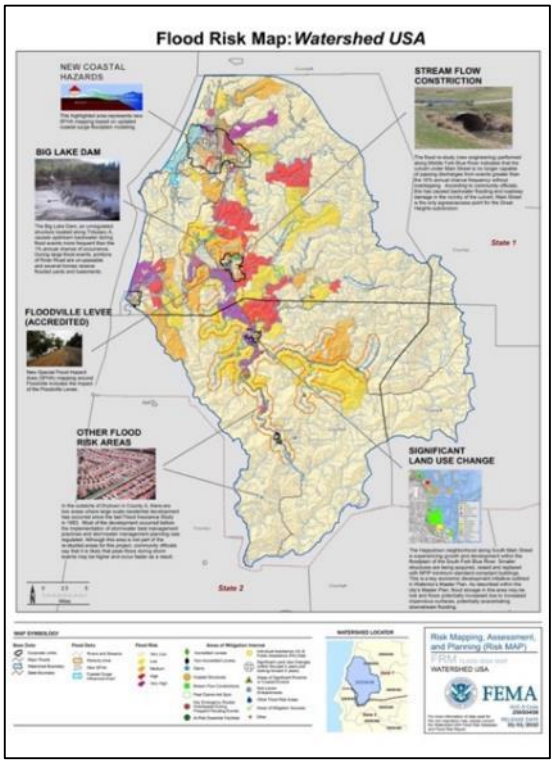

Figure 14. Flood Risk Map: Watershed USA. Reference: FEMA, 2018, P. 17.

Figure 14. An example of flood mapping products of FEMA in USA. Reference: URL 11.

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FEMA works with *"specific guidelines and standards"* to support the Risk MAP program. These guidelines and standards define the specific implementation of the statutory and regulatory requirements for NFIP flood risk analysis and mapping and also address the performance of flood risk projects, preparation of maps and related Risk MAP activities. Maps and datasets for flood risk describe hazard mitigation planning activities, in particular the risk and vulnerability assessment section of a hazard mitigation plan and information on development of risk-based strategies. They also help to guide land use and development decisions and take measures by highlighting areas of highest risk, areas where damage should be mitigated, and areas to be changed to prevent flood risk. As a matter of fact, the authors of spatial planning studies use these data to develop conservation plans, and studies of flood risk areas and take special decisions.

Main Approaches to Reducing Floods and Flood Risk in Switzerland

When the approaches in Switzerland, a Central European country that is not a member of the European Union, to reducing flood risk are examined, it is understood that the flood issues in Switzerland are mainly under the responsibility of the Federal Office for the Environment (FOEN). According to the references of FOEN, the Swiss government is responsible for protecting its people from natural hazards and ensuring property security. In Switzerland, damage caused by natural hazards is progressively increasing. Settlement areas are expanding and flood hazard areas are being used more intensely. In addition, global climate change significantly increases the risk of natural phenomena to turn into a hazard in Switzerland and its impacts. The figures for Switzerland as a whole show that one fifth of the settlement areas are facing natural hazards (mainly floods). In these areas, there are about 1.8 million people who face the risk of flooding. In Switzerland between 1972 and 2014, the total amount of damage caused by floods, landslides, erosion and mud flows was 320 million Swiss francs. Damages that were caused by natural hazards such as floods, mud flows, landslides, erosion and avalanche in Switzerland since 1972 provide considerable information about protection from natural hazards in this context. These experiences suggest that Switzerland has to live with these natural phenomena due to its natural location. The analyses of the experiences in Switzerland as well as systematic assessments and all experiences provide the basis for the need for an *"integrated risk management"* and today the principles of *"integrated risk management"* have been adopted for protection from natural hazards in Switzerland.

Integrated risk management is defined as a combination of methods and criteria. It involves obtaining information on risks, assessment and approval/acceptability on a periodic basis. Thus, priorities and action areas are developed. The development of risks is directed by appropriate criteria and future risks can be prevented. It is emphasized that a successful risk management requires an intensive "*risk dialogue*" between actors. In spatial planning criteria, co-operation of public and private actors in this context becomes much more important. Continuous monitoring of this process allows early recognition of general changes in hazards and of hazard situations, so it is aimed to mitigate damage through early warning, alarm and information systems. While completing basic studies on the National Hazard and Risk Assessments, Federal Office for the Environment (FOEN) revises them against constantly intensifying spatial use, *"risk analyses"* are made by superimposing flood hazards to spatial uses.

Protection from natural hazards in Switzerland is defined as a holistic task in which all participants provide their own inputs. The most important actors responsible for the protection from natural hazards are:

1. Insurance industry: To clarify the insurance conditions by providing information and counselling and insure potential losses.

2. Citizens / Respondents: To take responsibility for security of one's own property, be prepared for emergency situations and for acting appropriately in the event of a disaster.

3. Public institutions (across Swiss federation, cantons and districts): Public duties; in Switzerland, in the case of natural hazards, districts (in general) and cantons are accountable. The Swiss government (federation) assumes a strategic orientation role and supports cantons in terms of finance and expertise.

Apart from these, there are also other actors concerning protection against natural hazards. For example, *"planners and engineers"* are responsible for informing these risks in the framework of their areas of responsibility and for providing the criteria that reduce the risks.

Spatial planning studies in Switzerland govern the development and use of space. Care is also taken to avoid additional risk caused by new constructions in risky areas through superimposition and transfer of hazard maps and risk maps to spatial planning studies. In practice, implementation of *"risk based spatial planning"* requires combined use of various tools. Hazard maps are

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transferred to navigational spatial and land-use plans (Kantonal Richtplan). In this context, construction status is finalized by building permits. Building insurers provide consultancy services in various cantons to determine the criteria for protection. Cantonal Guiding Plans (Kantonal Richtplan) are the core tool of spatial planning. The Cantonal Guiding Plan prepared by the cantons for protection against natural hazards describes the guiding principles on how to live with these natural hazards, how to work on, coordinate and temporally organize hazard- and risk-based studies. A hazard- and risk-based study is a binding enforcement tool for implementation in cantons and districts (Gemeinde).

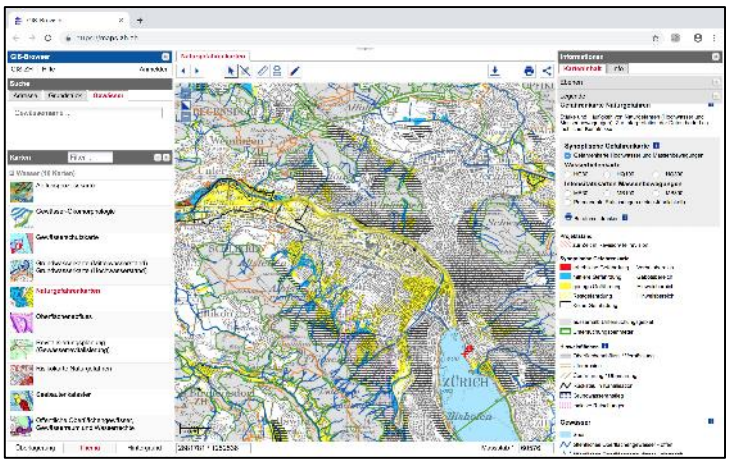

Figure 15. An example of Flood Hazard Map of Canton Zurich. Reference: URL 12.

Land-use and building and zoning regulations set forth in the Spatial Use Plan (Nutzungsplanung), show, on a land plot basis, the contents of hazard maps for districts and their results to land owners, and are binding. Hazard maps are divided into the zones.

- Red zones are the most dangerous areas where the construction of new structures and of existing ones is not permitted.

- In blues zones, construction is permitted subject to certain use restrictions (moderately risky areas).

- In yellow and yellow-white shaded zones (areas of minor or residual risk), permit is granted with structural precautions by which increases risk due to intensity of existing use is prevented.

When the above zoning legend is examined, risk zone of a site is determined by seeking an answer to the question *"at what depth and what velocity is that site affected by the flood"*, not only to the question *"whether that site will be affected by a flood"*. In the case of building permits, the cantons and districts inquire whether the request for building permit complies with the laws and

regulations of that district. In this context, the conditions for protection against natural hazards are also sought during evaluation of applications for building permits.

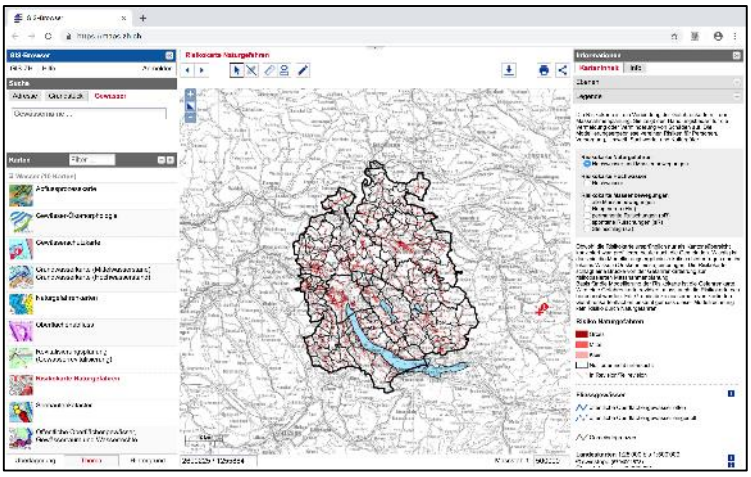

Figure 16. An example of Flood Risk Map of Canton Zurich. Reference: URL 12.

FOEN produces a variety of interactive maps on different natural hazards. Interactive Maps include geographical information models for natural hazards. All of these maps can be accessed from the Web-GIS page of FOEN. Hazard maps, intensity maps and hazard content maps are prepared by the cantons and can be seen at the cantons' geoports. It is the common duty of the Federal Office of Topography (Swisstopo), the Federal Office of Statistics and the Federal Office for Spatial Development to prepare basic documents on spatial uses and population development.

APPROACHES TO REDUCING FLOOD RISK IN TURKEY

Existing Legal-Administrative Structure in Turkey

Concerning the legislation on floods in Turkey, Law No. 4373 on Protection Against Flood and Inundation (1943) that entered into force upon its publication in the Official Gazette on 21.01.1943 is the oldest and most effective law. However, various institutions have been commissioned regarding floods by several laws and regulations, including Law No. 6200 on the Organization and Duties of the General Directorate of State Hydraulic Works (1953), Law No 3621 on the Shores (1990), Decree No. 645 on the Organization and Duties of the Turkish Republic Ministry of Forestry and Water Affairs (2011), Decree No. 644 on the Organization and Duties of the Turkish Republic Ministry of Environment and Urbanization (2011), Law No. 3194 on Reconstruction (1985), Law No. 5216 on Metropolitan Municipality (2004), etc. This has led to confusion of authorities and uncoordinated working.

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In practice, efforts to reduce the flood risk have been carried out predominantly by the General Directorate of State Hydraulic Works associated with the State Planning Organization. Established in 1954 with the Law No. 6200, the State Hydraulic Works is basically the oldest authorized establishment in the planning and management of water resources. By virtue of the authorization vested by the Law No. 6223 (2011) the Council of Ministers decided on 29/6/2011 to amend certain laws and statutory decrees due to establishment of the Turkish Republic Ministry of Forestry and Water Affairs. The General Directorate of State Hydraulic Works, the oldest and long-established institution dealing with hydraulic works carries out its activities under the Turkish Republic Ministry of Forestry and Water Affairs and is responsible for planning, management, development and operation of water resources. However, with the Metropolitan Municipality Law No. 5216, the rehabilitation of streams in metropolitan municipalities has been described as the duty, authority and responsibility of the metropolitan municipality.

Awareness on flood disaster and climate change in Turkey can be said to have increased especially after serious losses were suffered during the flash flood and river flooding events in Istanbul, Antalya, etc. in 2009. From that date onwards, promising efforts have been initiated more rapidly on prevention of flood disaster, disaster management and post-disaster issues. As a matter of fact, the Prime Ministry Circular (2010) No. 2010/5 and issue 27499 published in the Official Gazette on 20 February 2010 on the importance of the matter asking for urgent cooperation states that: *"Considering the differences in the quantity and intensity of rainfall due to global climate change and flood disasters caused by the floods in the recent years, in order to prevent potential future floods, river and stream beds should be rehabilitated in a short period of time". In this context, responsibilities are given to the public institutions and organizations regarding the rehabilitation of stream beds and waterways, particularly to the General Directorate of State Hydraulic Works (DSI),* Turkish Republic *Ministry of Environment and Forestry, Governorships, Metropolitan Municipalities pursuant to the Metropolitan Municipality Law No. 5216".*

The 10th Development Plan for (2014-2018) which guides planning studies at the country scale says; *"As a consequence of climate change, the frequency of disasters has increased, with effects reaching enormous levels. Although progress has been made in disaster management and pre-disaster risk mitigation measures in our country, there is still a need to prepare integrated disaster hazard and risk maps and to include them in settlement planning*

and zoning planning processes" (Turkish Republic Ministry of Development, 2013). Nationwide Disaster Response Plan of Turkey prepared in 2014 covers ministries, institutions and organizations, private organizations, NGOs and the community to be assigned duties in case of disasters and emergencies of any type and scale in Turkey. Founded in 2009 under the auspices of the Prime Ministry Disaster and Emergency Management Authority (AFAD) is one of the most active units specialized in all kinds of disasters. And the legal and administrative structure for flood disaster has begun to be revised (AFAD, 2014). Examples of legal arrangements include Law No. 5902 the establishment and duties of the Disaster and Emergency Management Authority (2009), Law No. 6305 (2012) on Disaster Insurance, Law No. 6306 on Transformation of Areas at Risk of Natural Disaster (2012) that entered into force upon its publication in the Official Gazette dated 31/5/2012, the Regulation on Disaster and Emergency Intervention Services (2013), published on 18/12/2013, Prime Ministry Circular No. 2006/27 on Stream Beds and Floods (2006) published in the Official Gazette on 9 September 2006 and Prime Ministry Circular No. 2010/5 on the Rehabilitation of River and Stream Beds (2010) published in the Official Gazette on 20 February 2010.

As an important and positive development in the process of harmonization with the EU, *"the Regulation on Protection of Water Basin and Preparation of Management Plans (2012)"* was adopted and published in the Official Gazette on 17 October 2012. The purpose of this Regulation is to set out procedures and principles on protection of surface waters and ground waters with a holistic approach in terms of physical, chemical and ecological quality and on preparation of water basin management plans. This Regulation covers the principles and procedures on protection of water basins with surface water and ground water resources, excluding seas and including coastal waters, and on preparation of their management plans. The *"National Water Basin Management Strategy (2014)"* was adopted in the Official Gazette on 4 July 2014. Under the Water Basin Management Plan, an important effort concerning floods is establishment of a *"Central Flood Management Committee"* and *"Provincial Flood Management Delegations"* within the scope of *"Flood and Inundation Strategy Action Plan"* to be prepared by 5 General Directorates as per the Decision of the Flood Coordination Board made by the Turkish Republic Ministry of Forestry and Water Affairs in 2012. *"The Regulation on Preparation, Implementation and Monitoring of Flood Management Plans (2016)"* was published in the Official Gazette on 12 May 2016 and entered into force. The purpose of that Regulation is to stipulate procedures and principles of

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assessment of flood risks at water basin scale and preparation, implementation and monitoring of flood management plans to reduce the adverse impacts of floods on human health, soil, environment, nature assets, natural protected areas, special environmental protection zones, cultural heritage, social and economic activities. "*The Flood Management Branch Directorate*", an entity associated with the Turkish Republic Ministry of Forestry and Water Affairs was also established in 2016.

In the Official Gazette No. 30474 dated July 10, 2018, it was decided to combine the Turkish Republic Ministry of Food, Agriculture and Farming and the Turkish Republic Ministry of Forestry and Water Affairs with the Decree of the Presidential Organization (No:1). All directorates within the Forest and Water Works are continuing their activities under the newly established Turkish Republic Ministry of Agriculture and Forestry.

Flood Management Plans in Turkey

Under the auspices of the Turkish Republic Ministry of Forestry and Water Affairs, the General Directorate of State Hydraulic Works has started to the studies for the establishment of Water Basin Management Plans that encompass harmonization with EU Water Framework Directive. The studies on the preparation of Water Basin Master Plans, which will provide a technical basis for the studies aforementioned, are conducted by the Directorate General of the State Hydraulic Works. The studies on the preparation of a "*Water Basin Master Plan Report*" for 25 water basins in Turkey were started in 2010. Another project in the process of harmonization with EU is *"EU Twinning Project on Capacity Building to Implement Flood Directive"* started in 2012. This project was prepared for Western Black Sea pilot basin and was completed in 2014. As a first example, the *"Preparation of Flood Management Plan"* was started for Yeşilirmak Water Basin in 2013. *"Flood Management Plan for Yeşilirmak Water Basin"* was completed by the Turkish Republic Ministry of Forestry and Water Affairs, General Directorate of Water Management in 2015. The second project entitled *"Preparation of Flood Management Plan for Antalya Water Basin"* was started in 2014 and it was completed by the Turkish Republic Ministry of Forestry and Water Affairs, General Directorate of Water Management in 2016. Within the scope of this project, flood risk maps aligned with 3 different (50-year (Q50), 100-year (Q100) and 500-year (Q500)) recurrent dams have been prepared in the direction of flood hazard maps, where the number of people affected, level of economic activity, critical facilities, possible economic damages and environmental damages are determined.

Figure 17. The Water Basins of Turkey. Reference: The General Directorate of State Hydraulic Works, 2017, P.43.

The provisions of the Regulation on Preparation, Implementation and Monitoring of Flood Management Plans are executed by the Turkish Republic Ministry of Agriculture and Forestry. The Regulation covers procedures and principles of preparation, implementation and monitoring of flood management plans. Flood management plans describe participatory cooperation processes on a water basin scale and regional scale in line with water basin management plans. The basic principles of Flood Management Plans are as follows: A Flood Management Plan;

a) serves as a guide to mitigate any damage that may arise from floods in a water basin,

b) is based on flood hazard maps and flood risk maps,

c) specifies the measures to be taken to reduce the risk,

d) identifies the responsible institutions.

In this context, responsibilities regarding Flood Management Plans in Turkey are defined as follows.

- Republic of Turkey, the Ministry of Agriculture and Forestry (General Directorate of Water Management) is responsible for the preparation, follow-up and coordination of Flood Management Plans as required.

- Water Basin Management Committees (under the chairmanship of the Governor acting as a Water Basin Coordinator) provincial governors and district governors in the Basin are responsible for conducting and reporting Flood Management Plans.

- Respective institutions and organizations (such as regional and provincial directorates of Ministries, local administrations) legally authorized and given responsibility for implementing the measures contained in the plan are responsible for the implementation of Flood Management Plans. Local

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administrations are obliged to prepare development plans, make disaster planning and carry out emergency aid services. In addition, the Metropolitan Municipalities are obliged to perform rehabilitation of the streams within their borders.

- Prime Ministry, Directorate of Disaster and Emergency (AFAD) is a leading institution with coordination duties during and after floods because of its responsibility to respond to floods and deal with the needs of disaster victims immediately.

Flood Management Plan for Yeşilırmak Water Basin (2015): Evaluation of Samsun Case

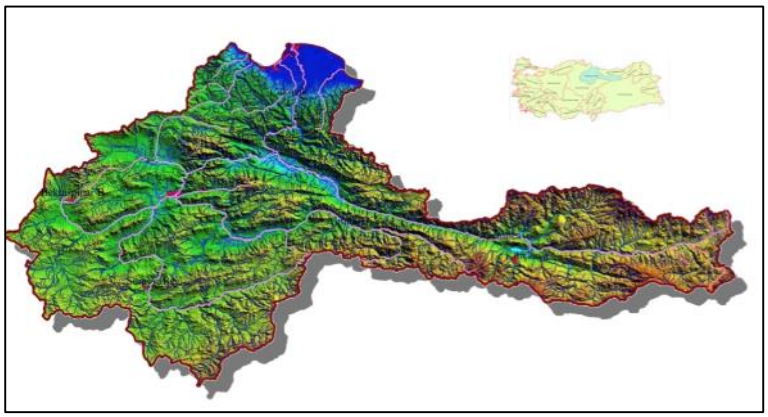

Figure 18. Yeşilırmak Water Basin Reference: Turkish Republic Ministry of Forestry and Water Affairs, 2015.

Yeşilırmak water basin, one of Turkey's 25 water basins, is located in the Black Sea Region of Turkey and is discharged into to the Black Sea. Yeşilırmak water basin contains the 3rd biggest rain area (39,628 sqm) in Turkey and also covers %5 of Turkey's surface area. %12 of water basin's area is constituted by the Samsun province. The identified risky areas were primarily located in Yeşilırmak water basin. According to surveys, the average total number of people expected to be affected per year in Yeşilırmak water basin is approximately 1,240 persons. Samsun is the place where the number of people expected to be affected by flood (Q500) is highest in Yeşilırmak water basin (Turkish Republic Ministry of Forestry and Water Affairs, 2015).

Figure 19. Flood Disaster in Samsun Canik District-TOKI Houses, 2012. Reference: URL 13.

Figure 20. Flood Disaster in Samsun Lovelet-Shopping Mall, 2012. Reference: Yılmaz, 2012.

The heavy rain in 2012 caused a casualty and big damage in Samsun. The overflow of the Mert River in Canik district provoked a great disaster. 13 people lost their lives during the flood that happened at the night of July 3th, 2012 in Canik district. Five of those casualties took place at the basement floors of Turkish Mass Housing Administration (TOKI). Following that, the Municipality removed the legal permission to reside in basements in this area (URL13). The shopping mall at Samsun's Canik valley, which was opened in June 8th, 2012, namely the Lovelet Shopping Mall was submerged into water. The mall became the victim of a wrong decision in a period of shorter than a month; constructing the mall on a river basin that was rehabilitated through drilling of the mountain (Yılmaz, 2012).

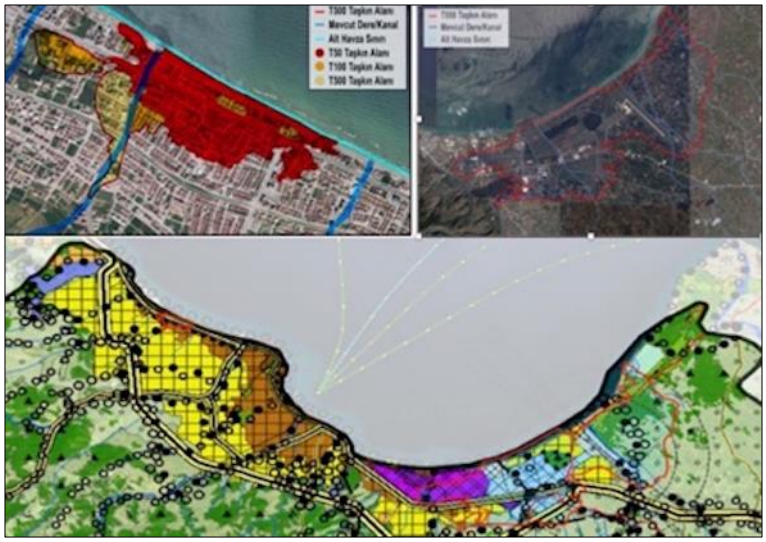

Figure 21. Areas exposed to flood risk (Q500) in Samsun as shown in the Yeşilırmak Flood Management Plan (Turkish Republic Ministry of Forestry and Water Affairs, 2015) overlapped with Satellite Images of Samsun Nord-west part (left), with Satellite Images of Samsun Nord-east part (right) and 1/100 000 scale Samsun-Çorum-Tokat Environmental Plan (Turkish Republic Ministry of Environment and Urbanization, 2016). Reference: Valiev, 2017.

[1]"Integrated Watershed Management in Turkey" has been studied at the Mimar Sinan Fine Arts University Master Programme, Urban Planning Studio course, in the 2016-2017 academic year. In the scope of the course, the relationship between flood risk maps and land use decisions in Samsun were investigated by Valiev (Figure21). After the first findings of the master studio studies, further research has been carried on land use and flood management plan decisions for Samsun by this study (Figure 22).

When the flood risk maps prepared for Samsun province within the scope of the Yeşilirmak Water Basin Flood Management Plan Report (Turkish Republic Ministry of Forestry and Water Affairs, 2015) are examined in detail, it can be observed that there are streams in Samsun, which is divided into 5 zones (A, B (B1-B2), C and D) (Figure 22). In this context, when we examine the 1/100 000 scale Samsun-Çorum-Tokat Environmental Plan (Turkish Republic Ministry of Environment and Urbanization, 2016), including high-scale spatial strategic plan decisions on the integration of these areas identified as flood hazard areas in Samsun province with spatial plans, it is observed that there are

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main decisions for organized industrial areas, residential areas, new development areas, natural conservation areas, marina area, and also airport area, etc. In this context, revision of land use decisions to reduce the negative effects of possible floods is required in Samsun.

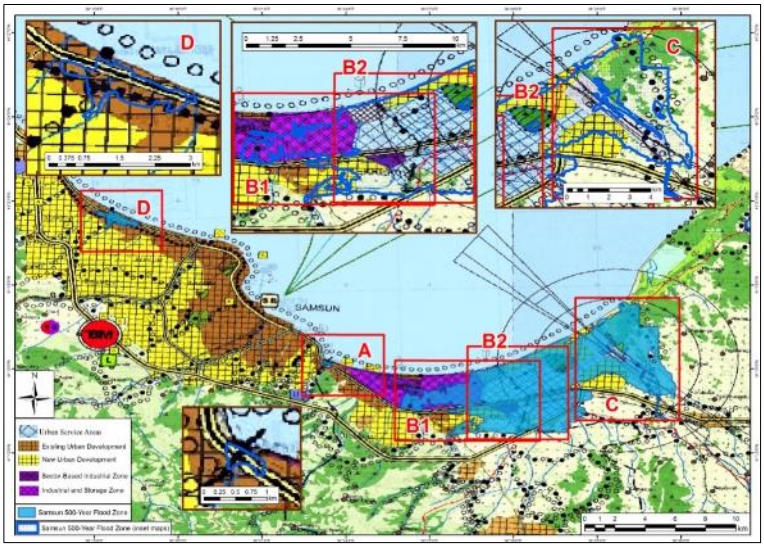

Figure 22. Areas exposed to flood risk (Q500) in Samsun as shown in the Flood Management Plan for Yeşilırmak Water Basin (Turkish Republic Ministry of Forestry and Water Affairs, 2015) overlapped with 1/100 000 scale Samsun-Çorum-Tokat Environmental Plan (Turkish Republic Ministry of Environment and Urbanization, 2016).

Flood Management Plan for Antalya Water Basin (2016): Evaluation of Manavgat River Case

Antalya water basin is located in the Mediterranean region of Turkey and discharged into the Mediterranean Sea. The water basin contains a rain area of 19,577 sqm and covers %2.5 of Turkey's surface area Antalya, the largest city of the water basin, is also the most important international touristic area of Turkey. Flood risky areas were identified primarily in Antalya water basin. Manavgat and Düden rivers are the places where the number of people expected to be affected by flood (Q500) is highest in Antalya water basin. The estimated total number of people to be affected during the flood recurrence periods is 72,467 at Antalya Basin's investigated river zones. When evaluated in scale of affected population from the flood (Q500); riskiest areas concentrate around Düden river (18,413 people) and Manavgat river (43,958 people) (Figure 24). In the meantime, Manavgat river has a special place in terms of the scale of expected amount of annual average damage, which is approximately 25 million Turkish Liras (Figure 25) (Turkish Republic Ministry of Forestry and Water Affairs, 2016).

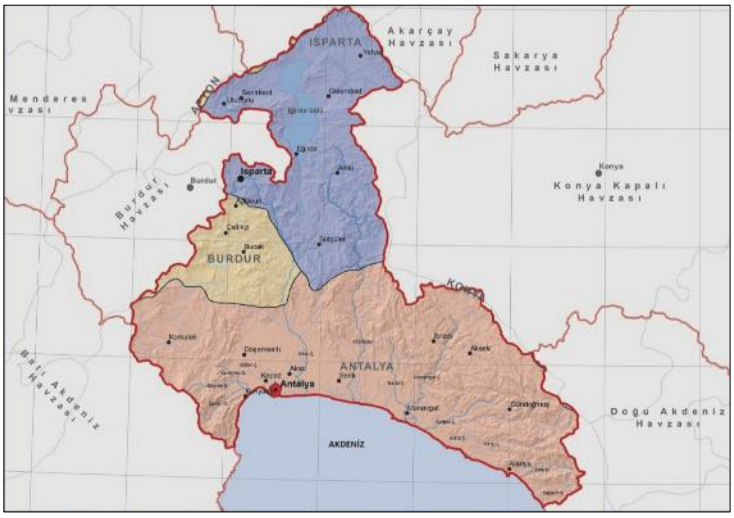

Figure 23. Antalya Water Basin. Reference: Turkish Republic Ministry of Forestry and Water Affairs, 2016, P. 2-2.

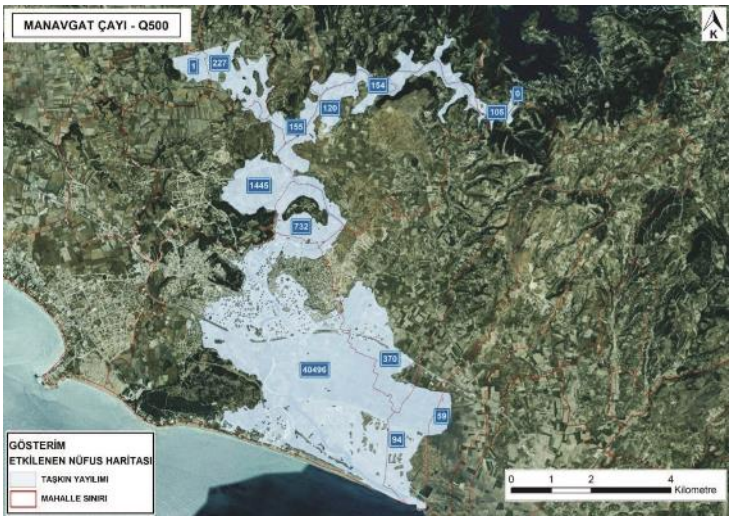

Figure 24. Affected Population (Q500) for Manavgat River by flood (Q500) Reference: Turkish Republic Ministry of Forestry and Water Affairs, 2016, P. 4-40.

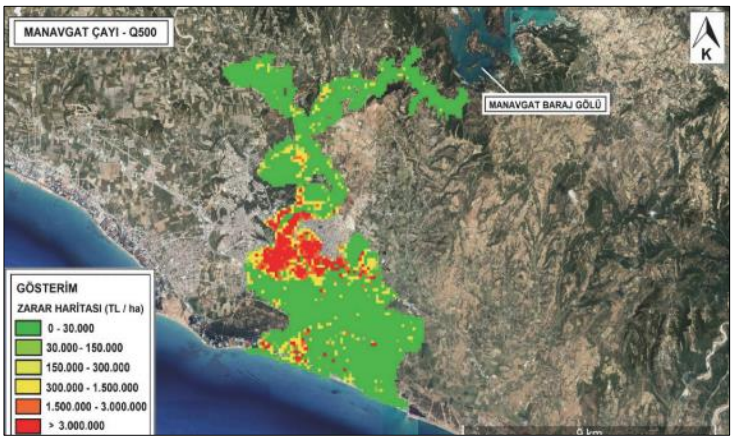

Figure 25. Annual Damage Map for Manavgat River by flood (Q500). Reference: Turkish Republic Ministry of Forestry and Water Affairs, 2016, P. 4-38.

In this region, floods can be experienced nowadays and they cause damage in rural and urban areas in Manavgat.

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Photograph 26. Flood Disaster in Manavgat, 2017. Reference: URL14. (left)

Photograph 27. Flood Disaster in the Tyche Temple in Side, 2014. Reference: URL 15. (right)

The flood risk areas of Manavgat river as shown in the Flood Management Plan for Antalya Water Basin (Turkish Republic Ministry of Forestry and Water Affairs, 2016) and the 1/100 000 scale Environmental Plan for Antalya-Burdur-Isparta (Turkish Republic Ministry of Environment and Urbanization, 2015) are laid together in this study (Figure 28). When we examine the 1/100 000 scale Antalya-Burdur-Isparta Environmental Plan decisions, including high-scale spatial strategic plan decisions on the integration of these areas identified as flood hazard areas of Manavgat river with spatial plans, it is observed that there are decisions for residential areas, tourism-related housing areas, urban development areas, agricultural areas and also important natural, historical and cultural conservation areas, etc. In this context, the spatial planning approaches that take flood risk into consideration are needed in Manavgat.

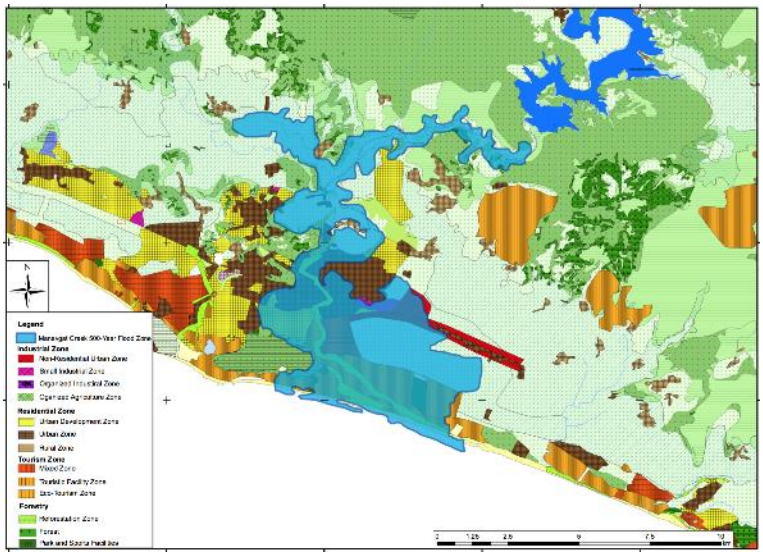

Figure 28. Areas exposed to flood risk (Q500) in Manavgat as shown in the Flood Management Plan for Antalya Water Basin (Turkish Republic Ministry of Forestry and Water Affairs, 2016) overlapped with 1/100 000 scale Antalya - Burdur - Isparta Environmental Plan (Turkish Republic Ministry of Environment and Urbanization, 2015).

Local administrations, primarily the Turkish Republic Ministry of Agriculture and Forestry and the Turkish Republic Ministry of Environment and Urbanization and also local governments should evaluate the results together by superimposing these studies with flood hazard and flood risk maps determined by the flood management plan. Flood hazard maps, flood risk maps and flood management plans should be integrated with regional spatial plans (1/100 000 scale environmental plans, water basin management plans etc.), local master building plans (1/5000

scale) and implementation development plans (1/1000 scale) at all scales.

CONCLUSION

The primary reason for the extreme losses suffered during the recent floods in Turkey is the wrong decisions on land-use. However, painful experiences have led to raised awareness on flood risk in Turkey, and as a result improved sensitivity on a national scale. Additionally, studies on fighting global climate change led by the United Nations and harmonization process with the European Union are positive developments that made Turkish institutions and organizations revise their legal and administrative structures regarding floods.

The Turkish Republic Ministry of Agriculture and Forestry works on *"flood management plans"* in line with the development of water basin management plans for reducing flood risk. Flood management plans should be expanded to cover the entire Country. It is understood that studies on flood hazard maps, flood risk maps and flood management plans have been carried out to reduce flood risk, and those studies place emphasis in particular on the need to correlate those studies with spatial planning studies. The Turkish Republic Ministry of Agriculture and Forestry should produce interactive GIS-maps and guidance on flood risk and flood hazards and this database should be accessible.

An *"integrated flood risk management process"* should be started in cooperation with the respective local administrations, local people, including also, the Turkish Republic Ministry of Agriculture and Forestry and the Turkish Republic Ministry of Environment and Urbanization. In the studies regarding planning of stream beds, long-term flood hazard and flood risk calculations should be taken into account and integrated into spatial plans. In this context, it is necessary to integrate of flood risk strategies with spatial planning decisions and also to revise all spatial plan decisions starting from upper scale national and regional plans to lower scale development plans.

As a matter of fact, Spatial Plans Construction Regulation published in the Official Gazette on June 4, 2014, prepared on the basis of article 5, 8 and 44 of Construction Law no. 3194 dated 3/5/1985 and article 2 of the Decree Law no. 644 on the Organization and Duties of the Ministry of Environment and Urbanization dated 29/6/2011 requires integration of all studies related to *"natural disasters"* and hence, the analyses of flood risk, risk management and mitigation plans, if any, with development

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plans. In this regard, local administrations have several responsibilities with regard to the planning processes, including raising awareness on flood risk among citizens. Preparation of "*risk-based spatial plans"* in flood disaster areas, as further defined in the Spatial Plans Construction Regulation, is extremely important and awareness should be raised among local people and administrators living in disaster areas, and actions should be taken through dialogue and cooperation in transparent processes. In light of these information, insurance and evacuation maps for flood risky areas should also be prepared.

The legal-administrative infrastructure has begun to be built in Turkey, which is a positive step in this regard. With effective urban planning approaches, irregular development can be prevented by foresting risky areas and stream beds, planning those sites as open spaces in accordance with the resolutions on ecological corridors and at the same time the negative effects of flood disaster should be reduced. "*High expropriation cost"* and *"reconciliation"* are the main long-term and challenging issues that need to be resolved with regard to rehabilitation of the areas exposed to flood risk in densely housed urban areas.

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Resume

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A Comparison of Classrooms' Layout Based on The Requirements of Preschool Literacy

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Abstract

Classroom design has claimed to be an important factor in supporting the pre-schoolers' literacy development. While many studies had focused on improving the overall environment of the classrooms, few studies are established with the focus on design characteristics that enhance early literacy. Comparative studies that reveal similarities and differences of design in different contexts and culture would be a significant attempt to provide a knowledge about the proper physical environment for literacy. This study is set out to compare the appropriateness of classroom design in two private and two public preschools in North Cyprus, by evaluating the necessary design characteristics for literacy activities. The study proceeds by developing an evaluation framework that analyses the design characteristics of classroom in terms of literacy learning, then followed by evaluating the design of each classroom by using this framework. The study is finalized by comparing the findings and discussing the similarities and differences of design in examined classrooms. Findings revealed that the layout of private classrooms were more literacy-oriented in compare to public classrooms, however in none of the classrooms there was any records of specific design considerations with the focus of literacy. In general, it was concluded that in all four classrooms layout of the classrooms lacked a

Keywords: *Learning environment, literacy activities, physical characteristics, preschool classroom, visual characteristics*

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sensitive design with concern of literacy activities. Results also demonstrated that only focusing on classroom will not be enough and considering the support for learning literacy in all the available spaces in preschool will establish more comprehensive results.

INTRODUCTION

Physical space of preschool classroom plays a significant role on defining the quality of literacy learning activities and there are studies that claim physical environment has a crucial role on children's behavior as well as their education (Maxwell & Evans, 2002, Lundquist, Kjellberg & Holmberg, 2002, Södersten, Granqvist, Hammarberg & Szabo, 2002). It is demanded that without an appropriate planning and organized environment, providing a successful literacy education for pre-schoolers will be difficult (Hart & Risley, 1995, Dickinson & Tabors 2001, Dickinson & Sprague 2002, Morrow, 2002, Cunningham, 2005, McGee & Morrow, 2005, Morrow, Roskos, & Gambrell, 2015). Regardless of the importance of physical space in improving the quality of early literacy development, it has been claimed that physical environment of the classroom is generally considered as background scenery and most of the concerns is given to pedagogy and interpersonal factors (Marrow, 1990).

Improving the design quality of classrooms to provide effective literacy is nearly now a universal goal, but achieving this goal requires assessments with a thoughtful focus on characteristic of the physical space. While a large amount of research has focused on testing the effect of changing the organization of the classroom, a few researches had concentrated in studying the design characteristics that improve the learning environment of the classrooms (Cortes, 2013).

Creating a framework that evaluates the design characteristics of the classroom by considering the pedagogical requirements would be a significant attempt to provide a knowledge about proper physical environment for literacy. This study aims to compare four different preschool classrooms by evaluating the appropriateness of their design characteristics for a quality literacy environment. The study proceeds by developing an evaluation framework that evaluates design characteristics of a preschool classroom in terms of literacy learning, then followed by using this framework to measure the differences between public and private preschool classrooms in North Cyprus. Finally, the results will be discussed to find out the similarities and differences in terms of design in examined classrooms.

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Background of the Research

A growing body of studies indicate the importance of literacy practices in preschool age for children to become skilled reader in their future and therefore the number of empirical researches that focus on improving children's early literacy instructions and practices is increasing (Lonigan, Allan & Lerner 2011). Huge number of literacy researchers addressed that social context had an important influence on literacy practices and since the place is always been part of this social context, the impact of place on literacy practices is undeniable (Graff 1991, Street 1995, Heath's, 1983 (cited in Nichols 2012)).

Lawn (1999, 78) defined the classroom as combination of "hard-ware and soft-ware". According to him hard-ware referred to physical structure of the space and soft-ware referred to the learning experiences operating within the physical structure, but Nichols and Nixon (2013) claimed that, existing literature related with early literacy had mainly considered the soft side of a classroom. Existing checklists and assessments such as 'Early Literacy Assessment Systems: Essential Elements', 'Early Language and Literacy Classroom Observation ELLCO', 'Preschool Educational Environment Rating System' and 'Literacy Rating Scale' items for evaluating children's developmental achievements in early literacy, mainly are related with soft-ware of the classroom while classroom's hard-ware remains un-noticed or at the background.

Geosemiotic analysis, which has been originally introduced by Scollon, Scollon and Wong Scollon (2003) as a framework to understand the meaning of signs and language by considering their physical and spatial context, has become a new methodology in early literacy and it. The bright side of geosemiotic analysis is that, this method does not only focus on 'what' has been doing related with literacy, but also it focusses on 'where' these practices are taking place (Albers, Holbrook & Flint 2014). Since geosemiotic analysis considers physical dimension of the space, researchers started to use the principles of this methodology in architectural researches. Nichols (2014, 184) classified the geosemiotic's layers of meaning for architectural studies as semiotic of place (Meanings produced through physical environment including zones, areas, pass ways, seating and etc.), visual semiotic (the placement and visual qualities of objects and materials) and interaction order (the relation and impact of semiotics of place and visual semiotics with social interaction and practices). From the time Scollon, Scollon and Wong Scollon (2003) has established Geosemiotic analysis method, the number of studies that use this method remains few and this might be due

to the considerable amount of time geosemiotic analysis requires for a proper evaluation.

Parallel with the scope of geosemiotic but with a closer focus on design characteristics of the space and less amount of time for evaluation, Shirin Izadpanah (2016) proposed post occupancy evaluation for preschool settings' interior space (PSIS) model that includes a systematic structure for quick evaluation of preschool spaces' design quality. Design characteristics that are considered in the structure of this model was established based on the common patterns of preschool learning experiences. Post occupancy model's section related with preschool's literacy centre include design characteristics that are necessary for supporting common patterns of learning experiences during preschool literacy. The structure of this model is useful since it is up to date, studies mainly focused on suggesting design requirements of spaces for a better early literacy learning, while there is also a need for evaluating the condition of existing preschool classrooms by considering suggested design requirements.

Studies claim that improving the quality of educational spaces requires understanding of leearning and education (Gifford's, 2002, Boys, 2010 & Hill, 2011). In this aspect, the intention of current study is to compare the appropriateness of classroom design in two private and two public preschools in North Cyprus, by evaluating the presence of necessary design characteristics for pre-school literacy learning. Asking teachers' idea about design characteristics of their classroom for literacy activity is one of the important concerns that was included in the structure of the evaluation model used in the current study. Studies claimed that in order to shape a better learning environment, it is crucial to take into consideration teachers' perspectives in design (Könings Brand-Gruwel & Merriënboer, 2005).

METHODOLOGY

Design characteristics that are defined as items for evaluating the design of preschool literacy centre in 'Post Occupancy Evaluation model for PSIS' has been used to develop the evaluation framework for current study. Since 'Post Occupancy Model' suggests that it is necessary to consider teachers' indication and children's interactions during learning activities for evaluating the appropriateness of design, current study has developed an evaluation framework that would evaluate design characteristics of the classrooms by considering teachers' indications and children's interactions in the classroom. Figure 1 shows the

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structure of the framework that is developed for evaluating the preschool classroom's design.

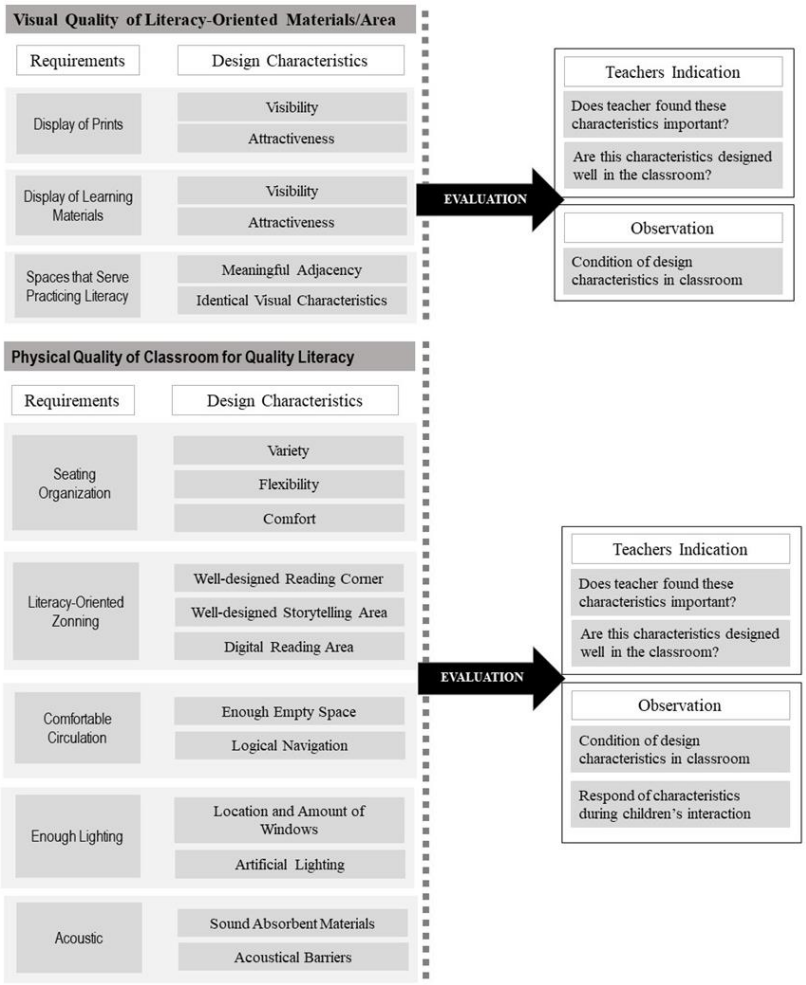

Figure 1. Framework for evaluating design characteristics of literacy learning in preschool classrooms, Developed based on post occupancy evaluation model for PSIS (Izadpanah, 2016)

To compare appropriateness of design for literacy activities in public and private preschool classrooms in North Cyprus, it was decided to choose four different preschools (two public and two private) as smaple studies. To choose these samples, kindergartens that are originally designed and built as kindergarten and located in Lefkosa, capital city of North Cyprus were defined as a main criteria for selection. Therefore, the cases that had been converted from a different function to kindergartens were eliminated. In second step, to choose the samples that are popular for their design, a classified list from previous step was presented to 40 families who live in Lefkosa and recently had preschool age children. In a quick survey they were asked to vote for two private and two public kindergartens with the best design. Two public and two private kindergartens which got the highest votes were chosen for the current study.

In North Cyprus children attend preschool class (Okul Öncesi) at the beginning of the age of five, and therefore this study focused

on four classrooms where 5-year-old students attend. General information about literacy in selected samples is shown in Table 1.

Due to different amount of time that public and private preschools consider for weekly literacy activities, this study also intended to learn if these difference had played any role in improving the design characteristics of private classroom for a better literacy experience.

Table 1. General statistics related to community experience of the three groups (source: Yimuyuan community survey in 2013

Preschool Classroom	Weekly hour dedicated to Literacy	Number of children	Number of teachers	Patterns of literacy activities
Classroom in Private Kindergarten 1 (P1)	6 hours	18	2	Reading Writing Talking Storytelling
Classroom in Private Kindergarten 2 (P2)	6 hours	15	2	Reading Writing Talking Storytelling
Classroom in Governmental Kindergarten 1 (G1)	3 hours	12	2	Reading books and poems Writing Talking Dialogs over topics Storytelling
Classroom in Governmental Kindergarten 2 (G2)	3 hours	14	2	Reading books and poems Writing Talking Dialogs over topics Storytelling

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The evaluation process included two stages. First stage was evaluating the classrooms through observation. In first step of observation, the conditions of design characteristics identified in evaluation framework (Figure 1) were examined by visiting the classrooms while there were no children. During this step, the presence or absence and position of design characteristics was recorded. In the second step, each classroom was visited during literacy activities and children's interaction with design were recorded for six weeks. It was intended to continue the visits until the records for interactions (during activities mentioned in Table 1) started to repeat themselves. After the week four, patterns have already started to repeat. During the visits, design characteristics were re-evaluated based on the support they have provided for literacy activities. Based on the support each design characteristics provide for literacy activities; each characteristic was identified as:

(1) Supportive: Classroom has the characteristic and this characteristic supports patterns activities during literacy learning

(2) Neutral: Classroom has the characteristic but this characteristic is not used to support the patterns of activities during literacy learning

(3) Misleading: Classroom has this characteristic but this characteristic prevent or even disturb the patterns of activities during literacy learning

(4) Missing: Classroom doesn't have this characteristic

In second stage of the research, teachers were informed about the observation records of their classrooms and they were asked to comment on the outcome of evaluation. Teachers comment included two parts. In first part, they were asked to comment on the evaluation status of each characteristic and share if they agree or object. In second part they were asked about the structure of the evaluation model. The intention for this part was evaluating the accuracy of the evaluation model according to teachers' experience.

FINDINGS

Private preschools were named as P1 and P2 and public preschools are named as G1 and G2, because all of them requested to remain anonymous. The findings were divided into three categories, visual quality, physical quality and teachers' indications.

Visual Quality of the Classrooms

Posters and books were considered as printed materials and the way they have displayed in each classroom were evaluated. As it was shown in figure 2, private classrooms had a better literacy-oriented display in compare to public classrooms but the visual quality of display was weak in all of the classrooms. While creating an attractive display for books seemed not to be a concern in any of the classrooms, lack of a visible display for books was a very negative issue in public classrooms.

P1 had the best display solution for posters, because both fixed and movable surfaces were available. Teachers were arranging the pictures on movable surfaces with children and use them during the group talks. In none of the other classrooms, any interactions with surfaces were recorded during literacy activities. Teachers in P2, G1 and G2 said that they arranged the surfaces monthly mainly by using children's art works. Display of learning materials was also very weak in most of the classrooms.

Only P1 had a visible way of display for literacy learning materials, but even in this classroom no special design was considered and top of the surfaces were used as display for pens and pencils.

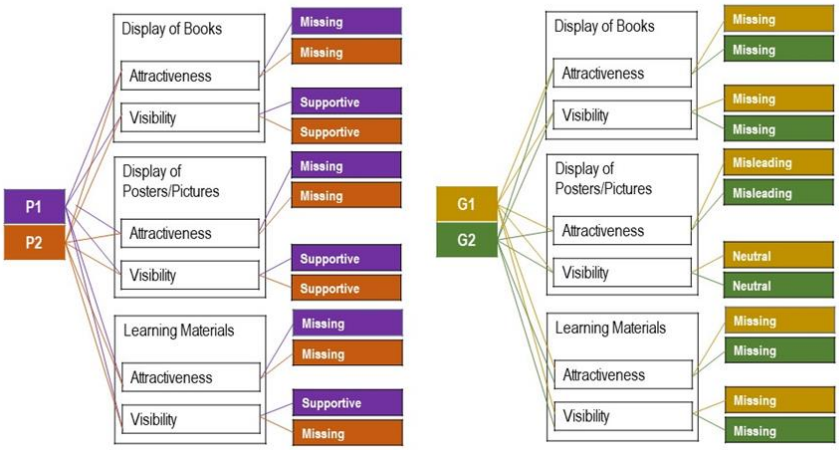

Figure 2. Visual quality of literacy-oriented displays in private and public preschools

Sub-spaces of literacy in private preschools were limited to seating area (writing, discussions/talks and poems reading) and reading corner and a separate drama/theatre space was used for storytelling activities. Since the focus of the study was classroom, private classrooms were evaluated based on available sub-spaces.

None of the literacy sub-spaces had a special visual/physical look that would make those areas stand out and the physical relationship between the areas was not specifically considered. Teachers believed that since classrooms have limited space, special adjacency between areas was not that necessary, because

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they distribute the materials and lead children to necessary locations. Teachers in public classrooms believed that identical look of the sub-spaces only make the classroom look good and does not improve the support for literacy, however private classroom teachers believed identical look of sub-spaces will help children understand the content of literacy better. Figure 3 shows finding related with materials' display and visual quality of sub-spaces.

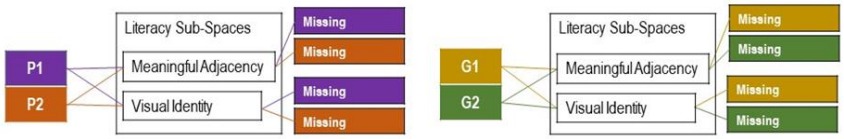
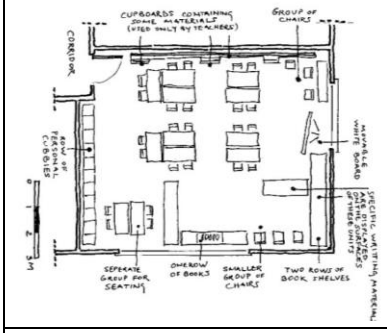
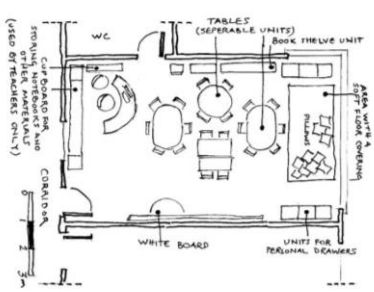
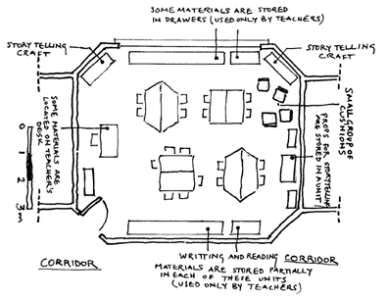


Figure 3. Visual quality of literacy sub-spaces in private and public preschools

Physical Quality of Classroom

To evaluate the physical quality of the classrooms, condition of the design requirements that have been identified in the evaluation framework were analysed and interaction of children and teachers with the design characteristics was recorded. At the end of the 5th week the records started to repeat the previous records and therefore observation has been ended. Table 2 shows the quick sketches of the classrooms' layout. Areas that served literacy were identified in each classroom.

Table 2. Quick sketches of areas that serve literacy in each classroom

P1	P2
	
G1	**G2**
	

Seating Organizations

Seating organization was the first requirement and it was rated by teachers as the most important item. P1 had a comfortable yet single type of seating organization, therefore a single type of seating organization was recorded during all the activities and the condition had identified as neutral. P2 had the best seating solution among all the classrooms. There were different types of seating arrangements and due to various shapes of the tables three different seating arrangements (circular, rectangular and semi-circular) could be organized by teachers. During group talks teachers were creating circular arrangements and during the writing activities, teachers and children were changing the arrangements to rectangular and semi-circular. An area with a soft floor covering next to the window were used for story reading and locating some pillows in this area had even increase the comfort during this activity. P2 was also the only classroom that was allowing children for free-exploration inside the classroom. This activity lasted 30 minutes each day and it was noticed that children who engaged with reading and writing had preferred sitting on the floor.

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G1 had a promising seating organization. Both circular and rectangular tables were available, but during writing and group talks it was recorded that only the rectangular seating arrangement was recorded. Interestingly in this classroom there was a high table and children were writing on sand boxes that teachers located on this table in standing position. The level of socialization and interaction was very high during this activity. Same as P2, when teachers were distributing books to children, most of the children were sitting on the floor in an area with a soft floor covering. G2 had four rectangular and four semi-hexagon tables and children were allowed to sit at any of these tables. All tables could join together and shape a big circular table, however during observation this arrangement was not recorded and therefore variety and flexibility has identified as neutral. In this classroom since there was no area with a soft floor covering, four small-scaled individual sofas, which were looking very comfy, were located at the corner of the classroom. Children who were entering the classroom were sitting at these sofas first, but they had to leave these sofas and join the groups because the number of these sofas were limited, so the comfort was rated as misleading in this classroom. Children were asked if they would prefer to change the plastic chairs with the sofas and most of the answers were positive. Figure 4 shows the ratings for seating arrangement in the classrooms.

Figure 4. Visual quality of literacy sub-spaces in private and public preschools

Space Organization

Private preschools were using separate area for drama and story-telling activities, therefore storytelling areas were missing in private classrooms. Only in P2, twice a week teachers and children were sitting on the floor at the area with soft covering and one of the teachers were reading a book to children. Children seemed to be interested in this activity since they were engaging by asking questions. In public preschools, storytelling was happening once a week in G1 and once a month in G2. Both classrooms were using puppet show crafts for storytelling. In G2 children and teachers were moving the tables towards the centre and moving the chairs in front of the puppet show craft. Teachers were asked if the difficulty in organizing the space was the reason to have this activity once a month and both teachers agreed.

Layout of G1 and G2 lacked a well-designed reading corner because there was no library or visible display of books. Every day during play time, teachers were leaving number of books on the tables so If in case of children would be interested to look at the books. Children's interaction with books were rare in both classrooms, but observation showed that in G1 children were preferring to sit on the floor while reading the books. Both private classrooms had daily reading time, but most of the time children and teachers were reading the text books in groups and only in P2 individual reading was a free choice during the free play. In P2 locating the bookshelves next to area with soft flooring seemed to be a good solution, since most of the children who were looking at the books during free play were lying or sitting at the soft area. P1 lacked an area with a soft flooring and book-shelves were not arranged as a corner and instead located in different units with open shelves separate from each other.

An area for digital reading was missing in all the classrooms and only in P2 a computer was located for teachers, but it was located only for adults' use. All the teachers believed that digital reading has a negative influence. However, recent researches suggested that digital reading and writing could actually improve children's literacy learning (Verhallen, Bus & de Jong, 2006, Wood, Specht, Willoughby & Mueller 2008, Ciampa, 2012, Beschorner, Hutchison, 2013). Figure 5 shows the condition of literacy-oriented sub spaces in four classrooms.

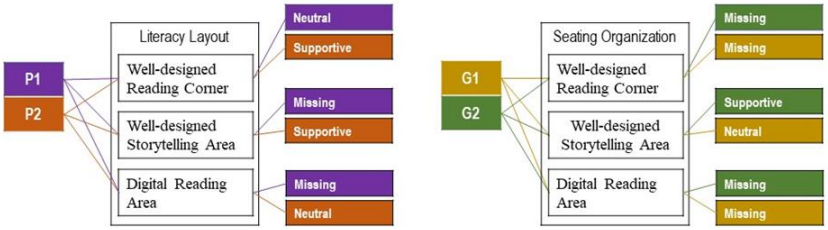

Figure 5. Condition of literacy-oriented sub-spaces in public and private classrooms

Circulation

Paths of movements in none of the classrooms were systematically arranged to navigate children to literacy-oriented activities and materials, but in general all the classrooms had enough amount of empty space for children's safe and comfortable movement. Findings from observations showed that since only private classrooms children were allowed to get the writing materials, children were actively moving around during writing activities. However, observing movement of children during writing activities showed that circulation paths in both classrooms do not provide a logical navigation for an easy access to the materials

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In public classrooms children's movement during writing sessions were recorded as movements out of distraction or a need for using the toilet. Teachers in public classrooms believed that if they had open display located in a safe place, they still wouldn't allow children to get and return the materials themselves, because they had to use the time efficiently. Figure 6 shows the condition of circulation network in classrooms.

Figure 6. Condition of circulation network in public and private classrooms

Lighting

Lighting in all four classrooms were was a positive feature. Most of the year Cyprus is sunny and this potential was used efficiently in all of the classrooms. According to the records, teachers were arranging the activities by considering the time of the day and the amount of light. For example, in G2 teachers were closing the curtains between 11 to12 to reduce the glow for children's writing activities or in P2 teacher and children were sitting on the soft flooring next to the window around 15.00 because during this time the amount of light was very pleasant and would not bother them. All teachers believed that light was the second important item for providing a quality literacy-oriented classroom. Figure 7 shows the condition of lighting solutions in all the classrooms.

Figure 7. Condition of lighting solutions in public and private classrooms

Acoustic

Consideration of acoustical barriers was missing in all four classrooms. However, in P1, P2 and G1 availability of certain features like surface materials, scale of the room, number and locations of elements and furniture was unintentionally controlling the level of noise and echo. In G2 due to lack of soft materials and existence of ceramic tiles as floor covering, the amount of echo and noise was recorded as high during group talks. Teachers in G2 also agreed with this weakness. Figure 8 shows the condition of acoustic solutions in all the classrooms.

Figure 8. Condition of acoustic solutions in public and private classrooms

Teachers' Indications

The only design requirement that teachers believed is not necessary for preschool literacy-oriented environment was including an area for digital literacy. Table 3 shows teachers' rating for each design characteristics. All the teachers believed that even though their classrooms lack certain characteristics, the educational strategies that they used created a quality environment for children's literacy learning. At the same time teachers accepted that if the design of their classrooms was improved based on the design characteristics included in evaluation framework, children would experience a better literacy environment.

DISCUSSIONS

Results of comparisons showed that private classrooms' design characteristics have created a better support for literacy activities in compare to public classrooms. On the other hand, interpretation of the overall records led to a conclusion that creating a literacy-oriented physical space was not the concern in designing any of the classrooms. For example, common design characteristics that was missing in all the classrooms was lack of physically and visually accessible displays for literacy-oriented materials and creating a sub-space with identical look. This shows that representing literacy in space was not the intention. Another missing characteristic in all the classrooms was lack of a logical navigation towards literacy materials. While in public classrooms teachers were distributing the materials, in private classrooms children were allowed to get and return the literacy materials. However, even in private classrooms the units where the materials were stored could be placed in a better location for a more comfortable access. These missing characteristics matched with the findings of Marrow (1990) in which he claimed that physical space remained as background scenery.

According to the records in the classrooms several conclusions can be made. Observing children during the activities showed that most of them prefer to sit on the floor during reading and story-telling. This finding approves that children prefer different positions while reading and it is necessary to provide different options (Izadpanah & Günçe, 2014). In P2 during free play it was observed that children were sitting on the floor to look at the

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books. Also in G1 during storytelling children had a higher engagement in compare of G2 and the only difference was availability of a soft-floor covering for children to sit on the floor in G1 and lack of this area in G2. Therefore, results suggested that considering an appropriate area for children to sit on the floor is necessary for creating a quality literacy environment.

Availability of a movable white board in P1 was another positive feature. Teachers in this classroom had the highest interaction with the prints during the group talks. Teachers claimed that movability of this display helped them rearrange the prints, use it in variety of activities and re-locate them in a best position. Teachers in P2 also were referring to prints time to time, but pointing at the prints pinned on boards was not as interactive as using the movable board in P1. All of the teachers were asked about having a movable surface and all of them agreed that it would help them use the prints more often.

Other interesting result was that providing literacy-oriented design characteristics in the classrooms seemed to remain neutral if educational strategies were not using those features as potentials. For example, in G2 by joining all the tables it was possible to create a big circular seating but even though circular seating would be more appropriate for group talks, this rearrangement was not recorded. Teachers were asked about this issue and they have responded that they didn't see this arrangement as a necessity. While in G1 a circular table was available, only rectangular tables were recorded to be used for writing and group talks. Teachers in public preschools also were asked about lack of visual a physical access of children to literacy materials. All four teachers believed that even if they had visible display they would prefer to distribute the materials themselves because in this way they would use their time efficiently. This respond showed that even if space offer an opportunity for supporting children's learning, without an appropriate teaching strategy this potential would remain neutral.

Furthermore, findings from rating the design characteristics by teachers showed that teachers in private classrooms agreed with the necessity of design characteristics more than teachers in public classrooms. This difference might be due to the reason that teachers in private classroom had a better physical condition in compare to public classrooms and therefore they had experienced the influence of appropriate design on improving the quality of activities. Teachers were also asked if they would add more design requirements to this framework what would be their recommendations. None of them had made any recommendation

as design requirements, but some of the teachers had recommended to consider preschool as a whole instead of focusing only on the classroom. Another interesting discussion was raised related with teachers indicating that they filled the gap of design by teaching strategies while they were accepting that improving the design of the classroom would increase the quality of learning. In this case it was concluded that teachers' first indication was due to defending their classrooms and they actually believe in the role of design for improving the learning quality.

CONCLUSION AND RECOMMENDATIONS

Results of comparison showed that private preschools had a better design for preschool's literacy. This can be due to a better budget and including more amount of literacy activities in their curriculum. But the overall evaluation claimed that private classrooms could be more sensitive with design since they upgraded their curriculum and gave more importance to learning literacy. Another important finding was lack of a visual display of books in public classrooms which was a basic requirement of a literacy-oriented environment.

Although recent studies claimed a positive impact of digital reading/writing on children's literacy learning, all the teachers found providing an area for digital literacy as a negative feature. Upgrading teachers about the positive impact of a well-design area for digital reading/writing might reduce teachers' opposition with digital literacy.

In overall, the findings suggested that the framework was appropriate for comparing the design of preschool classrooms in term of literacy requirements. Based on the context of evaluation a positive feature was that and if it looked necessary, evaluators could integrate children and teachers' indication and experiences in evaluation process. The flexibility of the evaluation framework makes the evaluation process easy and generates more realistic results. By re-structuring the framework for evaluating all the spaces in preschool, the framework can be ready for evaluation of a larger sample. Based on teachers' recommendations for improving the structure of the framework, additional studies can be implicated to identify additional design requirements for creating a literacy-oriented environment in all the spaces in preschools.

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Calligraphy as a Metaphoric Tool for Basic Design Courses

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Abstract

The primary purpose of this study is to show that works of art (painting, music, sculpture, literature, etc.) can be used as means of guidance for the designers, and triggering creativity. On the other hand, the secondary purpose is to prove the mettle art of calligraphy as a tool of guidance for the freshmen and a trigger for creativity in the context of basic design discipline.

During the fall semesters in 2015-2016 and 2016-2017, the main theme for Basic Design Course at Karadeniz Technical University, Department of Architecture was chosen and determined as "Anatolian Arts". Within the context of the chosen theme, it was tried to reveal the potential relationship between "Anatolian Arts and Basic Design Elements and Principles", moreover, the usability of Anatolian Arts as a tool of design.

Keywords: *Design education, basic design, Anatolian Arts, calligraphy, metaphor*

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In this aim, from the whole semester, only one sample of practice has been chosen to put forward the hypothesis of relationship between arts and education increases the creativity in terms of basic design elements (dot, line, direction, shape/form, distance, size, proportion), for this study; a sampling through "basic design elements" with the "art of calligraphy" has been made. Within this hypothesis, the "art of calligraphy" and its characters were introduced briefly and this characteristic situation was questioned in the given design problems by means of "basic design elements".

In short, this study, which exemplifies the state of calligraphy as a metaphoric tool in design education, focuses on the partnerships of calligraphy and basic design elements. Design elements such as "dot", "line", "direction", "shape/form", "distance", "size" and "proportion" are reinterpreted in the context of the characteristics of calligraphy. Thus, the art of calligraphy has become a metaphoric tool.

INTRODUCTION: DESIGN EDUCATION AND BASIC DESIGN STUDIO

The rather complex nature of the design process, starting off as an idea and gradually evolving into a product, had hitherto been a domain of speculation among the educators. In this context, the researchers had been discussing and brainstorming on a number of concepts and topics concerning design education, including the concept of design, the act of design, creativity, skill, abstraction, problem-solving, concept, conceptualization, representation, thought and visual perception. [1]

[1] *The following references can be examined for related topics; Arnheim, 1974, Arnheim, 1997; Goldschmidt, 1994; Salama, 1995; Durling, Cross, Johnson, 1996; Bell, 1996; Lawson, 1997; Gür, 2000; Durling, 2003; Moore, 2001; Oxman, 2006; Menezes, 2006; Çubukçu&Dündar, 20007; Kuloğlu, 2010; Köknar&Erdem, 2010; Tversky, 2011; Reinmuth, 2011; Tversky, Heiser, Morrison, 2013; Aydınlı, 2015; Erdoğdu, 2016.*

These concepts are crucial in the context of basic design education, and are often accompanied by the outcomes of a perspective considering "all disciplines of practical arts indispensable elements of a new form of architecture" (Conrad, 1991) as envisaged by the Bauhaus School, which had been the first venue to offer basic design education. In Turkey, most educational formations offer basic design courses based on the model which was first developed at Bauhaus, striving to provide insights into the act of design and foremost (Artun & Aliçavuşoğlu, 2009).

In this context, Gestalt Theory was also embraced by the proponents of Bauhaus School, and had been applied on the field of design, so as to provide the theoretical background of basic design education (Eryayar, 2011). The theory's (Koffka, 1935) contributions in the domain of design are undeniable; yet Gestalt is also known to have its critiques regarding the contemporary design perspective (Erdoğdu, 2016).

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Despite all the assumptions and questions involved, basic design education is a realm of existence in the curriculum at many design schools embodied with different perspectives. In the context of basic design education, students are oriented towards self-discovery, and the realization that the concept of design is naturally a part and parcel of life. During the courses on basic design, the students learn about the elements and principles of basic design, and the means towards the act of design, through Gestalt Theory. Yet another crucial goal of basic design education, in turn, is to instill the understanding that all senses should play active parts in the acts of perception and design (Beşgen et al., 2015). That is why arranging studio activities in a way to stir and mobilize all senses, and reinforcing awareness levels while doing so are crucial.

The basic design studio courses in Turkey, which hitherto had been based on the Bauhaus tradition and Gestalt Theory, are being implemented in different forms at different schools of architecture, based on the individual perspectives and innovative outlooks of those offering them. The common view is that the elements of basic design include dot, line, direction, shape/form, distance, size, proportion, texture, value and color; while harmony, contrast, repetition, symmetry, hierarchy, dominance, balance, and unity are the principles of basic design. Finally, the educators refer to the figure-background relation, good shape property, continuity-closeness, proximity, similarity, linearity and simplicity as the concepts of Gestalt Theory, (Koffka, 1935; Wertheimer, 1938, Denel, 1981; Gürer, 1990; Gür, 2000; Güngör, 2005; Pinna, 2010; Guberman, 2017).

Following the cases of design education and basic design studio - related to short and brief summary above- now, it is necessary to mention the strategies, methods and the means used in “Basic Design Anatolia Studio” at Karadeniz Technical University, Department of Architecture.

The basic design studio, which first started with Lütfi Zeren at Karadeniz Technical University, Department of Architecture started its education within the context of Bauhaus tradition. This tradition has been maintained for many years and the main idea of the studio has been preserved by the studio lecturers. An intellectual background/theme idea was put on the agenda of the studio after 2010, and the design problems in the context of basic design elements and principles were structured on changing and divergent themes each year: “concepts of architecture history”, “periods/movements/architects”, “contradictions/oppositions”, “metaphors” are some examples of the themes worked on.

However, in each selected theme, the status of art as a tool has been put on the agenda. In this context, it has been observed that using the fields of art such as literature, music, painting, cinema and theater ended with instructing, goal-oriented, interesting and successful results. Depending on the process summarized above, the basic design studio now incorporates different approaches to the program without departing from the Bauhaus tradition to keep up with creative developments in design.

The "Basic Design Anatolia Studio" sample, as the main theme of the academic years of 2015-2016 and 2016-2017, coupled with the choice to use "Anatolian Arts" as the tool to implement "Anatolia" theme (Durmuş Öztürk & Beşgen & Kuloğlu 2018). That choice was crucial for the lecturers in offering the studio courses; cause it's main aim was not to mention the ability to come up with a new set of constructions rising on Anatolian Arts, but, to provide a platform trying to use of arts as a means, to construct a way to support creativity for freshmen, to obtain a gaining insights, and to bring a summary for understanding Anatolian culture and arts.

CALLIGRAPHY ON TRACK TO BECOMING A METAPHORIC TOOL

This study discussing the use of calligraphy –a leading form of Anatolian Arts– as a means in the basic design studio courses, also presents a number of reasons to choose this form of art among a wider range of Anatolian Arts, in the light of existing studies.

The conceptual parallels among basic design and calligraphy are noteworthy, but are often disregarded in studies on calligraphy. The present piece, however, is based on the few studies emphasizing conceptual similarities.

It is common knowledge that calligraphy is essentially a form of writing. In Islamic countries and societies, miniatures, illuminated manuscripts and calligraphy are often used as substitutes for painting.

Even though it is essentially a form of writing, calligraphy also denotes something more, as calligrapher Hüseyin Kutlu put it: "In calligraphy, text is no longer just a means to express knowledge. Expressing knowledge is actually the most basal feature of calligraphy. It has its spirit, virtually revealing the whole world of emotions." (URL 1).

Pişgin defines calligraphy as "the symbol the belief in the oneness of God, as the basic doctrine of Islam, comes to exert on lines of word." The reference to certain concepts of design is obvious in

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the argument that the content conveyed through that symbolic text can be best expressed through "rhythm and geometry" (Pişgin, 2015; 56).

Yet another line of similarity between calligraphy and graphic design can be observed in the fact that Karahisari, a calligrapher, had been among the pioneers of a stylistic approach to calligraphy through an amalgam with graphic arts in an era where the latter was not known much (Nakilcioğlu, 2015).

Other scholars noted the fact that, in addition to the ability calligraphy as a form of writing provides in terms of understanding the thoughts of the artist, its aesthetic presentation capabilities are also noteworthy (Gürsu, 2015).

Boydaş argues that it is not possible to draw a clear line between calligraphy and painting, save for the former's function to convey knowledge, and remarks that calligraphy can be considered a visual art alongside the meaning it entails or the message it tries to convey (URL 2). To Boydaş, calligraphy is the Islamic equivalent to the western art of painting, and adds aesthetic qualities to its religious contents and scholarly function. He even goes on and argues in his book that Islamic calligraphy is "painting, figure, form and even music" with reference to Nurullah Berk. Investing the relationship between Islamic scripture and other forms of art, Boydaş notes that fine calligraphy may have affected Islamic architecture as well, with its rules regarding arrangement, such as unity, proportion, size (module), rhythm, symmetry, and balance (Boydaş, 1994). In another piece, Boydaş writes; "Just like other plastic arts, calligraphy is also about sight and expressing what is seen. To grasp the plastic beauty of this form of art, one does not need to read it and to realize its spiritual charge... Compatible with abstract presentations as well, this form of script is shaped in the context of a plan that is continuous in horizontal, vertical and diagonal composition" (URL 3). He also notes that the horizontal and vertical elements of calligraphy maintain continuity and balance that the relationship between the whole and its parts is crucial, and the four basic elements of painting, namely dot, line, stain and color are basic elements of calligraphy as well. These concepts are elements of design.

Underlining the involvement of abstract expression, Cam sees an unlimited plastic domain in the existence of specific sizes for the letters, with variances allowed based on the composition, and argues that this freedom enables calligraphy to come up with new forms in every day and age (Cam, 2013; 36).

Pekpelvan, in turn, has the following to say on calligraphy's abstract language of expression: "It is evident that Islamic arts are dominated by the 'abstract-abstracting' approach that is completely disconnected from the physical world beyond even the slightest evocation of and without any objective equivalent in the latter, not to mention a symbolist approach conveying thought through indirect means. The already abstract forms of Islamic calligraphy have been revised to come closer to the goal of achieving a more accurate and more aesthetic representation on each occasion, far from the perceptions and thoughts which would bring the artist to the forefront, and impair the quantitative chain" (Pekpelvan, 2009; 71).

Writing on calligraphy, Ufuk Alkan notes the following: "The calligrapher tries to draw and portray the letter, trying to approach its absolute form. He scribes and draws not a known object of the physical world, but the letters which are not part of the physical world, and the relationships between those letters... The philosophy of calligraphy is closer to that of contemporary art education. It employs the elements of form (dot, line, stain, distance, direction, form, color, texture) which are indispensable for the appearance of plastic arts. The affinity and parallels between calligraphy and painting arise at that point" (URL 4).

It is also frequently noted that calligraphy had a certain influence on western artists, and that certain artists benefited from some forms of calligraphy, such as the cufic script, when developing their own works (Boydaş, 1994; Pekpelvan, 2009; Cam, 2013). The calligraphy's potential to serve as a foundation or reference for other forms of art is evident in this context.

In the light of these information, one can forcefully argue that calligraphy entails abstract narratives, produces works of art, and establishes meaningful relationships with the concepts of design. Thus, it is possible to argue that calligraphy can evolve into an authentic and creative design tool, through inspiration and interpretation.

In this context -given the justification provided above-, the lecturers offering the studio courses decided to include calligraphy among the Anatolian Arts to be covered in the "Basic Design Anatolia Studio" for two years in a row. This decision is based on the abstract style involved, the visual art status of calligraphy, the inspiration it provided for certain abstract pieces of art, the rich intellectual contents involved, conceptual similarities and so on.

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Once these grounds for the decision are described as such, one can proceed to investigate the "metaphoric tool" status of calligraphy. In this aim, one of the goals of the basic design studio courses is to explain and understand the "art's ability to serve as a tool for design", and to do so, one first needs to understand the concept of metaphor.

Phrases or concepts used to denote meanings other than their conventional ones, through an association or analogy, are called metaphors. The word "metaphor" used in western languages has its roots in French (Hançerlioğlu, 1993).

Usually it is perceived as a word denoting an analogy, but it is also distinct from simple analogies. Metaphor is used to express an issue through another form. Metaphor refers to figure of speech serving to establish analogies, comparisons and descriptions between two things (Hançerlioğlu, 1993).

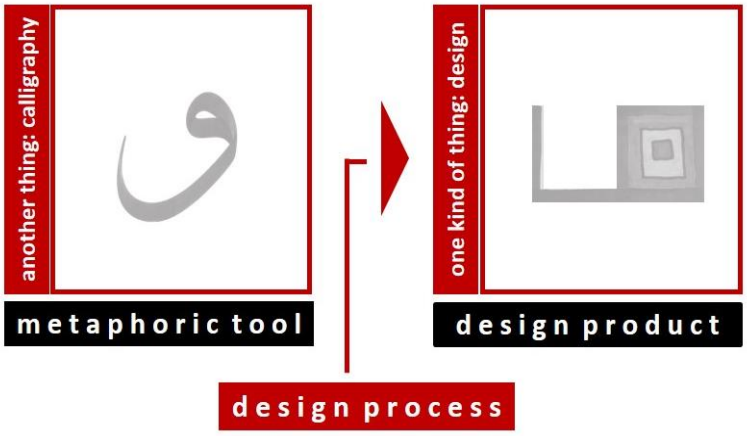
Lakoff and Johnson (2015) claim that metaphor is used widely not only in daily life, but also in language, thought, and action, and thus our system of concepts is mostly a metaphorical one. In contrast to the conventional perspective of metaphors, Lakoff and Johnson developed a new understanding of metaphors, called cognitive-linguistic conception, based on the claim that metaphors often are not built on analogies, but represent innate qualities of concepts rather than words. Yet, in the end, Lakoff and Johnson note an agreement with the basic views of the comparison theory, and thus claim that metaphors can be based on isolated similarities. Against this background, they also note certain differences from the comparison theory: "The primary function of metaphor is to provide a partial understanding of one kind of experience in terms of another kind of experience. This may involve preexisting isolated similarities, the creation of new similarities, and more" (Lakoff & Johnson, 2015; 202).

Lakoff and Johnson's (2015; 30) discourse about the essence of metaphor being the "understanding and experiencing one kind of thing in terms of another", viewed in the light of the abovementioned remarks, leads to the clear conclusion about the metaphoric tool function of calligraphy in design education. If one is to interpret the intellectual structure and visual outcomes of calligraphy, as an experience, the new similarities derived will certainly benefit from the means made available through this experience. Therefore, making good use of especially the visual experiences of calligraphy can be crucial. In a nutshell, understanding and experiencing design elements (one kind of thing) with the help of calligraphy (another thing) arises as a

metaphorical case, rendering calligraphy a metaphorical means to understand and interpret design.

Thus, the visualization provided in Table 1 shows the relationship between calligraphy and design in the context of figural metaphor.

Table 1. The relationship between calligraphy and design in the context of the former's use as a metaphorical tool. (*, **)



*** Image:** Calligrapher Aydın Köse http://www.hattataydinkose.com/tr/hat-sanati-ornekleri-galeri/

****Image:** Sümeyra Öztürk, Basic Design Studio, Piece from Fall 2016-2017.

PROCESS AND METHOD

The top theme chosen for the Basic Design Workshop in the 2015-2016 and 2016-2017[2] Fall Semester at Karadeniz Technical University Department of Architecture was designated as "Anatolia" by the lecturers of the course. In this decision, it was appropriate to use the Anatolian Arts as a tool in the Basic Design Workshop and to promote the Anatolian Arts. In this context, with the basic design elements in the studio process, art of calligraphy, marbling art, tile art; Miniature art, shadow play art, puppet art were thought to be in relation with Gestalt Perception Theory; whereas carpet art, decoration / design art, etc. were thought to be in relation and in parallel with basic design principles. (Table 2).

[2] *Lecturers and Assistants offering the Studio Courses:*

2015-2016 Fall Term Team: Nilgün Kuloğlu, Asu Beşgen, Demet Yılmaz Yıldırım, Serap Durmuş Öztürk, Kıymet Sancar Özyavuz, Gürkan Topaloğlu, Şölen Köseoğlu, Neva Gerçek.

2016-2017 Fall Term Team: Nilgün Kuloğlu, Asu Beşgen, Serap Durmuş Öztürk, Gürkan Topaloğlu, Şölen Köseoğlu, Merve Gerçek.

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Table 2. Basic Design Anatolia Studio Program, (Durmuş Öztürk, Beşgen, Kuloğlu, 2018; 469)

Anatolian elements/concepts/arts	Program of the Basic Design Course	Topics
CALLIGRAPHY	Dot, Line, Direction, Shape/Form, Distance, Size, Proportion	Basic Design Elements
PAPER MARBLING	Texture	Basic Design Elements
TILE	Value and Color	Basic Design Elements
MINIATURE	Good Shape Property, Continuity-Closeness-Symmetry	Gestalt Perception Theory
SHADOW PUPPETRY	Figure-Background Relationship, Depth, Transparency, Overlapping, Measurement Gradation	Gestalt Perception Theory
PUPPET KARAGÖZ LIGHT COMEDY PUBLIC STORYTELLER	Figure-Background Relationship, Depth, Transparency, Overlapping, Measurement Gradation, Linearity, Effective Environment	Gestalt Perception Theory
CARPET	Repetition/Symmetry/Harmony/Contrast	Basic Design Principles
ORNAMENT/MOTIF	Hierarchy	Basic Design Principles
ANCIENT PERIOD CITIES	Dominance/Balance/Unity	Basic Design Principles
ANATOLIAN DOORS	Dominance/Balance/Unity	Basic Design Principles

In the light of the above explanations, the use of calligraphy as a tool to develop creativity within the studio constitutes the sample of this study. The problems related to the art of calligraphy due to the compatibility of the basic design elements of the program; dot, line, direction, shape/form, distance, size, proportion was found to be appropriate for the subjects. The prepared problems were written in such a way that the characteristics of the art of calligraphy could be used, and the students were expected to interpret the problem given within the scope of the basic design elements and principles (Table 3).

Table 3. Problems proposed for Calligraphy and Basic Design Elements

Exercise 1
Topic: DOT-LINE-DIRECTION Theme: ANATOLIAN CALLIGRAPHY
Problem: Please interpret the crucial elements of Anatolian Culture, namely the PLURALITY and/or UNITY concepts, in your area of studies, making use of the insights you developed with the help of the research assignment you performed and brought along. In your composition use DOTS, LINES, and DIRECTION as the design elements. Make sure that the design elements are composed on the basis of the characteristic narrations provided in the CALLIGRAPHY examples you have researched and presented to you during the class.

Exercise 2
Topic: DISTANCE-SIZE-PROPORTION-SHAPE/FORM Theme: ANATOLIAN CALLIGRAPHY
Problem: Interpret the CULTURAL DIFFERENCES concept in your area of study, based on the knowledge you have acquired through the research assignment you performed and brought along. Describe your area of study from a horizontal and vertical perspective, as required for your composition. In your composition use DISTANCE, SIZE, PROPORTION, and SHAPE/FORM as the design elements. Make sure that the design elements are composed on the basis of the characteristic narrations provided in the CALLIGRAPHY examples you have researched and presented to you during the class.

BASIC DESIGN ANATOLIA STUDIO WORKS

The results of the "Basic Design Anatolia Studios" tried for two years in a row, are shared in various settings, with reference to examples based on various forms of art (Durmuş Öztürk & Beşgen, & Kuloğlu, 2018). The present essay, in its turn, aims to discuss the relationships established between calligraphy and the basic design studio, as well as the results achieved.

The studio was based on the following process: First of all, the students were provided a theoretical introduction into basic design doctrines, with the assistance of general images. Thereafter, the conventional and modern interpretations of calligraphy were discussed with reference to various calligraphers. Throughout the process, the students were expected to develop a grasp of the abstract aesthetic structure of calligraphy, and use it as a tool for design. In this context, leading calligraphers and their works were presented, with a specific focus on calligraphers who are also architects. Leading names which were discussed include, among others, Sheik Hamdullah, Ismail Zuhdi, Ahmed Shamsaddin Karahisari, Mustafa Halim, and Ali Toy.

The comments of architect-calligrapher Ali Toy are crucial in terms of grasping the objectives of the studio. Toy has the following to say about the mode of interpretation of calligraphy: "I write the script with some improvements on traditional styles; I thus develop mixed styles. Furthermore, I create authentic products using nothing but basic forms of geometry" (URL 5). His views on modern calligraphy, in turn, can be summarized as follows: "Of course calligraphy is used for writing Holy Scripture

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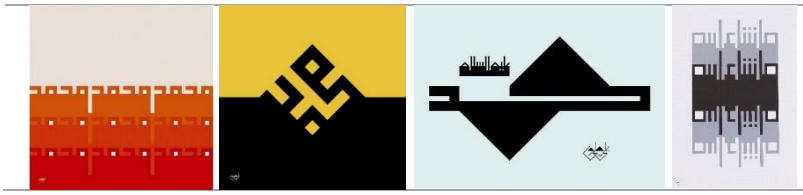
as well. But in essence, calligraphy is the art of scripting based on certain rules, not the art of scripting holy texts. Furthermore, the classical examples of calligraphy are actually inventions by the Ottomans. They cannot be found in other Islamic countries. Calligraphy always goes through renovations and transformation. Classical calligraphy also goes through a continuous cycle of development. I believe that a straight line has a more emphasized effect. Modern calligraphy is not a deformed or improved version of the classical script. These forms are completely new ones. They can be considered the architectural designs of calligraphy" (URL 6). The artist's works presented in Table 4, along with many others which cannot be shown in the confines of an essay make the relationship between art and design apparent.

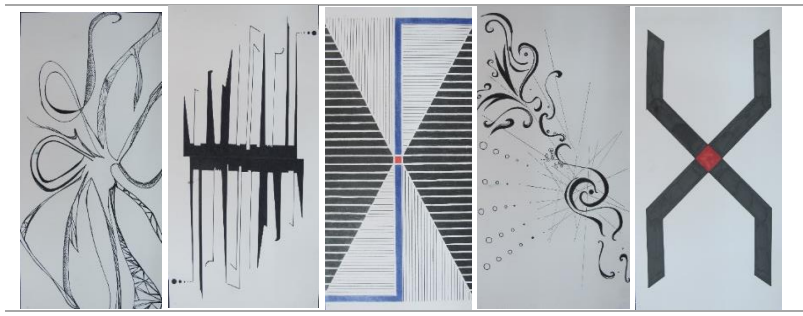
Table 4. Examples of Ali Toy's works (https://www.ketebe.org/en/artist/ali-toy-2095)



Once theoretical groundwork was presented to the students, they were asked to work on the problems (exercise 1 and 2) expressed in Table 3, leading to the products by the students. At this junction, some examples developed by the students within the framework of the Basic Design Anatolia Studio, and the extent to which the original goals of the studio were achieved, are discussed.

The tables presented provide cases to discuss the metaphoric tool capabilities of art, with reference to selected works by the students. The design works produced by the students within the framework of the studio were interpreted, assessed, and with reference to "calligraphy's ability to serve as a metaphoric tool" in "basic design". (Tables 5-6)

Table 5. Students' works on "Plurality / Unity" (Exercise 1) (1) Büşra Kurban (2) Zehra Dokuzparmak (3) Reyhan Sakallı (4) Yaren Sözen (5) Fethican Yıldırım



1 2 3 4 5

The students were expected to come up with designs using the concept "Plurality and/or Unity" deemed to represent Anatolia, and the art of calligraphy as metaphorical tools (Table 3). All works produced exhibit the characteristic features of calligraphy, as well as effective use of basic design elements, in the process of converting calligraphy -**another kind of thing**- to a design product -**a given kind of thing**- using basic design products (dot, line, direction).

If samples are analyzed from left to right (Table 5) according to the problem specified in Exercise 1, the following can be said; The basic design element selected in the composition (1) is; line. The organic character of the line in the traditional calligraphy art is the main idea of the design. In the composition (2), dot, line, and direction elements were chosen for the composition, but the direction element was dominant in the design. It is seen that these elements are used in the composition by taking advantage of the calligraphy character. In the composition number (3), Boydaş (URL 3) emphasizes that "line is the horizontal and vertical elements of calligraphy which provides continuity and balance". The horizontal and vertical use of the line is evident. In the composition numbered (4), similar to the study number (1), it was created by using the organic character of calligraphy. In this design, the geometric line character was used as a ground effect and the point element supported the composition. The lean and determined attitude seen in the composition provided the balance of the composition and the emphasis on calligraphy was an abstract expression like the works of calligrapher and architect Ali Toy.

Table 6. Students' works on "Cultural Differences" (Exercise 2) (1) Sude Bilgin (2) Nurten Gökçek (3) Gizem Sarıyılmaz (4) Sümeyra Öztürk (5) Cansu Mersinlioğlu

1 2 3 4 5

The students were expected to transform the concept of "Cultural Differences" under the influence of a multitude of cultures which co-existed in Anatolia for centuries, to design, using calligraphy as metaphorical tool. All works produced exhibit the characteristic features of calligraphy, as well as effective use of basic design

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elements, in the process of converting calligraphy -**another kind of thing**- to a design product -**a given kind of thing**- using basic design products (distance, size, proportion, and shape/form). The case visualized in Table 6, in other words "art's ability to function as a metaphoric tool for the design product" can be seen clearly through these works.

If the samples are examined from left to right (Table 6) according to the problem specified in Exercise 2, it can be said that the basic design element selected in the composition (1) is the line. The formal character in calligraphy seems to dominate the composition. In the composition (2), the basic shape chosen for the composition was square. Other forms have been organized to differentiate each frame. The main element of this design is the form. In the composition (3), not only the shape element, but also the distance, dimension and proportion elements are dominated in the composition. The perception created reflects the characteristic features of calligraphy. The composition number (4) is perhaps one of the most successful compositions to use the art of calligraphy as a metaphoric tool. The chosen shape, the colors used and the use of the work area make the composition different from the others. The composition number (5) uses rectangular shapes to create a line effect, bringing together three square shapes. Measurement and spacing elements were also used in the study in a balanced way, and the use of the line art as a tool was also clearly demonstrated.

The impression obtained from these studies can be summarized as follows; the use of calligraphy as a tool in achieving such a characteristic level has a significant effect. The problems of understanding the basic design elements (dot, line, direction, shape/form, distance, size, proportion) have been addressed in this context and the students' perspective on design has been changed and the creativity impulses have been triggered.

CONCLUSION

This study, which exemplifies the state of calligraphy as a metaphoric tool in design education, focuses on the partnerships of calligraphy and basic design elements. Design elements such as dot, line, direction, shape/form, distance, size and proportion are reinterpreted in the context of the characteristics of calligraphy art.

Groups of works show that "calligraphy" providing a means to develop extremely authentic designs, would provide guidance for "design". Moreover, Lakoff and Johnson's (2015) argument about "understanding and experiencing one kind of thing in terms of

another" describing, in their vision, the essence of metaphor, with reference to visual arts and design phenomena, was thus tried and seen to be successful. The studio products and experience conveyed within the framework of the present study suggest, in a sense, the ability of works in any field of art (e.g. painting, sculpture, music, poetry) to serve as metaphorical tools to shed light for the process of design.

Basic design studios, which support the architectural project studios universally, deemed the essence of design education, clearly need new outlooks and new perspectives alongside the pre-existing theoretical and practical experiences involved. The Basic Design Studio team at Karadeniz Technical University Department of Architecture, in its turn, maintains its efforts for an innovative outlook, through programs designed from different perspectives year over year. The goal is to share the experiences and products which may contribute to the design environment, with the wider academia, in the form of experiments with various tools, means and methods, with a view to providing examples for youth who join the ranks of academia.

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Resume

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The Effects of Incremental Housing Approach on The Level of Residential Satisfaction

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Abstract

Housing has always been regarded as one of the basic human needs and initial rights and its related costs contain a significant portion of the household's income. Providing affordable housing for low-income groups in many countries, including Iran, is the task of the government and other supportive institutions. In this regard, the Iran's government recently actions have more focused on the quantitative dimensions of housing production and qualitative issues, which are the main factors of residential satisfaction have less been considered. This paper investigates the effects of the incremental housing approach on the level of residential satisfaction in affordable housing projects. The research method is descriptive-analytic and data were collected through the case study. The results show that influenced indicators by the incremental housing approach including land and building ownership, providing technical and spatial basis for future development, quality improvement, and strengthen the social interactions among the residents, beside site design related indicators, including anticipation of the neighborhood units with proper pattern of activities are the most important factors of residential satisfaction. High residential satisfaction lead to bring a sense of belonging to the place and in upper level the social sustainability in

Keywords: *Incremental housing, affordable housing, residential environment, residential satisfaction, housing development.*

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the residential environment. Therefore, in order to increase the efficiency of the positive aspects of this approach, a model for determining the stages of work and necessary actions has been designed.

INTRODUCTION

Housing is a basic human need also; it is a basic human right and one of the most important issues that humans have always been struggling with and trying to find a proper and reasonable answer to this problem (Satarzadeh, 2009). In Islamic culture and architecture, house is where the divine effects appear (Vasigh, Pashtoeizadeh, & Bemanian, 2009) Housing issue should be addressed beyond the functional needs of the occupants. In fact, in every civilization, cultural beliefs and values are passed among the generations through the housing architecture (Seo, 2012). The main function of each building as a part of the architectural culture is to objectify a thought (mentality) by its particular container and in this way, this container will be used to measure this culture, so each building is a cultural witness (Memarian, 2014). In this regard, the design and construction of housing has long been the manifestation of the architecture of every civilization and ethnicity. Housing has the most effects on historical, cultural, social, and environmental contexts in comparison with other uses (Ebrahimi & Eslami, 2010). Its formation depends on some factors like culture, economy, lifestyle, and construction methods of the community (Tabibian & Mansouri, 2013). In addition, it is a determinant factor in creating cultural relation among different generations in a society and influences the direction of culture, lifestyle, social relations, and aesthetic choices of the community members. In Iran, housing has been the arena of architect's art in various historical periods and has followed the cultural and climatic features of its context and economic conditions of its occupants.

Today, housing design and construction is a major part of any construction activities around the world. In Iran, the growing population, increasing in rural-to-city migration rates, reduction of household size (Table 1), and increasing the young population of the country, as well as deterioration and lack of primary necessities in some settlements are the major factors of the country's need for housing production in the recent years. Therefore, in the fifth development plan of the country, inspired by the Iran's 20-year vision plan document and the housing master plan, the improvement of worn-out urban fabrics and promotion of housing quality alongside increasing housing production has been introduced as a general plan of the country (IMRUD, 2017b). According to the Iran housing master plan there is a need for an annual production of one million housing by 2025.

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Half of this amount is related to the renovation of houses in identified worn-out urban fabrics (Table 2) (IMRUD, 2017a). These areas often include low-income groups that providing affordable housing for them is of the government's duties. In Iran, this task is borne by the Ministry of Roads and Urban Development and other supportive institutions that provide necessary basis by defining affordable residential projects. In recent years, the Mehr housing plan has been an attempt to provide housing for low-income groups in a remarkable scale. The quantity of housing production was the priority of this plan. In addition to the criticisms that have been made in the field of locating and supplying infrastructures (Ghasemi & Ozay, 2018);(Etminani-Ghasrodashti, Majedi, & Paydar, 2017), the development goals of the 20-year vision plan document, which are based on cultural, geographical and historical basis of the country and ethical principles and Islamic values have not been addressed in mehr housing projects.

Table 1. Population and Family Changes in Iran during, 1986-2016 Source: (SCI, 2016)

Year	Man (%)	Woman (%)	Family	Average Household Size
2016	50/67	49/33	24196035	3.3
2011	50/44	49/56	21185647	3.5
2006	50/88	49/12	17501771	4
1996	50/81	49/19	12398235	4.8
1986	51/13	48/87	9673931	5.1

Table 2. Housing master plan targets by assuming economic growth of 5.4% per annum (thousand units) Source: (SCI, 2016)

Description	Supply of new households	Housing shortage compared to households	Need renovation	Total required construction	Gradual improvement
Total	3649	397	3828	7874	1500
Urban	3570	-	2193	5763	-
Rural	79	397	1635	2111	-

The design of these projects have often been developed with the sole focus on locating the maximum residential units in a piece of land. Due to acceleration of the process, necessary studies for identifying the needs of target groups have not been carried out, so the final products have not been adapted to the climatic conditions and cultural characteristics of their habitat (Mohseni, 2012). Even with the assumption of providing necessary urban infrastructures in future plans, the above items will lead to

problems in meeting the mental and functional needs of the occupants. The most important challenges in providing affordable housing in developing countries are economic problems caused by high land and building materials prices and inadequate allocations of loans (Atamewan & Olagunju, 2017). In most of the turnkey low-income housing projects, the final product is usually not able to meet the diverse needs of the households, so in long term, the occupants are forced to leave the house, instead of improving the space of it. This moving costs too much for the households and is against the intended goals of achieving sustainability, especially in the social sphere. The intended plans for quantitative development of housing in Iran by the year 2025 contain almost one third of the existing residential buildings. Considerable amount of this development is devoted to the affordable housing projects that shows the importance of doing practical researches in order to achieve proper design and construction methods in this field. Therefore, in this paper the effects of incremental housing approach on the level of residential satisfaction in affordable housing projects have been investigated. The main objective of this paper is to achieve strategies in the field of design, planning, and construction to improve the quality and increase the level of satisfaction in affordable housing projects. The research questions are as follows:

What are the effects of incremental housing approach in the various dimensions of residential satisfaction?

What design and construction measures should be taken in order to develop the level of residential satisfaction in incremental housing projects?

How should the spatial structure of the Iranian incremental housing be in different steps of development?

LITERATURE REVIEW

Happiness, life satisfaction and the real security of housing just can be earned when the human's heart and soul are safe from anxieties and everyday concerns (Ahmadi Disfani & Aliabadi, 2011). Human needs include basic needs relate to the environment, well-being, security, health, as well as psychosocial needs relate to the concepts of privacy, personality, identity, territoriality, aesthetic and social relations (Asefi & Imani, 2016). Therefore, regardless of economic issues that play an important role in housing provision for low-income groups, providing necessary qualities to improve living conditions in residential environments and obtaining user satisfaction are so important. Empirical studies on residential satisfaction introduce two general approaches in this field. The first approach considers

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residential satisfaction as a predictor of the resident's behavior about staying a home, or moving to another one (Adriaanse, 2007). The second approach describes residential satisfaction as a criterion for assessing the quality of home and introduces some indicators like length of residence, ownership status, physical features of the home and neighborhood, the possibility of establishing effective social relations among neighbors and the social conditions and characteristics of the neighbors (Galster, 1987); (Adriaanse, 2007). Subsequently, residential satisfaction is related to the three factors of the home, neighborhood, and neighbors.

The growing demand for affordable housing in most developing countries has faced governments with serious challenges in responding to this need. In this regard, in the research carried out by Wallbaum et al. (2012), challenges such as resource scarcity, lack of adequate budgets, shortages due to high demand, lack of skilled labor and final product low quality as well as system inefficiencies and lack of added value are mentioned. In response to these challenges, the following strategies have been proposed:

- Improving the production methods to increase the efficiency of using existing resources.
- Reducing the initial cost of housing construction.
- Inventing new techniques of construction and removing unnecessary administrative processes to speed-up project execution time.
- Prioritizing construction technologies that can be implemented by local workers.
- Using prefabricated systems to reduce waste of resources during the construction process.
- Using collaborative design methods to provide proper housing for applicants.

The results of the above research suggest the use of vernacular materials and technologies to achieve sustainability in the construction of housing for low-income groups and the adoption of incremental housing to create added value and meet the diverse needs of the applicants in developing countries.

People need a place to alleviate their mental problems and get rid of some social constraints. A place to communicate with their relatives and of course a place to pray. If the place of residence does not meet these needs, it can not be named as house (Arjmand & Khani, 2012). Incremental housing can be considered as a comprehensive solution in order to provide necessary standards for improving the quality of life in affordable housing projects. Incremental housing encompasses a wide range of construction, design, and financing methods, but generally, it can be said that

any planned activity in housing development, which involves the construction of a part of the project after the presence of users, can lead to create incremental housing. In this method of development, minimum requirements for low-income groups settlements are provided in the form of designing a multi-functional space, along with the required service spaces, while improving the quality of housing or increasing the number and dimensions of spaces will be postponed to the next stages (Goethert, 2010). Studies show the importance of land ownership in the level of residential satisfaction in any housing development projects (Minnery, Argo, Winarso, & Hau, 2013).

Pandelaki and Shiozaki (2010) Introduced the necessary measures for incremental housing as follows:

- Proper quantitative and qualitative features of functional spaces should be ensured in future developments
- Grant the ownership to the applicants in order to motivate the improvement of housing quality in future developments.
- Use Durable, economical, and returnable materials with minimal waste in building incremental housing.
- The provision of necessary infrastructures for the future development of housing should be considered at the planning and land preparation stages.

Atamewan and Olagunju (2017) introduced incremental housing as the most appropriate option for development of affordable housing in developing countries. Economic efficiency, maximum flexibility in making decisions and possibility of applicants participation in design and construction phase are mentioned among the benefits of this approach. The case study of this research is located in the Bilsa province in southern Nigeria; the results of field studies show that the willingness of applicants to use vernacular materials and techniques is due to the economic efficiency and familiarity of local workers with this type of construction method. In addition, a high percentage of applicants agreed with the incremental housing approach, so in the first step, a kitchen a bathroom and a multi-purpose living space for each household are considered. The house can be enlarged with the increase in income or the number of households in the next steps.

Wainer, et al. (2016), concluded that Incremental housing has proved capable of giving low income home-seekers what they cannot provide themselves: well-serviced land, infrastructure, and foundational structures for a sturdy and extensible house. Joon, et al. (2018), propose a 'Self-Reliance Centre, which is designed to function as a space for community empowerment, a training center, and a temporary shelter for incremental housing scheme in slum upgrade. HASGÜL (2016) investigated the

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vernacular character of informal settlements and served incremental housing as a multi-sided solution concerning both social and economic issues.

Chavez (2012) examined three case studies of incremental housing programs that took place over three decades in Latin America, Africa and North Africa. He concluded that incremental housing strategy can work in different countries with different cultures, and it is resilient in the face of economic and political changes. Beattie, et al. (2010)believe that Incremental housing is a successful urban development strategy because it harnesses knowledge about the critical stages of informal development and provides various support interventions to guide development toward positive outcomes. Aravena, the Chilean architect, believes that incremental approach provides solutions that are adaptable and livable to provide housing for low-income groups. This approach balances aesthetics with affordability. It balances low-rise high-density building envelopes, limits overcrowding, and allows for the possibility of expansion from social housing to middle class dwellings (Aravena, 2008).

Gamal and Elhassan (2014) in their research on incremental housing construction in Khartoum have concluded that this approach is more successful in North American, Asian and African countries due to the high initial cost of housing construction compared to the incomes of target groups. They have categorized the basis of incremental housing in three general categories as follows:

The first category consists of informal settlements that are usually grow without planning in the suburban areas or non-residential lands. These settlements expand according to the financial situation of their occupants. The second one includes site and service projects that are usually defined by the governments. The construction of the residential units in these projects can be carried out by the participation of the applicants and in the form of incremental housing. The first projects in the form of site and services were implemented between the 1960s and 1970s by the World Bank in Latin America and Southeast Asia. The benefits of site and service projects include granting the private ownership to applicants, providing necessities for incremental housing development, increasing social convergence through the division of responsibilities in the process of construction and development, as well as playing the role in the urban development process and achieving affordable housing (Wakely & Riley, 2011). The mass housing projects in the form of site and services usually can be defined in suburban areas, where the price of the land is relatively lower. This causes segregation from urban

texture and high costs of supplying the infrastructure (Lizarralde, 2011). The third category is core housing, which is known as the main solution in obtaining affordable housing. Core housing is the initial step of incremental housing that can provide a shelter for a household in the shortest possible time and with the lowest initial cost. Core housing includes a living space with a bathroom and a place for cooking in a piece of land that is connected to the urban infrastructures.

In order to identify the spatial needs of incremental housing projects and take necessary actions in the field of design and construction. Two prominent project that was constructed using this strategy, was surveyed as practical examples.

EXAMPLE 1: IQUIQUE 100-UNITS PROJECT IN CHILE

This project has been defined in 2003 to improve the housing quality of households that have lived over 30 years in an informal settlement in the center of the Iquique city. The main purpose was to build 100 affordable housing units for low-income groups in a land with an area of 5000 square meters. An amount of $ 7,500 for supplying land, engineering services, and infrastructures has been allocated to any residential units by the government. This amount was just sufficient for construction of a 30 square meters space on that time, while in the intended plan, 75 to 90 square meters of residential space had considered for each unit (Aravena, 2008). The number of land plots in the initial condition was 30, which illustrates the need for providing a proper land planning and design to meet the functional requirements of the project. According to the high value of land due to its location in the city, the maximum use of it has been the primary objective of the design. This was for increasing the number of residential units and more using of government subsidies. In this regard, designers examined various options from terrace houses to high-rise buildings. In the case of terrace housing, it was found that only 66 plots by minimum required width could be provided. In addition, the design of high-rise buildings eliminates the possibility of future development and is not a suitable option to meet the needs of the project (Figure 1) (Aravena, 2008). Finally, four neighborhood units containing two-story building blocks formed the design of the complex. The purpose of designing neighborhood units was strengthen social relationships among residents. In addition, the intended space for development of each block is quite clear and there is no possibility of unplanned development and spatial disturbance in the project (Figure 2).

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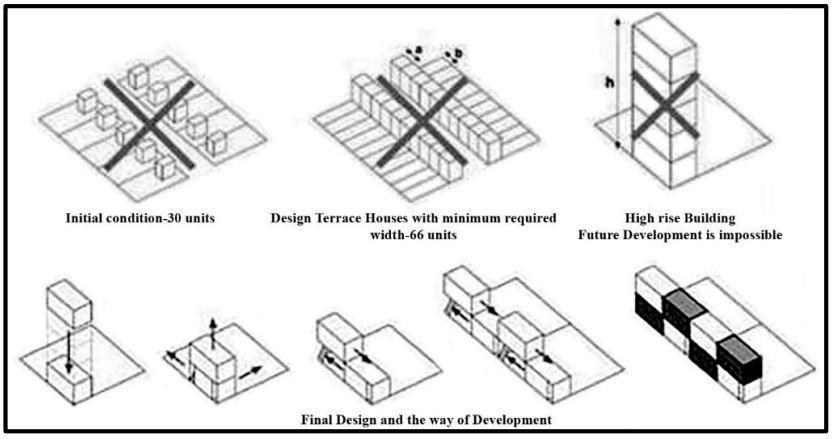

Figure 1. Evaluation of different design options-Source: (Aravena, 2008)

Figure 2. Neighborhood units and the way of development-Source: (Aravena, 2008)

EXAMPLE 2: BELAPUR 500-UNITS PROJECT IN NEW BOMBAY-INDIA

This project was constructed between 1983 and 1986 on an area of 5.4 hectares with 2 kilometers distance from the center of the city. The applicants was families with various income levels that residential units ranging from 45 to 75 square meters were built for them (Ravishankar, 2014). Each residential unit was located in a single plot and this provided the necessary basis for the future development. In order to enhance the social interactions among residents, several neighborhood units in three different scales were designed. The smallest contain seven building blocks that have shared a semi private yard. On the other level, each three neighborhood units form a larger one and there is a larger yard that has been shared among these neighborhood units. Eventually, this module repeats around the biggest central yard of the complex (Figure 3). In addition, to provide functional spaces for residents, an appropriate hierarchy to access from the public

spaces to the semi-public, then semi-private, and finally the private spaces of each unit, has been defined and this kind of spatial arrangement is perfectly suited to the vernacular culture. The houses are structurally simple and can be built and extended by local workers. The results of field study show that the residents' maintenance of public and semi-public spaces is less than that of semi-private courtyards and it seems that they do not consider these spaces as their residential realm (Ravishankar, 2014).

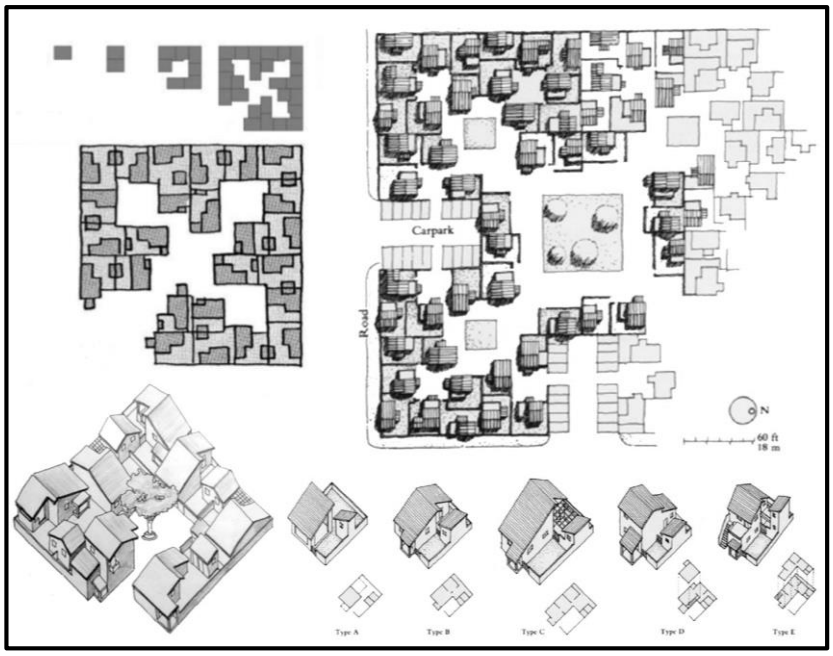

Figure 3. Design of neighborhood units and building blocks with incremental development capability Source: (Ravishankar, 2014)

LITERATURE REVIEW CONCLUSION

The review of literature on the incremental housing shows that this construction method can be responsive to the need for affordable housing in worn-out urban fabrics and informal and suburban settlements. Most of the constructed projects in this template are related to the blocks, which include one or, maximum, two residential units. Therefore, in metropolises, where the land price is relatively high, the application of incremental housing approach is more confined compared to the smaller cities. Incremental housing provide the chance of ownership for low-income applicants due to the need of minor initial capital. It has also provide a proper basis for employing local workers, participation of applicants in the process of design and construction, and revitalization of the verified traditional vernacular methods of construction.

RESEARCH METHODOLOGY

In order to explore the effects of incremental housing approach on the level of residential satisfaction, a descriptive-analytic research method was used. In the process of data collection, a case

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study has been surveyed by using field study methods. The case study contains a mass housing project in Iran that have been built by using incremental approach. Data were obtained using field study methods. In this regard, in order to study the spatial needs of residents, the method of observation and evaluation of the process of development have been used. Indicators, which affect the level of residential satisfaction and influenced by the nature of the project have been put in a questionnaire and the applicants were asked to give their view through the Likert scale. The questionnaire was given physically to the head of each household or an over 18 year's old individual and they were asked to send it to authors through the virtual social networks. The required sample size was calculated using the Cochran formula with 5% Margin of Error. The result was 108 from 150. In order to measure the reliability of the questionnaire; the Cronbach's alpha for the entire questionnaire was 0.842, which indicates an acceptable internal consistency among the questions. The statistical relationship between the data was analyzed using correlation test. Then, based on the interpretation of research findings, a model for increasing the level of residential satisfaction has been presented in order to be used in mass incremental housing projects.

CASE STUDY: RESIDENTIAL PROJECT IN BAFT COUNTRY-KERMAN-IRAN

This project has been established in the northwest of Baft country in the Kerman province with 1.7 kilometers distance from the center of the city. The project covers an area of 16 hectares, including educational, cultural, and residential uses in the form of providing site and services (Figure 4). 150 residential land plots are allocated to build affordable housing for low-income groups and the process of construction was begun in 2013. On that time, each residential unit benefited from 150 million rials (5000 US dollars) loan that covers one fifth of the price of a 65 square meters residential unit and a 250 square meters land plot. The intended land lots for this project are located in north-south direction and according to the local codes; the building mass should be located at the north of each lot with a maximum occupancy of 60%. The incremental housing approach has been chosen to build these 150 units. In the first step, necessary spaces contain a bathroom, a toilet, a living space and a kitchen were provided for each household in the form of a 65 square meters unit. The development plan of each unit, which can be completed in three stages, includes the addition of two bedrooms and an increase in the size of the living room. This development eventually brings 120 square meters area for each unit (Figure 5). According to the results of the Iran 2016 National Population and

Housing Census, this amount is the usual area of a single-family house in the city of Baft.

The structural system of residential units is the composition of the brick barrier walls with the concrete slabs on a concrete foundation and a flat beam and block roof. Due to the technical issues and dimensions of the foundation, it was constructed completely in the first stage of the development. In order to implement horizontal and vertical concrete slabs in other stages of the development, steel plates were put in the foundation and any other necessary places. The technology of this structural system is relatively simple and can be implemented by local workers and it was one of the primary objective of the project.

Residential satisfaction considered as a dependent variable on incremental housing approach in analyzing the case study and practical examples of literature. The indicators of residential satisfaction that gained from literature review were listed in a questionnaire that has been shown in Table 3.

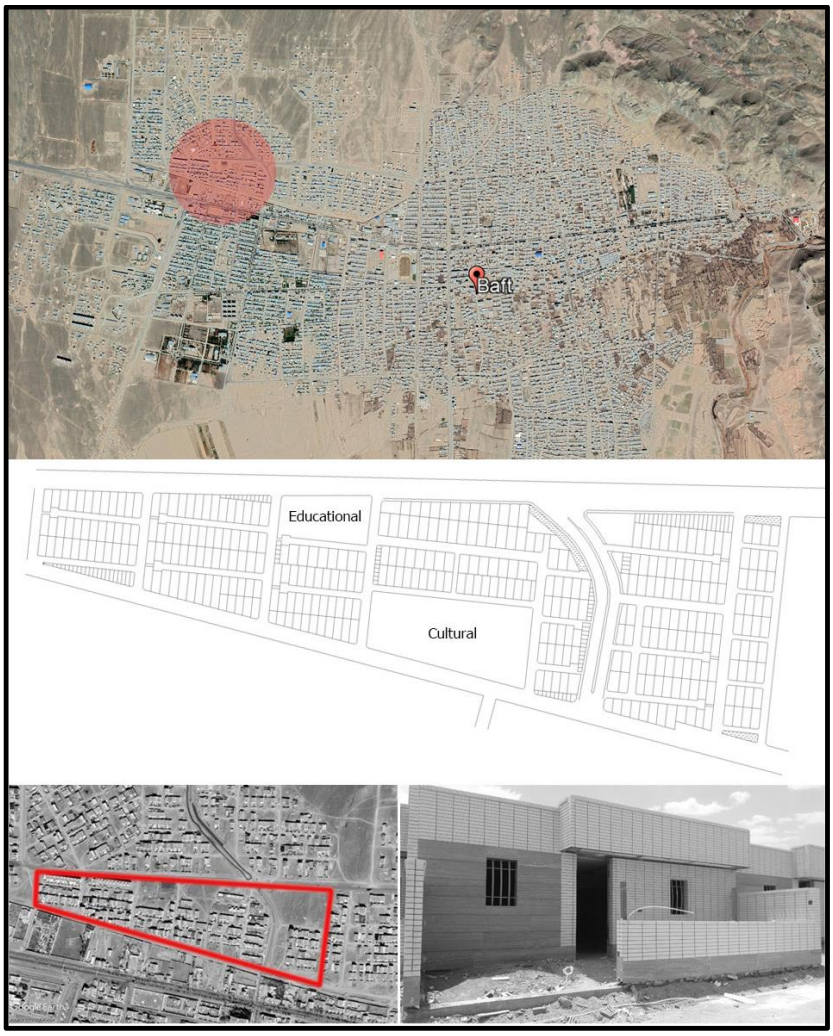

Figure 4. Site plan and residential unit with a bedroom next to the living space-Source: Authors

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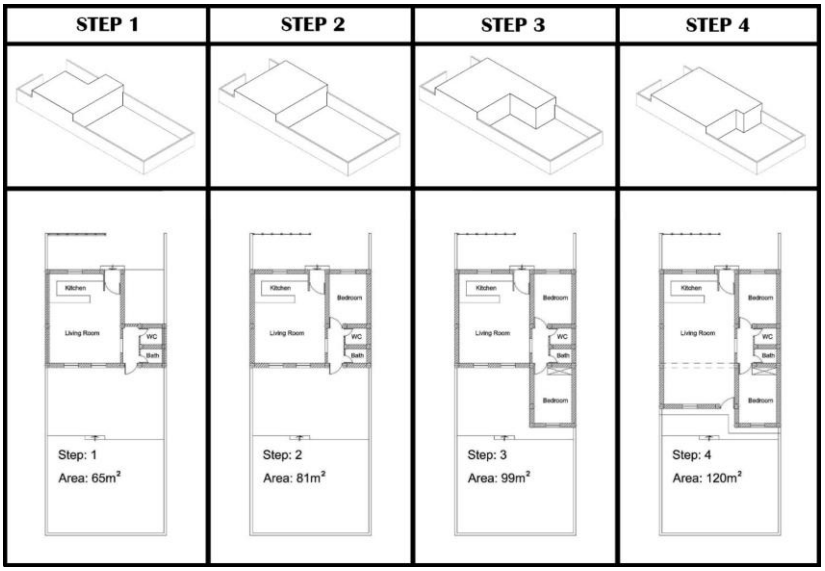

Figure 5. Stages of the development over the time-Source: Authors

Table 3. Provided questionnaire

Which alternative options do you prefer for placement of the service spaces?		Inside the residential unit	Inside the yard				
	Kitchen						
	Bathroom						
	Toilet						
What kitchen system do you prefer in the case of a kitchen inside a residential unit?		Open system	Close system				
Please indicate the level of satisfaction of your family with any of the following indicators by numbers 1 to 5 (Number 1 as the lowest level of satisfaction and number 5 as the highest).			1	2	3	4	5
Construction Quality	Quality of the building facade						
	Quality of the building components						
	Quality of the building materials						
	Quality of streets and alleys						
Urban and Neighborhood Services	Sewage disposal system						
	Access to urban infrastructure networks						
	Access to public transportation						
	Pedestrian and vehicle access systems						
	Waste collection system						
	Green space maintenance						
The ownership possibility	Initial price suitability						
	Housing loan suitability						
Providing the basis for future development	Technical anticipation						
	Spatial prediction for future development						
	Using local workers in the construction process						
Providing the basis to strengthen social relationships among the neighbors	Providing suitable shared open spaces						
	Applying incremental strategy in buildings construction						
Overall satisfaction							

FINDINGS

In the case of Baft Project, the results of field studies show that among the 150 blocks, which allocated to the affordable housing applicants, 24 households have agreed to attach a bedroom in the first step of the development and have incurred additional costs (Figure 4). In addition, after 2 to 4 years of residence, 14 households added one and 26 households added two bedrooms to their houses, as the Figure 5 shows. It is important to note that during the time of this extension, the families could stay at living room and there was no need to evacuation. After 4 years of residence, just seven households have extended the living room and could use the bedrooms as living space, during the time of the living room extension. This shows that the occupants are more eager to extend the number of spaces compared to the size of them. One of the reasons of this would be the importance of the public and private spaces separation. Therefore, this fact had to be considered in the first step of the development. According to a conducted survey among 108 samples, 96 cases preferred the direct access to service spaces (kitchen and sanitary spaces) from the indoor space. Among these 96 cases, just 11 cases agreed with the open system kitchen and this is because of the some issues like odor and privacy. Hence, in some units, the visual connection of the kitchen and the living space has been cut off by using curtain walls. To evaluate the level of residential satisfaction, some indicators that influenced by the incremental nature of the project, were analyzed. In the provided questionnaire to each households, the respondents were asked to indicate their level of satisfaction with the listed indicators by numbers 1 to 5 in front of each option. Number 1 as the lowest level of satisfaction and number 5 as the highest. The results have been shown in Table 4. In order to prioritize the indicators and examine the individual effects of each one on the overall residential satisfaction, a correlation test was used. In all cases, Pearson Correlation was more than 0/2, so a statistically significant relation was observed and the results are obtained in Table 5.

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Table 4. Obtained data from the question about the level of satisfaction with the relevant indicators-Source: Authors

Indicators	number of samples	Points based on 540	Percentage
Construction Quality	108	243	45
Urban and Neighborhood Services	108	204	38
The ownership possibility	108	397	73
Providing the basis for future development	108	398	74
Respond to the functional needs	108	223	41
Providing the basis to strengthen social relationships among the neighbors	108	336	62
Overall satisfaction	108	377	70

Table 5. The correlation coefficients between total satisfaction index and others-Source: Authors

		Construction Quality	Urban and Neighborhood Services	Providing the ownership	Providing the basis for future development	Respond to the functional needs	Providing the basis for social relationships among the neighbors
Overall satisfaction	**(r) Pearson Correlation**	0.497	0.458	0.868	0.651	0.258	0.741
number of samples		108	108	108	108	108	108
0<r<0.29= Weak Correlation 0.3<r<0.69= Moderate Correlation 0.7<r<1= Strong Correlation							

DISCUSSION

The results of analyzing the questionnaire's data show that providing the basis for the future development, the ownership, and the social relationships among neighbors are the most important factors in attracting resident's satisfaction. The reason of the ownership importance is due to the social and economic conditions of these people. As the ownership always was a wish for them, and this project has provided the necessary base for achieving this. Christopher Alexander believes that the house is the wining throw of the dice which man has wrested from the uncanniness of universe; it is his defense against the chaos that

threatens to invade him. Therefor his deeper wish is that it be his own house that he not have to share with anyone other than his own family (Aleksander, Silverstein, & Ishikawa, 1977). Therefore, the land plot complete ownership due to the build of single-family houses has an important role to obtain the residents satisfaction. The incremental approach makes occupants hopeful about their living environment. Although their current home may not fulfill all their quantitative and qualitative needs, the possibility of improvement and development is always exist and this would lead to create a sense of belonging to the residential environment. Therefore providing the basis for future development is discovered as an important indicator in gaining the residents satisfaction.

Construction quality is the most important factor in every project. Especially in the case of low-income groups housing, although the economy plays an important role, it does not deny the necessity of achieving the desired quality in terms of strength, durability, and beauty. The nature of incremental housing requires participatory design and construction methods, so using simple construction technologies and local label forces are the priorities. This can face the projects with some challenges in providing similar quality for all residential units. One of the other benefits of incremental housing is providing the basis for the quality improvement in other stages of the development, especially in some cases that the householders do not have the financial strength to bring a proper quality for facades or indoor spaces. Urban and neighborhood services can be classified into two main groups; the first group contains some infrastructures like water supply, gas, sewerage and other necessary networks. The second group is related to some services like public transportation, waste collection system, pedestrian and vehicle access systems, green space maintenance and etc. Therefore, in the incremental housing projects some infrastructures like sewerage and gas networks can be implemented in the next stages (in these case temporary arrangements should be considered). Although relevant organizations are responsible for providing infrastructures, the necessary basis can be provided to facilitate the provision of these services, due to the proper design. For example, make sure that some spaces have been allocated to the public transportation stations and waste collection system.

The design quality of the open spaces has a significant effect on the occupant's decision to maintain them. In this regard even if the urban services are not so desirable, these spaces always remain alive due to the presence of the residents. Since residents are faced with common issues regarding the development of their houses and construction activities, Social relationships can be

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strengthened due to some activities like asking neighbor's opinions and using their advices, observing neighbor's final work, introducing contractor groups to each other and so on. As in the Baft project, despite the fact that site design factors did not provide necessary basis to strengthen social relations, this indicator is in a good situation from the residents view. In order to continue these relations, it is necessary to consider the appropriate spaces, including public and semi-public open spaces with their proper pattern of activities. In this regard, in the study of the Belapur project, it was seen that the scale, the situation, and the prediction of pattern of activities that will take place in these spaces, are of particular importance. Based on the Ravishankar field studies, the residents were more enthusiastic about the presence in the semi-private courtyards compared to other bigger open spaces (Ravishankar, 2014). The shortage of the effective pattern of activities in strengthen the social interactions; decrease the quality of the shared open spaces. As it was seen in the Chilean residential project, the shared open spaces just allocated to the parking lots, so in the design of residential environments, it is strongly recommended to allocate a common courtyard that works as a semi-private open space for 8 to 12 houses. Some spaces like community small gardens, children playground and proper sitting spaces should be anticipated in these courtyards, but they can be assembled in the later stages of the development.

Due to the social sustainability issues, it is preferable to locate affordable housing projects in the context of the cities and scattered these houses among the others. As it was seen in the Baft project the 150 affordable houses are scattered in the site and the quality of their facades are the same as the other houses (There are only some differences in the quality of materials for indoor spaces).This would lead to the social integrity in the residential environment. Finally a model for designing incremental housing has been prepared and presented in Figure 6.

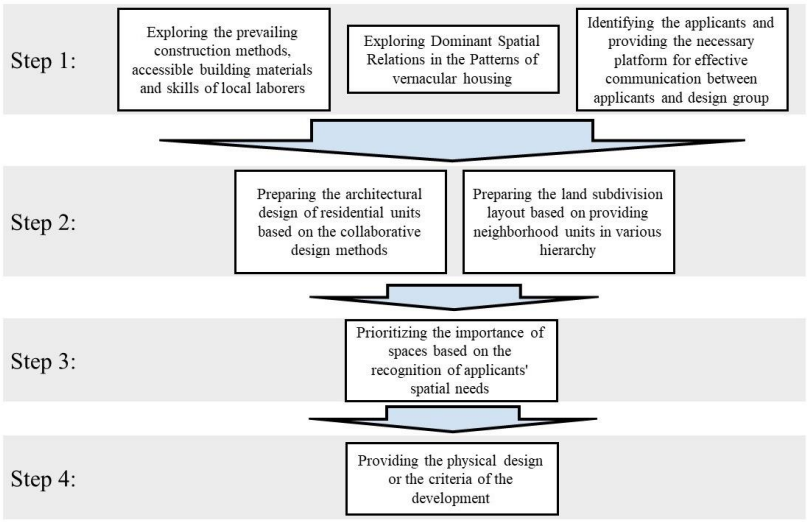

Figure 6. Necessary measures and design procedure for incremental housing projects-Source: Authors

CONCLUSION

The results of the literature review and case study illustrate that the incremental housing approach can be considered as an appropriate way of providing affordable housing, especially in mass housing projects. Providing the basis for future development and ownership possibility are the main factors that cause residential satisfaction in these types of projects. These two indicators can be gained through the essence of incremental housing approach. Using this approach is more practical in the construction of single family houses due to the structural issues. In the other hand, the spatial and functional needs of a single family are more limit than the occupants of an apartment complex. Therefore, if just one person is responsible for the decision, the process of development will be run faster. The nature of the incremental housing is based on the participatory design and construction methods, so in addition to moderate the financial problems in obtaining housing, the final product will be more suitable for the target groups from the both functional and esthetic power of view. The important point about incremental housing projects is to determine the minimum required functional space for the applicants. In Iran due to the emphasis on the separation of public and private spaces in the traditional homes and current lifestyle, increasing the number of spaces is preferable compared to increasing the dimensions of them, so the initial core of the incremental housing in Iran should contain sleeping, living and servicing spaces. The next step is to define a development framework to minimize the negative effects of attached spaces on the other spaces or on the physical aspects of the city. In this regard, site planning is so important for example, in the terrace housing cases the building development is more confined compared to the other types of layouts, so it is important to determine the final envelope of the buildings and define facade

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design criteria in terrace housing projects. Subsequently the proper design of neighborhood units and open spaces with appropriate anticipation of pattern of activities to strength social interactions among the residents are the important factors to increase the physical and spatial qualities of an incremental housing project. In addition, responding to the functional and aesthetic needs of the target groups should be the first priority of design and construction activities and this would lead to bring a sense of belonging among the residents that is the fundamental target of any residential environment development. Other challenges that incremental housing approach are faced with, are environmental, economic, energy and sustainability issues that can be the subject of the future research in this field.

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A Study on Accessibility of Disabled People: Case for Kızılay Shopping Center, Ankara

Hayri Ulvi*

Abstract

Although legal arrangements have been made about accessibility in Turkey, their reflection the urban spaces have been inadequate. Accessibility is an issue that needs to handle at different scales to improve the quality of life of every individual disabled or not. Analyzing many studies, it is observed that the disabled people in the society have difficulty in either inside of place or outside of place accessibility. It is among the most important accessibility problems that the design of the place with standard measures that will increase the accessibility of individuals is ignored. In order to draw attention to the planning and design criteria on the accessibility of place, it is aimed to determine the accessibility of the space by analyzing compliance with standards in Ankara Kızılay shopping center case area. Within the scope of the study,

Keywords: *Accessibility, disabled person, accessibility of shopping center, Kızılay Shopping Center*

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accessibility criteria in the study area are evaluated by using an accessibility monitoring and inspection form for buildings prepared by the Ministry of Family and Social Policies General Directorate of Disabled and Elderly Services. As a result of the evaluation, it is revealed how accessible the components that affect the availability of Kızılay AVM. According to this study, there is no usage area with very poor accessibility level. Parking has poor accessibility level. The use of emergency and building installation elements is at the medium level of accessibility. Perceptible walking surface signs and building entrances have good accessibility levels. The other usage areas of the shopping center are horizontal and vertical circulation in the building, toilets and orientation and markings are very well accessible. The importance of this study is the answer to the question how accessible the social activity area for all in Kızılay, which is developed as the central business area of Ankara over the accessibility criteria according to legislation.

INTRODUCTION: A GENERAL OVERVIEW

Human needs space in order to maintain the basic needs of social life as well as need for shelter. The space in different forms is observed in time because of changing the human life. Population growth occurs urban space differentiations. Social, cultural and economic developments lead to changes in the demands and needs of the society and to create new social spaces. The spaces are important areas for increasing unity and solidarity in society. People need to be directed to the place and to be created a desire for having time there. Thus, the use of space and keeping the space alive are provided. There are many factors for enhancing use of space. Accessibility is one of the factors which enable the use of an urban space. Having an accessible space are among the reasons to prefer the space.

There are many people in the society who are young-old, male-female, with permanent or temporary barriers, pregnant, obese, illiterate, non-linguistic, with limitations such as vision, orthopedic, and hearing impaired. Many of these people face with obstacles in urban areas like on pavement and pedestrian roads, pedestrian crossings, building entrances, public buildings, workplaces, schools and shopping center, cinema, theater and so on. They also find it difficult to use street furniture, symbols and signs, and public transport and private vehicles (Buldurur and Yavaş, 2007).Therefore, the concept of accessibility becomes more important for every individual.

In literature, achieving human-oriented accessibility is related to the concept of universal design, barrier-free design and inclusive design. Kuter and Çakmak (2017) mentions that after the Second World War, urban design led to the concepts of equal use and accessibility for society in the process of restructuring of cities. It also refers to the development of a barrier-free design concept for

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the organization of life environments for the society and soldiers who suffer from the war. It emphasizes that the concept of universal design emerged in order to prevent discrimination and inequality in society over time. Kaymaz (2015) mentions that accessibility standards should be realized by taking into account the needs of each user in the design process, not after design.

There are many studies on the accessibility of urban spaces. Güngör (2013) examines the accessibility of Gazi University Faculty of Architecture and how its accessibility changes according to accessibility standards (TS 9111) after the renovation work. In this study, it shows how the percentage of spatial accessibility of classes, conference hall, cafeteria, faculty and the social areas of the faculty change with four different responses in five categories which can measure horizontal and vertical accessibility. Gezer (2014) reveals the ways in which the accessibility should be considered in physical environmental dimensions and physical environment conditions through hospitals and health centers. It examines spatial accessibility criteria in health structures such as parking, building entrance, elevator, ramp, stairs, doors and windows, toilets, maneuver areas, orientation and communication applications . In addition to this, it emphasizes that plans should be made in such a way as to provide solutions for the removal of wastes, easy and safe transportation to the hospital and conditions which might pose a danger to patients. Bekçi (2012) mentions problems and offers some solutions about use of transportation axes eligibility over pedestrian pavements, floor coverings, signs and lighting boards, intersection points, stairs, ramps and proximity to housing. Meşhur and Çakmak (2018) analyzed the factors affecting the accessibility of public spaces by the universal design approach in Konya Zafer pedestrian zone. Arslantaş and Güngör (2014) discusses accessibility issues in and around municipal buildings in a different method. The physical environment is evaluated according to four different responses. As a result of the scoring, the accessibility of five different municipalities in Ankara evaluated in terms of green areas, public transportation stops, main and alternative entrances, walking paths and connections with these buildings. Arat and Sayar (2016) focuses Konya Kent Plaza Avm as a case study to investigate the spatial accessibility of shopping centers with its national-international disability design criteria. As a result of the study, it develops alternative circulation scenarios for disabled individuals.

CONCEPTUAL FRAMEWORK: THE CONTEXT OF ACCESSIBILITY

The concept of accessibility is examined in two ways as people-oriented accessibility and location-oriented accessibility. Human-centered accessibility is defined as ensuring that each individual leaves his / her home safely and returns to his / her home without the need for another person. The location-oriented accessibility refers to the spatial integration of the distance between the point where people want to reach from their point of origin horizontally and vertically.

Accessibility is an important concept aims to ensure that every individual living in the city can use all the spaces of the city. Accessibility can be ensured by the continuation of actions in everyday life without breaking. The accessibility of each individual to the urban space in the city where it is easy, healthy and reliable is defined as external accessibility, while access within the space is defined as internal accessibility. The availability of structures is related to the availability of outdoor spaces. Ergenoğlu (2013) defines the accessible outdoor design as a means of providing access to the place within the boundaries of any land, providing a suitable way for everyone from public transportation stops or parking spaces to disabled people to the entrances of buildings and the places where they will arrive. It also emphasizes that at least one way to connect structures, elements and spaces on the land should be determined. Internal accessibility is related to the provision of vertical and horizontal connections to the places where the person wants to arrive at the space, and to provide the equipment for this purpose.

Kaplan (2013) emphasizes the concepts of built environment, independent movement, and unhindered space and explains their relationship with each other. This study emphasizes the importance of the concepts of independent movement and unobstructed space in order to affect the transportation and circulation of individuals in terms of space and time. In order to be able to act independently, spaces must be accessible, unhindered and if there is an obstacle, it should be realized. It is stated that transportation and circulation can be provided by accessibility in the built environment and that new development areas should be designed and the existing ones should be arranged in order to prevent the restriction of the use of space by individuals.

In the literature, concepts such as accessible / reachable design, inclusive design and universal design are gaining importance to increase accessibility. Accessible / reachable design is made by considering disabled individuals as target group. The purpose in

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inclusive design is still the same but it differentiates from the reachable design. Inclusive design provides more realization of the design of how to achieve (Ergenoğlu, 2013). In the universal design, it develops the concept of design for all by considering all individuals who make up the society. There are 7 principles of universal design. These principles are equality, flexibility in use, simple and intuitive operation, perceived information, resistance to faults, low physical effort, size and space for approximation and usage.

Barrier-free accessibility with the relevant standards in the world and Turkey is also approved laws to guide for accessibility. Published ADA (Americans with Disabilities Act) in 1990 approved on 15 September 2010. It enables individuals with disabilities to have easy access to state and local government facilities, public buildings and commercial facilities by giving the minimum and technical standards (URL 1). According to Turkey's 2023 Transport and Communications strategy, disabled solutions projects is noteworthy. Within the scope of the project, it is aimed to follow the implementation of the laws and standards including the "Convention on the Rights of Persons with Disabilities" entered into force on 03.12.2008, the Law No. 5378 and the relevant Prime Ministry Circular and other current legislation and Turkish Standards, and to establish an board of control. In the context of accessibility, Tiyek, Eryiğit and Emrah (2016) disclose that disabled people have problems in their structures and surrounding architectural solutions and due to lack of public transportation systems, they have problems in education, employment, social life participation, communication and information, social support and health services. In addition, it is stated that the disabled people should be able to improve their living standards and to be able to walk freely in urban areas to ensure accessibility, so it is necessary to work with a universal design approach that may meet the needs of access and accessibility of disabled people from the planning and design stages. On 12 May 2000, the European Commission issued a communique entitled Towards a Europe without Disabilities. This Communique emphasizes a comprehensive and holistic strategy for the elimination of social, architectural and design barriers that restrict the access of people with disabilities to social and economic opportunities (as cited in Tiyek, Eryiğit and Emrah, 2016).

As a result, the implementation of certain standards in the physical environment and space features has a great importance for individuals with disabilities to facilitate their lives, to ensure their circulation in urban space, and to direct them to activities such as work and socialization.

LITERATURE SEARCH ON ACCESSIBILITY IN SHOPPING CENTERS

In the historical process, the changes in the economic, political and cultural lifestyle lead the structural transformations of urban life in terms of meaning and function. As a result of urban lifestyle transformations, it can be said that the shopping centers take over the role of city centers (Çetin, 2018). So shopping centers are used as actively for certain spatial and functional purposes such as entertainment or recreation on weekdays and weekends.

Arslan& Bakır (2010) summarized the criteria for shopping center to be preferred. These are product diversity, to carry out eating-drinking activities, to have social activity areas for adults and children, to be a safe environment, the layout and design of the shopping center, easy to access, vertical transportation (escalator / elevator) to provide, be clean, price suitability etc. Türk (2012) mentioned that the connection between the parking lot and the shopping center, vertical circulation ease, floor heights, corridor widths, lighting and indoor materials affect the user as well as shopping center's location selection, transportation facilities, parking facilities.

Shopping centers used by everyone for social activities are usually carried out in the form of buildings constructed with closed or open space. Therefore, this study handled the accessibility review of the shopping center under 8 headings based on the General Directorate of Disabled and Elderly Services Accessibility Monitoring and Supervision Regulation and Circulars Annex-1 accessibility monitoring and inspection form for buildings. These are classified under eight headings;

1. Parking
2. Building entrance
3. Toilets
4. Horizontal circulation inside the building
5. Vertical circulation inside the building
6. Emergency and building installation
7. Directions and markings
8. Perceivable walking surface marks

It is possible to summarize the standards that should be at the shopping center under the headings above by considering the accessibility guidelines with Improvement of Accessibility for Everyone Example of Implementation Guidance and Accessibility for Local Governments Basic Information Technical Manual Book prepared by the Ministry of Family and Social Policies General Directorate of Elderly and Disabled People.

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Parking

6% of the shopping center car park should be reserved for each disabled person and visitors. In addition, the disabled parking lot must be marked with a wheelchair symbol. It has a great importance that the wheelchair has the width to be easily maneuvered in order to enable the disabled people in shopping centers to reach the shopping center easily and that the disabled parking areas are close to the building entrance. The vehicle width should be 3600 mm and the length should be 66000 mm. The recommended interval between the two vehicles where the wheelchair can be passed is 1500 mm.

Building entrance

The building entrances should be flat feet and in places where there is a staircase, a ramp arrangement and a handrail should be placed for the physically disabled. In addition, building entrances should be laid with non-slippery material and well lit. The fact that the elements such as doors, ramps and stairs are not in accordance with the standards in the entrance of the building is an obstacle for individuals. One of the issues to hinder building entrances is the door. The safest door width is 1200 mm. If double doors are to be used, each of the doors width must be at least 800 mm. The glass doors width should be 1500 mm and the lower edge of the door should be 1400 - 1600 mm high from the floor and marked with a bright colored strip. Instead of revolving door, automatic or motion-sensitive doors should be used. If there is a revolving door, there must be a normal door. One of the difficulties in building entrances is that ramp standards are not suitable. The slope of the ramp should be kept as low as 5%, it should not be more than 8%. Platform used by wheelchair users should be less than 6000 mm to relax, and ramp widths should not be less than 2000 mm. Also at the beginning and end of the ramp should be long at least 1500 mm and there must be level areas as the ramp width. Railings must be made on both sides of the ramps. These should be 850-950 mm above the ramp surface. There should also be a second handrail at 650-700 mm height for children and short people. Another obstacle is the stairs in buildings. All steps in stairs must be uniform. Vertical surfaces should be 100-150 mm and horizontal surfaces should have a non-slip surface with a width of less than 300 mm. On the stairs, as well ramp standards, there should be a side rail on both sides. In addition, a stimulant surface should be installed to warn disadvantaged groups.

Toilets

The toilets in shopping centers should be designed with different spatial scale, regulation principles for individuals with

wheelchairs, visually impaired individuals and people with baby carriages. The toilet entrance door must be easy to open and door width must be at least 925 mm. The toilets have to be 2800 mm wide and 2200 mm long to allow passage of the toilets from the front, right and left. The closet height should be 480 mm and there must be handles to allow passage to the toilet. The washbasin should be 720 - 740 mm from the floor and the hand dryers and soap dispensers should be approximately 850 mm high. There should also be an emergency call button in an easily accessible place.

Horizontal circulation inside the building

Horizontal circulation inside the shopping center is provided by corridors. If there is a difference level in the building in the corridors, they should be provided with accessible route width and ramp arrangements should be made. A wheelchair gap should be at least 9000 mm in the corridors and the maneuver area should be considered to provide a minimum 150 mm turnover diameter (universal guide for disabled people). In the shopping center access to public areas and shops to the elevator from the entrance should provide through circulation.

Vertical circulation inside the building

In the shopping center crossing between floors is provided by stairs, escalators, ramps, walking ramps, walking platforms and elevators. Elevators are more preferred in vertical circulation. Therefore, the elevator dimensions in compliance with the standards are important for increasing accessibility as well as the dimensions of the stairs mentioned in the entrance of the building. The depth and width of the elevators should be at least 14000 mm. The elevator door should be 900 mm for single door and 1100 mm for double door. There must be holding bands 850-900 mm above the floor in the cabin. The minimum size of the buttons inside and outside the cabin should be 19 mm. In addition, there must be a usage area at least 1525x1525 mm in front of the elevator to maneuver wheelchair. For individuals who have not completely lost their vision ability, guidance should be provided with the use of contrast color. In addition, it is recommended to have a danger alarm (emergency signal) in the elevator. The hazard alarm should be prepared not only by sound but also by using both visual and embossed text for emergency use.

Emergency and building installation

In case of emergency, there should be visible visual and auditory guidance signs. Also, there should be audible and visible alarm.

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Directions and markings

Directions and markings have a great importance for the visually impaired and hearing impaired individuals. They should be readily visible and should be legible. Directional signs must be colored contrast and vivid in order to provide the convenience of low vision individuals. Markings should indicate places such as stairs, lifts, toilets, entrances, exits and consultations.

Perceivable walking surface marks

Perceivable surfaces are very important for visually impaired and low vision individuals. Perceivable surface relief height should be 5mm. There are 2 types of this surface. The first is the surfaces that warn of potential danger. This surface informs people to protect some dangers when the individual does not notice them like stairs, space, door. The second is informative surfaces. It informs us that there are usage areas such as toilet, ATM, elevator.

CASE STUDY FOR KIZILAY SHOPPING CENTER

Kızılay shopping center is located on the Atatürk Boulevard, which extends from the Ulus square to the Çankaya Pavilion, which is one of the most important and unique structures of the city of Ankara (Figure 1). Kızılay shopping center consists of 18 floors including basement, ground floor, attic, mezzanine and entresol. There are 120 stores, playgrounds, entertainment center and eating-drinking areas in the shopping center.

Figure 1. Location of Kızılay shopping center in the city

Since Kızılay was developed both spatially and functionally as central business district of Metropolitan Area, it is easily accessible by private and public transportation means. It is possible to reach Atatürk Boulevard and Kızılay shopping center by private vehicles, taxis, municipal and public buses, minibus and underground railway from the residential areas located outside the city center. Buses and minibus stops around Kızılay shopping center are within walking distance. Passengers arriving via rail system (Kızılay-Koru, Kızılay-Batıkent-Törekent, Kızılay-AKM-Keçiören subway lines and Dikimevi-Aşti Ankaray Line) have the opportunity to enter the shopping center without leaving the

metro station. As shown in Figure 2, the distance of the most remote public transport stop to Kızılay shopping center is 400 m. According to Kuntay (2008), the pedestrian can easily reach 500 m distance in 80%, so Kızılay shopping center is easily accessible by public transport. Easy access with different types of transportation and walking distance from public transportation stops to the shopping center allows for the increase of accessibility of Kızılay s hopping
center from outside the city center.

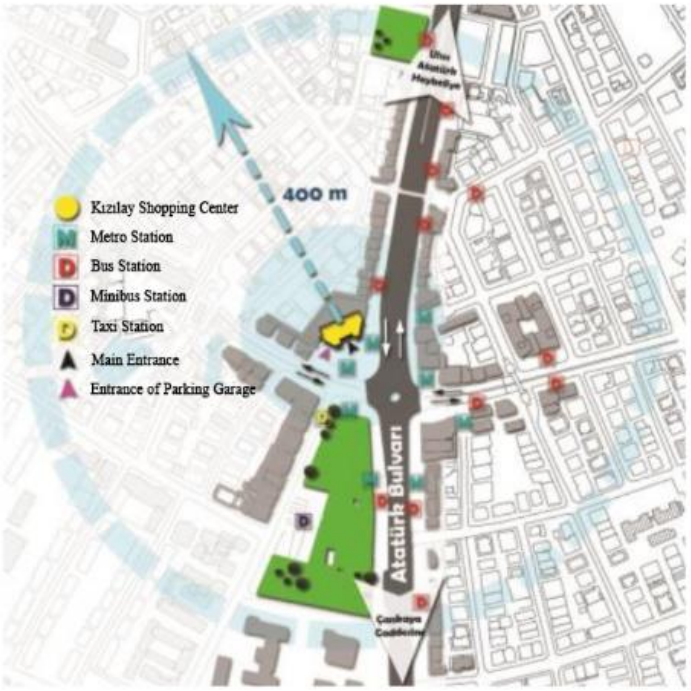

Figure 2. Accessibility of Kızılay Shopping Center

The accessibility analysis is carried out by evaluating in terms of compliance with the accessibility standards including Kızılay shopping center car park, building entrance, toilets, indoor circulation, indoor vertical circulation, emergency and installation, orientation and markings, sensible walking surface signs.

At first, it is examined parking areas. There is an indoor parking with a capacity of 300 vehicles. There is no open car park and no parking on the street (Figure 3). There is no private parking space for the disabled in the indoor parking in the shopping center. There are orientation signs in the parking lot. However, some of the signs are written on paper, so this method is not in compliance with the standards. There are two elevators for vertical circulation from the car park. While these elevators can reach as far to the third basement, access to the fourth basement is provided by stairs. Therefore, the fourth basement floor is not accessible for disadvantaged groups (Picture 1, 2, 3). Accessibility of Kızılay shopping center parking area are evaluated in terms of

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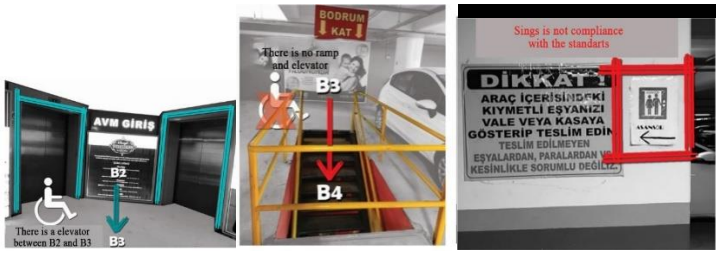
5 different criteria according to the accessibility monitoring and inspection form for the buildings prepared by the y of Family and Social Policies General Directorate of Disabled an Elderly Services. For each criterion, the total score is 2, and the total score of Kızılay shopping center, which can be 10 points, is 3 points. In fact, according to the form*, the percentage dependency of car park to the form is 30% (Table 1).

Table 1. Evaluation of parking criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Parking	5	10	3	%30



Picture 1., 2., 3. Evaluation of accessibility of parking at the shopping center

Kızılay shopping center has four entrances. These are the main entrance of the shopping center, the entrance to the shopping floor without access to the shopping center, the second basement entrance from the car park and the entrances to the second basement from the metro station area. The main entrance of the building is subject to inspection as the main entrance of the building is accessible by persons with disabilities (Picture 4).

Figure 3. Car park area of Kızılay Shopping Center

Picture 4. Building entrance review

The building entrance is covered with a wet non-slip surface and well brighten. The difference of elevation from the pavement of outside Kızılay shopping center to the entrance of the building is 32cm. There should be a ramp at the places with a difference of more than 1.3 cm according to the standards. There are two ramps for the disabled at the entrance of the building. The slope of the ramp is 13%. According to the standards, if the level difference is between 16cm-50cm, the slope of the ramp should be 9%. Therefore, the slope of the ramp is not compliant with the standards. There is a standard handrail next to the ramp. There is no stimulating surface 30 cm before the beginning of the ramp and after the end of the ramp along the width of the ramp up to 60 cm wide. There is no obstacle to restrict the movement of disabled pedestrians at the start and end of the ramp. When we look at the stairs in the building entrance, the height of the stairs is 16 cm and the width is 30 cm. There are no handrails on either side of the staircase. There is no stimulating surface along the width of the 60 cm wide staircase, 30 cm before the beginning of the staircase and 30 cm after the end of the staircase. When we look at the building entrance door, it is a photocell door consisting of large glass surfaces. According to the design standards, if there are large glass surfaces at the building entrance doors and around it, there should be a 7.5cm width stimulating contrasting color tape , which are first-level at the height of 130cm-140cm from the ground and second-level at the height of 90cm-100cm from the ground. There is a safety controller (x-ray) conforming to standards at the building entrance. After the entrance there is a consultation desk. Informative and stimulating signs can be seen and felt after entering through the door (Picture 5, 6, 7).

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Picture 5., 6. Evaluation of factors of main entrance

Picture 7. Evaluation of main input factors

When the availability of the main entrance of Kızılay shopping center was analyzed for disabled people, it was evaluated with 42 different features and received 56 points out of 84 points. According the form*, the percentage of dependency to the main entrance form is 66.6% (Table 2).

Table 2. Evaluation of building entrance criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
General features	5	10	8	%80
Ramp	15	30	18	%60
Stairs	10	20	12	%60
Door	4	8	5	%62.5
Apron	5	10	7	%70
Safety control device	1	2	2	%100
Information and warning signs	2	4	4	%100
Total	**42**	**84**	**56**	**%66.6**

Thirdly, toilets are evaluated. There are 122 toilet cabins in Kızılay shopping center, 5 of these 122 toilets belong to disabled people. These are located in the first basement, the first floor, the third floor, the fifth floor and the eighth floor (Figure 4). There is no elevation difference when accessing the toilet from the entrance of the disabled toilet cabin and the doors of these toilets open to the outside. Informative signs are not sufficient for disabled toilets. In addition, the attendant must be called to use the disabled toilet (Picture 8).

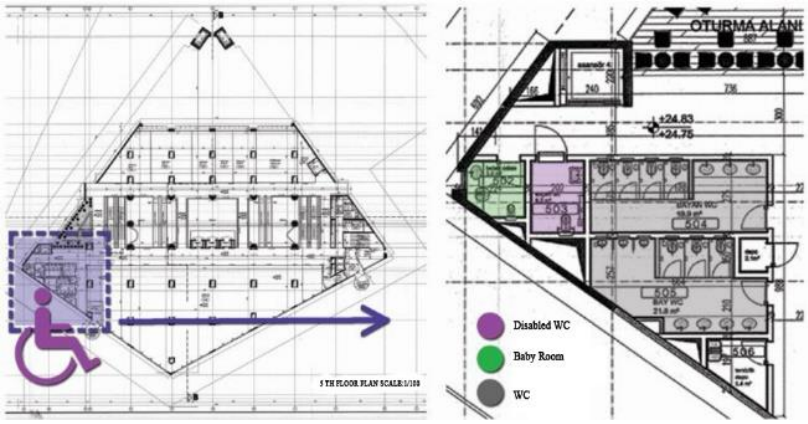

Figure 4: Location of the disabled toilet

Picture 8: Use of the disabled toilet

When the availability of Kızılay shopping center's toilets is analyzed for disabled people, it gets 54 points out of 62 points according to 31 evaluation criteria. According to the form*, the percentage of dependency the toilets to the form is 87% (Table 3).

Table 3. Evaluation of the toilet criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Toilets	31	62	54	%87

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After entering the shopping center, there is no difference of levels between the entrance door of the building and the entrance hall. In addition, there are no differences in elevation in the circulation areas (corridor, access to the elevator from the building entrance, access to the elevator in the floors etc.). Circulation areas are free of obstacles and well brighten. The floor coverings in the circulation areas are flat, stable and durable.

Fourthly, horizontal circulation is examined. The horizontal circulation of Kızılay shopping center was analyzed for disabled people by evaluating 7 criteria. Its score is 12 out of 14. According to the form*, the percentage of dependence on the building horizontal circulation form was 85.7% (Table 4).

Table 4. Evaluation of horizontal circulation inside the building according the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Horizontal circulation inside the building	7	14	12	%85.7

Fifthly, vertical circulation is analyzed. Kızılay shopping center has staircase, elevator and escalator for vertical circulation. There are 9 elevators in the shopping center. One of them is for emergency cases and, the others provides to access between floors. There are 6 elevators with different features to provide circulation within the building (cabin dimensions, etc.). (Figure 5) (Picture 9, 10, 11, 12, 13, 14). There is no lift to provide vertical access only between the floors of the basement 3 and the floors of the basement 4 (Figure 6). There is no threshold, stair and elevation difference in the cabin access. Unobstructed access distance is provided less than 30 m from building entrance to elevator. In addition, access to the elevator with information signs was facilitated. Within the shopping center, there are normal stair steps, escalators and fire escape stairs (Figure 7). It is observed that step ladders are designed appropriate for the use of disabled individuals. The stair surface is flat, stable and durable. The stair surface is covered with non-slip material in a wet-dry state. Height of stairs are 16 cm and there are handrail on both sides. There is no stimulating surface along the width of the 60 cm wide staircase, 30 cm before the beginning of the staircase and 30 cm after the end of the staircase (Picture 15, 16).

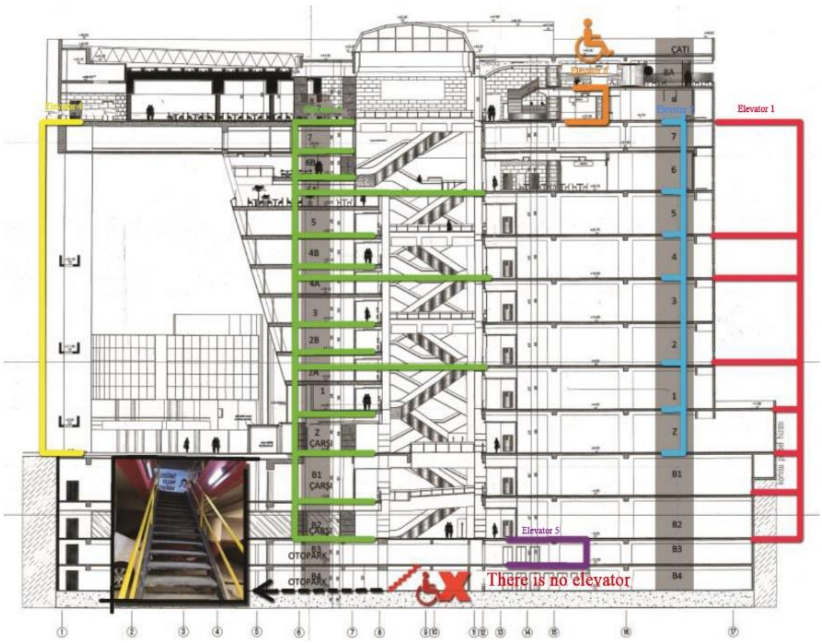

Figure 5. Cross-sectional view of elevators serving floors

Picture 9., 10., 11., 12., 13., 14. Elevators serving floors

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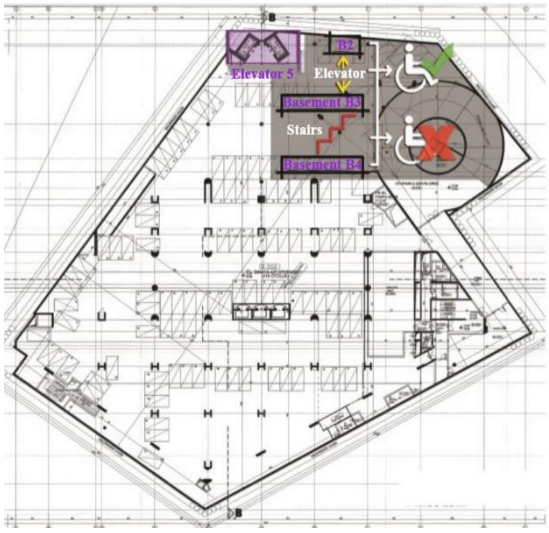

Figure 6. 3rd floor basement plan and vertical motion analysis

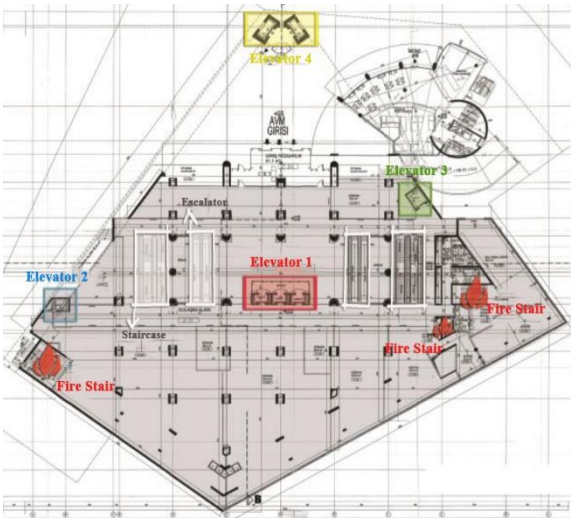

Figure 7. Floor container plan and vertical motion analysis

Picture 15., 16. Evaluation of stair properties

The analysis of the usability of the vertical circulation in the Kızılay shopping center for disabled people is examined with 144 criteria. When it is performed for each elevator and step ladders, vertical circulation gets the score 264 out of 288. According the form*, the percentage of dependence on the building vertical circulation form was 91.6% (Table 5).

Table 5. Evaluation of elevator and stairs criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Elevator 1	25	50	45	%90
Elevator 2	25	50	46	%92
Elevator 3	25	50	46	%92
Elevator4	25	50	46	%92
Elevator5	25	50	43	%86
Total	**125**	**250**	**226**	**%90.4**
Vertical circulation inside the building (Stairs)	19	38	38	%100
Vertical circulation inside the building (Total)	144	288	264	%91.6

Then, emergency criteria is investigated. Kızılay shopping center has a light guiding sign which can be easily recognizable for emergency situation. There are no voice guidance signs to guide for an exit in emergency. In case of emergency, while there is a visible alarm, there is no audible alarm. The height of the lighting switches is between 90 cm and 110 cm according to standards.

The analysis of the emergency and building installations of Kızılay shopping center takes 8 points on a maximum of 14 points. According to the form*, the percentage of addiction to emergency and building installation form is 57% (Table 6).

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Table 6. Evaluation of emergency and building installation criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Emergency and building installation	7	14	8	%57

Thanks to the information signs in Kızılay shopping center, there is a possibility of walking without getting lost easily. After the main entrance door of the building, there are information signs, directional signs and functional signs that are legible and understandable for usage areas in the building (Picture 17, 18, 19). However, all manuscripts and markings are not in accordance with the standards. It is observed that all the markings are not used Braille, embossed letters and symbols for the visually impaired people.

Picture 17., 18., 19. Direction and markings evaluation

The analysis of the direction and markings of the Kızılay shopping center has a score 16 out of 20 points. According to the form*, the percentage of dependence on the form is 80% (Table 7).

Table 7. Evaluation of direction and marking criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Directions and markings	10	20	16	%80

Finally, walking surface signs are evaluated. There are perceptible walking surface signs from the entrance door to the information desk at Kızılay shopping center. It is observed that guide tracks are used to mark the walking route. Perceptible walking surface

markings are not non-slip in wet-dry condition. In addition, maintenance and repair is not observed.

Analysis of the perceivable walking surface mark of Kızılay shopping center is evaluated with 10 criteria. The score is 14 points out of 20 points. According to the form*, the percentage of dependency on the form of perceptible walking surface signs is 70% (Table 8).

Table 8. Evaluation of perceivable walking surface mark criteria according to the form

Working area	Number of working point	Total score	Receiving sore	Ratio
Directions and markings	10	20	16	%80

Accessibility percentages were determined as a result of scoring evaluations. According to certain criteria, accessibility percentage was evaluated in 5 categories (Table 9).

Table 9. Accessibility ratios and level of accessibility in different usage area of Kızılay Shopping Center

Working Area	Accessibility Ratio	Level of Accessibility
Parking	%30	Low
Building entrance	%66.6	High
Toilets	%87	Very high
Horizontal circulation inside the building	%85.7	“Very high
Vertical circulation inside the building	%91.6	Very high
Emergency and building installation	%57	Medium
Directions and markings	%80	High
Perceivable walking surface marks	%70	High

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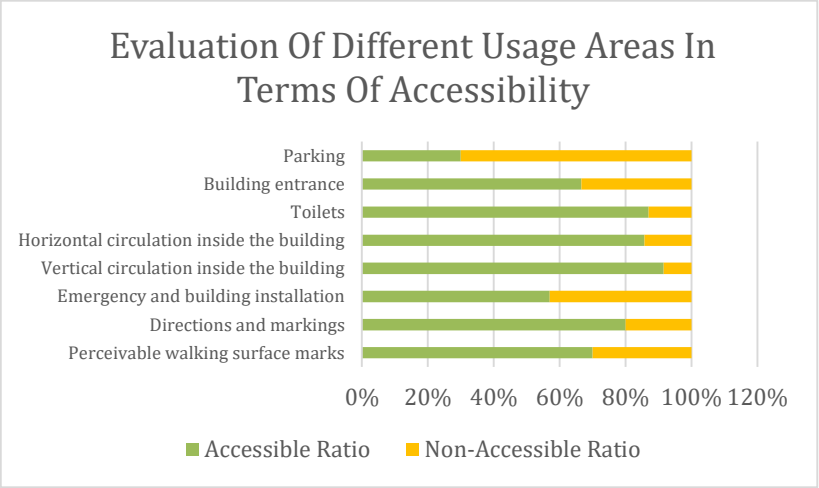

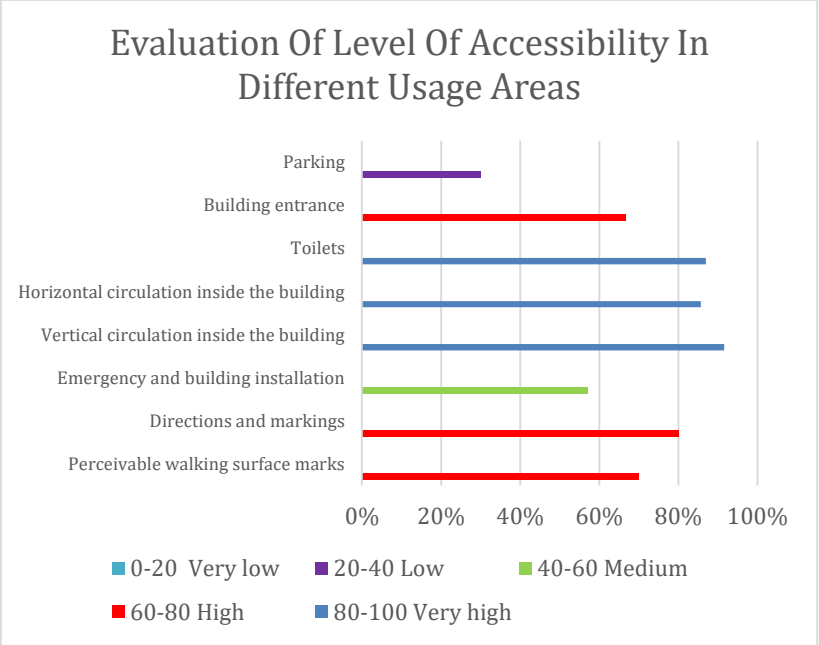

According to the evaluation results, there is no usage area with very poor accessibility level. Parking has poor accessibility level. The use of emergency and building installation elements is at the medium level of accessibility. Perceptible walking surface signs and building entrances have good accessibility levels. The other usage areas of the shopping center are horizontal and vertical circulation in the building, toilets and orientation and markings are very well accessible. During the evaluation, the scoring made by evaluating criteria to be convenient in accessibility concretizes how much Kızılay shopping center is accessible. In this way, the deficiencies in different usage areas within the shopping center are realized.

CONCLUSION

Accessibility is a subject that dwells on the living areas of the city, green areas, transportation systems, social reinforcement areas etc. for ensuring the continuity of the actions carried out in daily life and meeting the needs of each individual without the need of others. The rights of people with disabilities making up about percentage 12.26 of the population of Turkey are taken under legal protection with Law No 5825 United Nations Convention on the Rights of People with Disabilities approved by Council of ministers dated of 3 December in 2008 (Ergenoğlu and Yıldız, 2009). In spite of the legal regulations, the inadequacies and inaccuracies in the application affect negatively the life quality of the disabled people. The concept of accessibility needs to be well understood in order to eliminate inadequacies and inaccuracies. The target population should cover not only disabled individuals, but also every individuals by including disadvantaged groups such as transient disabled individuals having health problems or being illiterate, elderly, pregnant and obese individuals.

This study is useful for examining the accessibility of the shopping center, which is defined as the working area of the concept of accessibility, and for guiding deal of the accessibility of the city in different usage areas. With the original method, expression of the percentage of accessibility on the classification that influences the accessibility of the building enables to notice the deficiencies. It also encourages the elimination of deficiencies. According to studies in usage area of Kızılay shopping center, it is necessary to make improvements in the short term in poor and medium accessible usage areas in order to increase the accessibility of Kızılay shopping center according to the determined levels. In the long term, the deficiencies should be eliminated in the usage areas of good and very good accessibility.

It is important for the disadvantaged groups in the society to participate in the society and to ensure their socialization in order to survive as active individuals. Therefore, indoor and outdoor places are arranged to be usable by everyone. The problem of accessibility in closed space experienced by many people with and without disabilities should be taken in terms of accessibility criteria. To achieve this, spaces should be designed with a universal design approach to increase the use of all individuals in society. This study reveals important criteria and deficiencies providing accessibility in the shopping center. The surface materials should be preferred for non-slip material on wet-dry surfaces to ensure the safety of individuals. Redirections should be visible, perceivable, and audible. The circulation system of the perceivable surfaces must be done as embedded in the ground

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without being disconnected if it is possible. Stairs, elevators, ramp solutions providing to vertical access should be made in accordance with the standards in a way to ensure safety and horizontal and vertical circulation connections should not cut in space.

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Resume

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The Evaluation of Architectural Tourism Potentials of Greek Heritage Structures Remained after the Population Exchange in Niğde's Settlements

İlknur Acar Ata*
Mehmet Emin Başar**

Abstract

The population exchange between Turkey and Greece was decided in 1923 as a result of Lausanne Treaty. By this decision, non-Muslim Greeks living in Turkey and Muslim Turks living in Greece were mandatory mutual migration. The immigrants left their architectural heritage that was built with cultural, ethnic and faith values in the settlements where they were born and grew. Many religious structures (churches, monasteries, chapels), civil buildings (housing, education, health, trade, accommodation, social), technical and economic structures (mills, ovens, bridges, fountain) remained after Greek-Turkish population exchange in various regions of Turkey.

Besides to being the witness to history each of the original heritage structures that reflect Greek immigrants' economic, social conditions, cultural wealth and belief have architectural tourism potentials. Within the scope of the study, the architectural tourism potentials were

Keywords: *Architectural tourism, Cappadocia region, Niğde, Turkish-Greek population exchange, Tourism potential*

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evaluated by selecting the Uluagac Greek School, Fertek Church, Hancerli Laundry and Church Fountain as a sample among the different building groups located in the Uluagac, Fertek and Hancerli settlements located in Nigde/Turkey. The analyzes for the selected buildings were conducted according to the determinants of architectural tourism potential (architectural and environmental factors, targeted tourist).The data obtained from the analysis were synthesized architectural tourism with cultural, ethnic, religious and ancestral tourism and suggestions were developed.

INTRODUCTION

In the globalizing world, as a result of the many transportation possibilities and the desire to discover the world, humanity has seen other places to move since prehistoric times and has developed experiencing a wide range of inter continents. Holden (2007) opposes the definition that tourism is intended only for entertainment and pleasure; holiday, visiting friends and relatives, sports and cultural activities as the main types of tourism and together with them for the reasons of business education, religious and health tourism is diversified. Tourism is a bridge that provides two-way interaction between countries. After visiting other countries, tourists influence the composition of social, cultural, historical and architectural identities of their countries (Hudman & Jackson, 2003). If the purpose of tourists to come to the city is categorized as participating in entertainment, holidays, education, courses, sports, cultural and artistic activities and visiting historical and cultural places, it is seen that both the visited and experienced buildings of architectural tourism support other tourism types.

Erkal (2007) divided architectural tourism into two categories. One of them is a category that covers certain organizations (architecture biennials, UIA meetings, building fairs, architecture conferences, international studios) in the context of the architectural profession, and in the selection of the places where these are organized, the historical and contemporary architectural works, the architectural museums, the powerful architectural media in the international sense and the important architecture. The existence of universities indicates that it is decisive. It is a kind of tourism which provides the experienced place of architecture in the second category. At this point, that the main subject of this study is the tourism value of "heritage building". Heritage might be understood to be a physical 'object': a piece of property, a building or a place that is able to be 'owned' and 'passed on' to someone else (Harrison, 2010). Built heritage refers to historic buildings and structures and is comprised of human-made, fixed elements, possessing historical values and

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meaning derived from the settings in which they occur and societal values that ascribe worth to them (Nuryanti, 1996, p. 270). Cetin (2015), historical environments that provide connections with people and the environment are also very important symbols of continuing human values and also details of the social and economic structures of past civilisations lie in this environment. (İncedayı, 2007); Nuryanti (1996)'s work, the important point that architectural tourism focuses on the relationship of historical buildings with culture. Structures represent more culturally value than natural surroundings. Macdonald (2006) identifies heritage as a ''material testimony of identity''. İncedayı (2007) provided a different perspective on the subject by saying that "Architectural tourism" should be seen as an important process in order to spread the architectural culture in a multi-dimensional way and to gain the habit of environmental criticism."Heritage tourism", like other leisure and tourism activities, is largely viewed as a process of experiential consumption (Chen & Chen, 2010). In line with the demands of architectural tourism, it has been seen that since Greek and Roman civilizations, hospitality and accommodation facilities have a service concept that supports tourism activities (Lewis, 1993). At ICOMOS Turkey Architectural Heritage Conservation Charter / 2013 the structure and structure groups, which are the common property of humanity and which have to be transferred to the future with their original characteristics, which have to be preserved according to the principles of integrated protection with different values and qualities and with all their values, are defined as architectural heritage. The historical, cultural, artistic, aesthetic and periodic values of the architectural structures should be supported by tourism with a conservation-oriented approach.

In 1923, the Treaty of Lausanne was signed between Turkey and Greece about the compulsory migration of Turkish Muslims and non-Muslims Greek, "population exchange" is a decision having the ongoing effects today. After the First World War, Turks struggled and won the War of Independence. Many lands dominated in the Ottoman Empire were lost and there have been many problems and consequences of the pre-war and process of ethnic diversity in Anatolia. The population exchange between Greece and Turkey held, after the War of Independence and Mudanya Agreement, the Lausanne Peace Conference, held in Lausanne Switzerland is one of the decisions taken. Some of the major problems for Turkey ahead of the conference were as follows: Lack of population in the country, minorities, the situation of the Turkish minority in Greece. Turkey would try to solve in Lausanne these problems (Kiracı, 2006). Exchange of

population in Turkey and Greece aim is to provide uniformity in the Muslim and non-Muslim population. Both countries accepted the exchange with the "Convention and Protocol on the Exchange of Greek and Turkish Peoples" signed on 30 January 1923. The Convention consisted of nineteen articles and a protocol. According to this convention:

"As from the 1st May, 1923, there shall take place a compulsory exchange of Turkish nationals of the Greek Orthodox religion established in Turkish territory, and of Greek nationals of the Moslem religion established in Greek territory. These persons shall not return to live in Turkey or Greece respectively without the authorisation of the Turkish Government or of the Greek Government respectively."

After population exchange between Turkey-Greek many architectural structures remained as a heritage at both countries. The architectural structures that reflect the historical, ethnic, cultural, economic values of the settlements that have survived after population exchange until today has architectural tourism potential with architectural features, aesthetics value, current use and orjinal function. These structures were constructed according to the physical conditions of the environment and the social, ecomonic, cultural, religious expectations and needs of the Greeks. According to the needs of Turkish immigrants who came after the exchange, some were used with their current functions and others were given new functions. These settlements are places where architectural tourism potentials and integrated conservation and survival activities should be carried out.

In this study, Greek Heritage structures remained after population exchange inNigde at Cappadocia region potentials of architectural tourism were identified and demonstrated through the proposals for architectural tourism can be developed for them. Heritage, whether it be an object, monument, inherited skill or symbolic representation, must be considered as an identity marker and distinguishing feature of a social group(Flores, 1995). Architectural structures remained after the population exchange have carried many values about the identity of the community who migrated. The main component of architectural tourism, "heritage building", together with the architectural features of the period in which it was built, has a supportive relationship associated with ethnic tourism and cultural tourism at the urban scale together with the natural environment, which demonstrates the social, cultural structure and economic power of the society, giving information about the daily life and rituals of the society.

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METHODOLOGY

The architectural structures belonging to the Greeks living in many regions of Anatolia before the Turkish-Greek population exchange must be protected by providing social and economic sustainability. The aim of this study is to reveal the potentials of architectural tourism of these heritage structures and to develop suggestions that are synthesized with other types of tourism (Figure 1). Firstly, as a result of the literature research, the determinants of architectural tourism potential have been revealed. These determinants have been comprised according to the environmental factors and the demands of the targeted tourism group by focusing on the architectural features required for the structures to be inherited.

The architectural style, which makes a heritage structure different from other structures and makes it unique for the targeted tourist population, is due to the fact that the structural features of the structure, the construction technique and the ornamental features are formed by the physical environment (the spirit of the place) depending on the economic, cultural and social environment of the society. From this point of view, the factors that constitute the architectural characteristics of the building and the environmental factors as a determinant of the architectural tourism potential are a whole, and these two determinants should be analyzed according to the targeted tourism mass.

In the next step, Greek heritage structures selected samples of the field study were analyzed according to the determinants of architectural tourism potentials. The formation of architecture with the cultural, socio-economic and faith values of the society leads to a strong network of architectural tourism with ethnic, cultural and faith tourism. As a result of these analyzes, the data revealed in each architectural structure were synthesized in other tourism types.

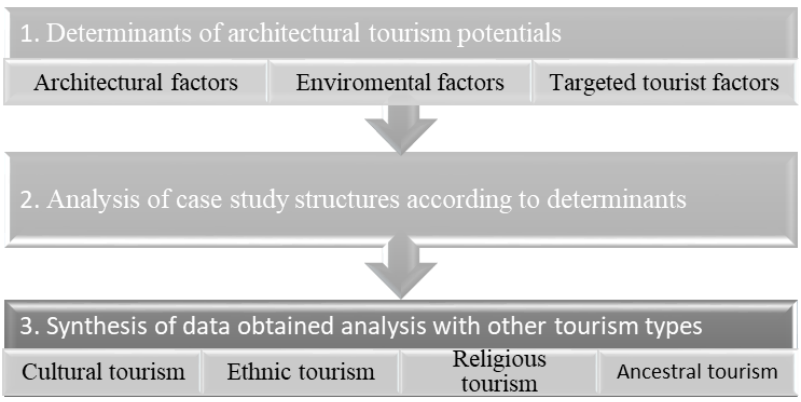

Figure 1. The flowchart of methodology

In this study, the problems related to the socio-cultural, ethnic and spatial issues of the Greek structures in the settlements with population exchanges were tried to be solved with the suggestions of re-functionalization and improvement in accordance with the architectural conservation perspective. Also, the proposed re-functionalization and improvements are based on the data of the socio-economic, cultural, historical and physical environment and are supported by other types of tourism. At the end of the study, the results and suggestions for evaluating the architectural tourism potentials of the Greek architectural heritage structures remained after the population exchange with the method of analysis synthesis were developed.

The Architectural Tourism Potential Determinants

The architectural features of the building, which are among the determinants of architectural tourism potential, should have a parallel relationship with the criteria that allow the structure to be accepted as the heritage structure. Riegel (1996) classified the value of a heritage entity into main categories: age value, historical value, deliberate commemorative value and use value. Age value, authenticity, aesthetics, uniqueness and monumentalism are considered as the criteria for the evaluation of the structure in many studies dealing with the preservation of architectural structures (Feilden, 2007; Jokilehto, 2007; Orbasli, 2008). A built heritage may define a specific period's architectural style, construction methods and advances in architecture and construction (Khodeir, Aly, & Tarek, 2016). In looking for authenticity, some tourists focus on the product in terms of its uniqueness and originality, its workmanship, its cultural and historical integrity, its aesthetics, and/or its functions and use (Halewood & Hannam, 2001).

In terms of tourism, it is not possible to evaluate the architectural potential of the building independently from its surroundings.

The effectiveness of environmental factors is important in the architectural tourism potential of the building. In the past, the social, cultural and economic requirements of the environment determined the function of structures. The connection of the environment with the past shows the place where the structure takes place in the history. Social and cultural values include identity expression (Dümcke & Gnedovsky, 2013).Over time, the identity of the environment to which the structure belongs is influencing the social and cultural values of the environment.

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In the global world, consumption societies have changed the attitude towards recreation, entertainment, shopping to discovering the original in time, experiencing and intercultural cultural embassy. In heritage tourism, tourist satisfaction lies in the peculiarities of its region(Brown & Perkins, 1992). As Enlil, Dinçer, Evren, and Seçkin (2011) point out, the attraction of a place for tourists is closely related to the extent to which the place is unique and different, to what extent it is familiar, and to provide an environment other than the usual. Prentice (1993) explained relationship between tourism and heritage attractions by analysing the benefits that tourists seek when visiting heritage attractions and measures their reactions to the presentation of such sites. Another study analyzes the relationship between tourist to heritage attraction according to personal characteristics, area characteristics, awareness, perceptions and behaviour (Poria, Butler, & Airey, 2003).While the architectural heritage of the societies was protected by certain criteria, it was among the reasons for the tourists visiting the country and the historical circles were reorganized in this direction.

The architectural tourism potential of buildings that constitute the core of the historical environments is evaluated in such a way that they will not disturb the texture in such a way as to enable the visitors to experience the whole of the settlement in which they are located. Orbaşlı (2000) describes the outcome of this situation with the definition of the heritage market which historic towns and quarters are competing to attract tourists, and previously unknown places are appearing on the service for this aim.

Table 1. Cohen's (1972) typology of tourists

Category		Characteristics
1	The organised mass tourist	Highly organised travel; minimum contact with destination culture; travel in large groups.
2	The individual mass tourist	Rely on the tour operator to arrange flights and accommodation; enjoy an element of liberty but will still tend to stay on the 'beaten track'.
3	The explorer	Tries to avoid the tourist track; make their own travel arrangements; learn the language of the place they are going to and attempt to associate with local people; retain some of the values and routines of home life.
4	The drifter	Attempts to become part of the local community by living and working with them; shuns contact with other tourists and the tourism industry.

The literature demonstrates that some analysts have felt the need to subdivide tourists into categories (Cohen, 1972, 1974; Murphy, 1985). Later in the studies carried out, tourists were examined under different categories according to their lifestyles (E. Lowyck, Langenhove, & Bollaert, 1992), travel patterns, personal interests and activities during the trip (Perreault, Darden, & Darden, 1977), trip indices (Uysal & Mcdonald, 1989), according to their motivation to travel a place (Plog, 1972; S. L. J. Smith, 1990).Cohen (1972)'s four-fold classification of tourist experiences and roles (organized mass tourist, individual mass tourist, explorer, and drifter) (Table 1) covers all of the detailed tourist typologies in the later studies. In determining the target tourist mass, the profiles of tourist who will connect with the Greek architectural heritage structures that have a history of exchange, and their surroundings through architectural, cultural, ethnic and religious aspects were reasoned. Large group of tourists formed by migrants who have had faced population exchange and their relatives with organized tours for visiting emigrant settlements,

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can categorize in Cohen's 'The organised mass tourist'section. Individuals with a history of population exchangewho want to see their ancestors' lands with individual efforts can categorize in Cohen's The individual mass tourist section. Besides professionals conducting academic studies on architecture, art history and history, those who are interested in past and present ethnic life can categorize in Cohen's 'The explorer'section. People traveling without discovering any links or without seeking a destinationcan categorize in Cohen's 'The drifter'section. So, in this study, the target tourist population was evaluated by Cohen's four tourist typologies.

It is very important to bring the tourists, who will have a positive interaction with social and cultural aspects and provides economic returns for the region and the country as sustainable. Many Nigde villages that do not have the qualifications to provide a tourism system need practices accepted by the local government and peasants to activate their architectural tourism potential. In the tourist typology of Cohen, if individual, explorer typology is chosen as the target audience for the villages, tourism can be sustained. As in other types of tourism, architectural tourism potential will be determined by this type of tourist supported by other types of tourism (Table 1: typology of tourists; Cohen, 1972). The heritage building plays an important role in meeting the demands and expectations of those who come to visit on their own single building scale and in the urban context the city is perceived as a series of streetscapes and spaces defined by building facades (Orbaşlı, 2000, p. 8). Many people prefer to be in the atmosphere formed by the facades of historical buildings, to walk in the open spaces that occur spontaneously in the streets, to sit and chat, and to spend time in the cafes at historical environments.

The Analysis of Heritage Structures by Architectural Tourism Potential Determinants

The analysis of heritage structures with the potential determinants of architectural tourism will be made and the value of each structure will be revealed (Table 2).

Table 2. Determinants to make analysis of Architectural tourism potential

Determinants to make analysis					
Architectural Factors	Architectural Period and Style	Environmental Factors	Physical environment	Targeted Tourist Factors	The organised mass tourist
	Architectural building group		Historical environment		The individual mass tourist
	Construction Technique and Material		Economic environment		
	Originality and Aesthetics		Social Environment		The explorer
	Current use		Cultural environment		The drifter

The architectural structures were analyzed according to the physical environment, historical, economic, social and cultural background of settlement. Systematicdata on the architectural features of each building depending on the current state and the function used in the past were collected. Environmental and architectural attractions were taken into consideration in the analysis for the targeted tourism mass. Finally, analyzes provide the selection of appropriate data for the syntheses that will associate the architectural tourism potentials with other types of tourism.

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The Synthesis of Heritage Structures with Other Tourism Types According to Their Architectural Tourism Potential

The architectural heritage is an expression of the cultural richness of the region, the diversity of ethnicity, the routines of social life. Owing to its role as a carrier of historical values from the past, heritage is viewed as part of the cultural tradition of society (Nuryanti, 1996).Cultural tourism is a type of tourism activity in which the visitor's essential motivation is to learn, discover, experience and consume the tangible and intangible cultural attractions/products in a tourism destination (Khodeir et al., 2016). The elements of cultural heritage and their use within the scope of tourism are examined different perspectives in many disciplines (Du Cros, 2001; Meskell, 2009; Poria et al., 2003). Cultural tourism assets include museums, art galleries, historic theme parks, heritage sites and arts festivals (Zeppel & Hall, 1991). These attractions/products relate to a set of distinctive material, intellectual, spiritual and emotional features of a society that encompasses arts and architecture, historical and cultural heritage, culinary heritage, literature, music, creative industries and the living cultures with their lifestyles, value systems, beliefs and traditions (Khodeir et al., 2016).

V. L. Smith (1977) defined ethnic tourism as marketing to the public in terms of the 'quaint' customs of indigenous and often exotic peoples. As a part of cultural tourism in today's tourism concept, tourists have the ambition to experience different cultures on the basis of ethnic tourism. Nowadays, ethnic tourism activities are diversified as visiting ethnic villages, minority homes and ethnic theme parks, being involved in ethnic events and festivals, watching traditional dances or ceremonies, or merely shopping for ethnic handicrafts and souvenirs (Yang, Wall, & Smith, 2008). Much of today's heritage tourism product depends on the staging or re-creation of ethnic or cultural traditions (Chhabra, Healy, & Sills, 2003). Religious tourism has come about by people's desire to perform their religious duties, as well as cultural, cultural trips with curiosity to sacred places. People can see the historical and social dimension of different beliefs, places of worship especially in the trips which are planned to visit religious places. Religious places, buildings, rituals, festivals, beliefs and religious events are among the important factors that affect tourist behaviour and direct people to faith tourism (Henderson, 2003). The fact that religious places, as well as cultural heritage belonging to the past civilizations, have the characteristics of discussion of whether religious tourism and cultural tourism can be evaluated together (Richards, 2007). People may visit the same site with very different motivations

with the same site being a religious pilgrimage for some while encompassing pilgrimage (cultural or nostalgic) or tourism (adventure or cultural) for others (Ebadi, 2014).

As a result of the Turkish-Greek Exchange, Turkish and Greek architectural structures remained as witnesses of that period. Considering the war and economic situation of the two countries at that time, the reason for the fact that many of these structures are not able to preserve their original state will be explained simply. Many cities that had population exchange in Turkey presents Greek emigrants' religious beliefs, economic assets, information architecture and application level, culture. Franklin (2003), travel and tourism is the opinion that people experience the idea of nationality and collective past. Many tourists learn "to understand as history" through their own family history. Ray and McCain (2009) study tourists travelling for family heritage (ancestral tourism) and find that travellers belonging to a certain religion want to visit those religious sites. This opinion explains why the main desire of grandsons of immigrants who migrated from Turkey to Greece visiting cities that had population exchange of Turkey. At this point, each of the structures that were built before population exchange carries the traces of an original ethnic past life with the potential to be emotionally connected.

CASE STUDY

After the Greek-Turkish population exchange according to the frequency of population, the immigrant enclaves in Turkey are Aegean region, Marmara region, Black Sea region, Central Anatolia region and the Mediterranean region (Arı, 2008). In this process, the Muslim Turks from Greece were settled in Western Anatolia (especially Aydın, İzmir, Ayvalık), Mersin, Adana, South Marmara (Sakarya, Bursa, Balıkesir), Middle Black Sea (Samsun, Tokat) (Sepetçioğlu, 2007).

Annual of the Institute for Statistics presented below (1929-1930) on the schedule for almost all of the emigrants were placed in Turkey (Figure 2).

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Figure 2. Cities having population exchanged from Turkey are marked on Google Earth [08.08.2018]

The churches, mansions, laundries, schools, monasteries that the Greeks shaped in terms of socio-cultural, economic and religious aspects were idle in some places that were converted in some settlements according to the changing requirements and approaches of the immigrants Muslim Turks and non-migrants.

In this study, the Greek architectural heritage structure in three villages of Niğde was chosen as the study area. When we examine the geographic structure of Niğde, we see a settlement dating back to the history of Cappadocia with a history of nine thousand years (Gedik, 1997). Strabon defined the borders of the Cappadocia region as the Taurus Mountains in the south, Aksaray in the west, Malatya in the east and Black Sea in the north. Niğde has been under the rule of many states and civilizations from Antiquity to today's republic period (Gabriel, 1962; Gedik, 1997). After The War of Independence, the population exchange took place between Turkey and Greece created many results for Nigde at demographic, social, cultural, religious, and in the urban context. Just before the exchange, the population of Niğde had been around 45,0002. In addition to this population, only 15,750 people arrived in 3969 households covered by the exchange (Ağanoğlu, 2001). The population increase in Nigde in 1923-1930 was much higher than the increase in the country. This increase can be said to be around 30% (Özkan, 2007). Turkish Muslims from Greece were settled in villages and settlements belonging to non-Muslim Greeks and Armenians in Nigde like other Turkish cities which had the same destiny. Among the settlements that had population exchange located in the central districts and villages of Niğde are Fertek, Dilmusun-Dermusun-Telmusun (Hançerli) İlusun (İlhasan - Küçükköy), Aravan (Kumluca), Kurdunus (Hamamlı), Teneği (Yeşilburç), Sazalca (Taşlıca), Madala (Ballı), Uluağaç, Semendire (Ovacık), Hasaköy, Andaval (Aktaş), Çarıklı'dır Çamardı, Solucuova Köyü, Suvermez, Kiçağaç Village, Gölcük, Tırhan (Figure 3).In these settlements, there are 25 churches(Parman,

1988; Pekak, 1999), stone mansions, the educational buildings, the trade structures and the fountains belonging to the pre-Turkish-Greek Population exchange.

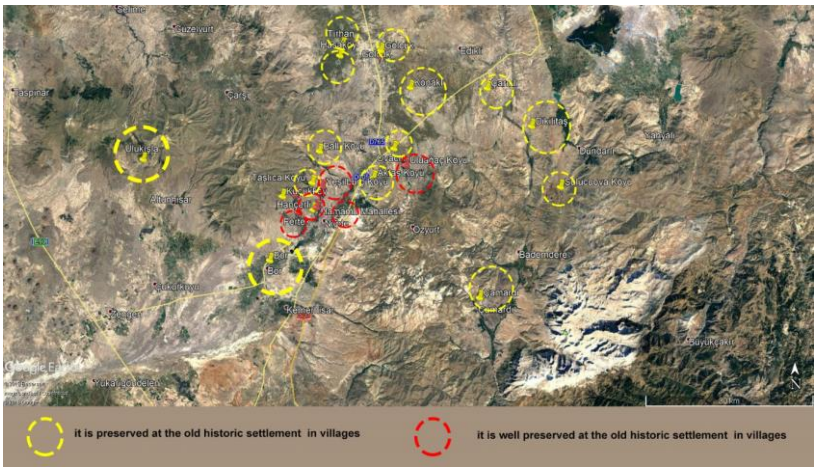

Figure 3. Niğde Settlements which had population exchange (Marked in Google Earth 08.08.2018)

Three settlements (Uluağaç Village, Fertek, Hançerli) were selected as the villages during the period of the population exchange in the central and districts of Niğde. Selected villages having the different type of protected buildings (church, school, laundry, mansions, fountain) has architectural tourism potential supporting by the cultural, religious, ancestry and ethnic tourism.

The Analysis of Architectural Tourism Potentials of Uluagac Greek School

Located in the east of Niğde city center, Uluagac village is 22 km away from Niğde city center on Kayseri road and 17 km away from Gümüşler direction. After the population exchange, the Greeks living in the region went to the Balkans, Turks living in the Balkans came to Anatolia and Turks from the Balkans were placed in place of the Greeks sent from the village of Uluagac Eryaman (2013). As in the other settlements in Endevit Valley in Uluagac Village, Muslims and Greek Orthodox had lived together before the population exchange (Selamoğlu, 2011, p. 14).

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Figure 4. Niğde Uluagac settlement and historical buildings (marked on Google Earth 08.08.2018)

The monumental school structure in the settlement emphasizes the importance of this place social aspects in the 19th century (Pekak, 1999, p. 29). The ruins of the Uluagac Church, Greek school and mansions are considered as structures remained after Turkish-Greek Population exchange (Figure 4).The Greek school had been built by Greek before the population exchange, Turks school when they settled after migration to Uluagac Village. This situation reflects an important using value for school in both cultures today.

Figure 5. The front of the church and its surroundings

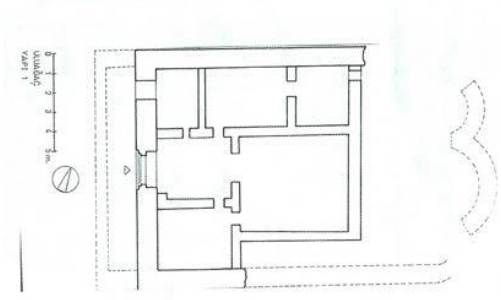

Figure 6. Plan of the Church (Inventory)

The ruins of the church located in Uluagac Village should be a three-aisled, three-nave, basilica church according to the existing remains and the remaining traces (NiğdeValiliği, 2016), (Figure 6). On the west side of the church in the east-west direction, there is a door with basalt frame and lintel (Figure 5).

The church is built of smooth cut stone. The surrounding of the door is decorated with low relief geometric and herbal decorations. The relief decorations of grape bunches on the west entrance of the church are similar to the reliefs in the contemporary buildings in Nevşehir and especially in the churches of H. Theodoros in Derinkuyu (Pekak, 1999, p. 30). Uluagac Church is under protection by Nevşehir Directorate of Conservation of Cultural Heritage by the decision of the registration on 08.04.2011 / 2911.

The mansions usually consist of two floors and a basement floor carved from the rock which is Kapadokya region's architectural construction technique (Figure 11). In the buildings made of cut stone and rubble stone, local yellow trachyte stone and andesite stone were used. The mansions in Uluagac Village were usually built in the courtyard (Figure 8).

Figure 7. Mansions of Uluagac Village
Figure 8. One of the mansions is idle

Figure 9. Vaulted room
Figure10. Courtyard gate

Figure 11. The sample of storehouse that was made of rock carving

Some of the mansion rooms are vaulted (Figure 9). The mansions have wooden ornaments, cupboards and wood panelled doors (Figure 10).The gates of the courtyards are monumental and have similarities with stone type and construction techniques that was used other Niğde settlements during the same period (Ata, 2017).

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Table 3. The analysis of Uluagac Village's Greek Heritage Structures by environmental factors

The analysis of Uluagac Village's Greek Heritage Structures by environmental factors	
Physical environment	The Greek School is located in the center of the old settlement where transportation can be easily achieved. The entrance facade is facing the Village Church. The samples of civil architecture in Uluagac are concentrated in the old settlement of the village, around the church and the school. In time, the construction of new structures caused losses in the original village fabric. Some mansions have survived to the present day, while others have not. The transportation for Uluagac Village that is close to Yesilova, Ovacık and Aktaş Village is from Niğde City Center by bus. The church is within walking distance of the village entrance and is near the other registered historical building, the Greek School.
Historical environment	The school where the students from neighbouring villages received the education was an architectural prestige structure before population exchange in the education area for the village of Uluagac, which is close to other villages.
Economic environment	Before the population exchange schools, churches and mansions show that the village was in good economic condition in the past. However, some Turkish Muslim families who settled after the exchange have migrated from the village due to the distance of the village from Niğde centre. The general source of income in the village is based on agriculture and small animal husbandry.
Social Environment	Nowadays immigrant traditions are still alive in the village life (Eryaman, 2013).
Cultural environment	

Table 4. The analysis of Uluagac Village's Greek Heritage Structures by architectural factors factors

The analysis of Uluagac Greek School by architectural factors	
Architectural building group	 General view of the school
Architectural Period and Style	The school has a rectangular plan, a two-storey building. The corridors on the ground floor of the building are the cruciform plan and the rooms are placed within the framework of this plan(NiğdeValiliği, 2016) .
Construction Technique and Material	Construction with a smooth cut of local stone. The rectangular windows casements on the three facades of the building are wooden and are wreckled. The upper floor has wooden staircase system. The roof system of the building was subsequently replaced and is now a hipped roof with Marseilles tiles.
Originality and Aesthetics	 Entrance gate of the building The façade of the building is located on the northeast side, and there is an entrance door with a round-arched lighting window on the front façade (NiğdeValiliği, 2016). This door is similar to the entrance doors made before the population exchange period in other settlements with construction technique and decoration features.
Current use	In the interior of the structure, it is seen that there are later additions since using as a village school after the population exchange (NiğdeValiliği, 2016).The structure is not used today, it remains idle. Uluagac Greek School is under protection by Nevşehir Directorate of Conservation of Cultural Heritage by the decision of the registration on 28.06.2013/781.

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Table 5. The analysis of Uluagac Village's Greek Heritage Structures by targeted tourist factors

The analysis of Uluagac Village's Greek Heritage Structuresby targeted tourist factors	
The organised mass tourist	Relatives of Greek immigrants who migrated from the village following the Turkish-Greek population change
The individual mass tourist	the people who are interesting at history, art history, architecture
The explorer	grandsons of Greek migrants who are seeking their the ancestry

The Analysis of Architectural Tourism Potentials of Fertek Church

Fertek is located in the centre of Niğde, close to Küçükköy and Hançerli Village (Figure 12). Küçükköy and Hançerli are also settlements that had population exchange and have historical buildings at this period.

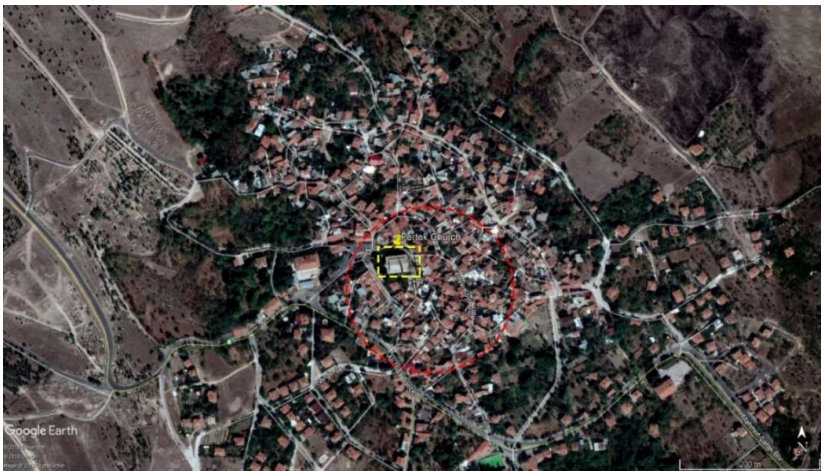

Figure 12. Niğde Fertek settlement and Fertek Church (marked on Google Earth 08.08.2018)

Fertek has architectural and cultural richness by the church, the bath, the underground city, the civil architecture examples which have given information about the daily life of the non-Muslims who migrated here. The richness of the Greeks who lived here was reflected in their church and houses (Table 8).In the study of Yavaşcan (2018), it is stated that Fertek stone masters have an effect on the elaborate cut stone workmanship of traditional Niğde houses. Fertek stands out with its historical texture and preservation and is the closest settlement in Niğde to have urban site criteria. The original examples of the traditional residential architecture in the village date back to the end of the 19th century

and the beginning of the 20th century (Yavaşcan, 2018). Fertek Mansions, which are larger than the mansions in other settlements in Niğde, reflect the wealth and social lives of the Greeks living in that period (Figure 13-14-15).

Figure 13. Stone consoles on mansion facades
Figure 14. Fertek House II facade (NiğdeValiliği, 2016)

Figure 15. Stonework of entrance door of a chapel

The mansions consisting of ground floor and upper floors are built from local stones. Mansions show the characteristics of the period in which they were built with inscriptions found in the entrance gates, masonry. Nowadays, Fertek House 1 and Fertek House 2 under protection by Nevşehir Directorate of Conservation of Cultural Heritage by the decision of the registration on 13.02.2009/2063 and05.12.2013/958 (NiğdeValiliği, 2016).

Table 6. The analysis of Fertek Village's Greek Heritage Structures by environmental factors

The analysis of Fertek Village's Greek Heritage Structuresby environmental factors	
Physical environment	Buses from Niğde city center to Fertek provide easy access to the village by public transport. The church is in the village square and is very close to the bus stop. The old texture developed in the focus of the Fertek Church. Nowadays, there are new residential buildings built with mansions in the area where the original historical texture is located.
Historical environment	Fertek city history has been formed in a rich historical process. The underground city is dated by Early Christian period. There are bath, churches, mansions, fountains belonging Ottoman Period.

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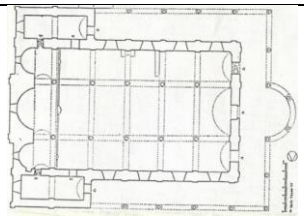
Economic environment	Before the population exchange, the Greeks engaged in viticulture which enabled them to produce raki and wine(Dinçer, 2008).
Social Environment	Before the population exchange, Greeks and Turks lived together.
Cultural environment	It is seen that the Greeks living in Freek and Greek population other settlement in Nigde are interacting with each other socially and culturally architectural building (church, baptismal area, school)

Table 7. The analysis of Fertek Village's Greek Heritage Structures by architectural factors

The analysis of Fertek Church by architectural factors		
Architectural building group	 Front facade of the Church	 Interior of the church
Architectural Period and Style	 Church Plan (NiğdeValiliği, 2016) The church has a basilical plan with three naves in the east-west direction	It was built by Karamanoğlu Hacı Nikoli in 1837.There is a Caramanian inscription on the half round and outward façade of the narthex.
Construction Technique and Material	Local yellow trachyte stone and andesite stone were used on the building's construction. There are a total of 16 columns in the narthex (Ekiz, 2015; Parman, 1988).	
Originality and Aesthetics		
	Ornaments of Church	

	The ceiling is vaulted and has drawing ornaments. There are fresco ruins on the left on the upper floor. The narthex ceiling has wooden workmanship. In the structure, rich wooden ornaments on the flat ceilings, column headings in naos, stone ornaments on door and window lintels and arches, and frescoes on the apsis walls. God can be seen angels with Christ Pantocrator(Parman, 1988).
Current use	
	The Fertek New Mosque is the largest building in Nigde that has been converted from a church to a mosque. As the building was converted into a mosque, the altar, the pulpit and the minaret were added(Ekiz, 2015; NiğdeValiliği, 2016; Parman, 1988). The General Directorate of Foundations is responsible for the maintenance of the structure and the structure has been protected by the Registry Decision 16.01.1992 / 1218.

Table 8. The analysis of Fertek Village's Greek Heritage Structures by targeted tourist factors

The analysis of Fertek Village's Greek Heritage Structuresby targeted tourist factors	
The organised mass tourist	Religious rituals for Christians at certain times of the year Relatives of Greek immigrants who migrated from the village following the Turkish-Greek population change
The individual mass tourist	The people who interested in history and production of wine and raki
The explorer	The people who interested in history and production of wine and raki The people who interested in art history and religious history (frescoes at church)

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The analysis of potentials of Hançerli Church Fountain and Laundry

Hancerli with its lush nature, water resources and historical artefacts is one of the most important settlements in Niğde. The settlement just north of Fertek is inhabited in 1920 by 1283 Muslims in 1045 Karaman (Selamoğlu, 2011, pp. 11-12). The city center of Nigde is about 10 km. Hançerli Village, which is located in the distance, hosts important structures belonging to the Christian minority (Ekiz, 2015). These are the church located in the center of the settlement, which is now a mosque, and the fountain and laundry in the south of the church the other is a monastery located to the north-east of the village (Figure 16).

Figure 16. Monastery, Church, laundry and fountain of Niğde Hançerli settlement (marked on Google Earth 08.08.2018)

Hancerli Church, church fountain and laundry facilities close to each other and their structure groups and daily life data were evaluated according to the architectural tourism potential.

Figure 17. General wiev of Hancerli Church
Figure 18. The front of the Hancerli Church

Figure 19. Interior of the Hancerli Church
Figure 20. A special construction technique on the roof

It was written on Caramanian inscription that the building was built in 1832. It is a three-nave church in bazilkal plan. There are three apses round and externally on the east and nartex cosisting with 6 columns and 5 pointed arches on the west (Figure 17-18). The cover system of the nephrums is the cradle vault in the east-west directionand the roof of the main space is covered with a barrel vault in the West (Ekiz, 2015; Parman, 1988; TürkiyeKültürPortalı). The original roof of the church was covered with stones that were interlocked with a special construction technique and preserved until today (Figure 20). The structure that the General Directorate of Foundations is responsible for is protected by the decision of 16.01.1992 / 1218. After the Christian population migrated as a result of the exchange, the structure was used as a mosque by Muslims. One of the windows was closed and a mihrab was added here. There are also a minbar to the right (NiğdeValiliği, 2016).

Figure 21. General wiev of Hancerli Monastery (Ekiz, 2015)
Figure 22. Ruins of Hancerli Monastery (Ekiz, 2015)

Table 9. The analysis of Hancerli Village's Greek Heritage Structures by environmental factors

The analysis of Hancerli Village's Greek Heritage Structures by environmental factors	
Physical environment	Hançerli has a green nature because it is rich in water resources. Church, building is located in the center of Hançerli village. Since the roads are very narrow, there is a need for an arrangement to reach the church on foot from the entrance of the village. Laundry is located to the south of the Hançerli Church. Fountain is adjacent to the retaining wall to the south of the Hançerli Church. There is Hançerli laundry in the south of the fountain.
Historical environment	Hancerli Village is home to two important structures of Christian minority. The first of these is the church located in the center of the settlement, which is now a mosque and the fountain in the south of the church; the other is a monastery located to the north-east of the village (Ekiz, 2015).
Economic environment	Today, the livelihood of those living in Hancerli is agriculture and animal husbandry.

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Social Environment	Nowadays the area which is close natural water resources are used by the public as a picnic area.
Cultural environment	

Table 10. The analysis of Hancerli Village's Greek Heritage Structures by targeted tourist factors

The analysis of Hancerli Village's Greek Heritage Structures by targeted tourist factors	
The organised mass tourist	Relatives of Greek immigrants who migrated from the village following the Turkish-Greek population change The church and ruins of the monastery may be open to Christian visits
The individual mass tourist	The people interesting in nature and history
The explorer	

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Table 11. The analysis of Hançerli laundry by architectural factors

The analysis of Hançerli laundry by architectural factors		
Architectural building group	 The entrance of Hançerli laundry	
Architectural Period and Style	The building is rectangular in the north-south direction and covered with a flat roof on the outside. In the south of the building which has three facades, the entrance is provided by two door with half circle arches. Since the door on the left are covered with a stone up to a certain level, it looks like a window.	
Construction Technique and Material	The interior of building is covered with barrel vault. Most of the building is made of rubble stone and in some of it a smooth cut stone is used.	 the barrel vault inside the building, the stone tables, niches and the channels
Originality and Aesthetics	The use of the building as a laundry provides information on the lifestyles of the Greek population at the time of its function. The relation to the location of the building with fountain, church and water collection pool is a sign that it is made environmental planning according to the function of building in the past. From the architectural point of view, the barrel vault inside the building, the stone tables, niches and the channels flowing water are unique.	
Current use	It is under protection by Nevşehir Directorate of Conservation of Cultural Heritage by the decision of the registration on 25.12.2015/1907(NiğdeValiliği, 2016). Laundry is not used today.	

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Table 12. The analysis of Hançerli church fountain by architectural factors

The analysis of Hançerli church fountain by architectural factors	
Architectural building group	 
Architectural Period and Style	The fountain is consisting of a pointed arched niche in the ogive and a pointed arch that is bigger than inner at the outer. In this way, the niche of the fountain gradually shows a recess. Just above the outer pointed arch, there is a eave running over stone consoles protruding from the wall surface (Ekiz, 2015)
Construction Technique / Material	The building was built with smooth cut stone.
Originality and Aesthetics	  Both the fountain general lines are limited with the orijinal eaves of the fountain and visual mobility is provided. Just above the arch of the fountain, there is a white marble inscription written in Caramanian and Greek. The inscription shows the date of 1832 as in the church inscription.
Current use	It continues to be used as fountain. Unfortunately, something was written on the fountain facade due to vandalism behaviour. It is under protection by Nevşehir Directorate of Conservation of Cultural Heritage by the decision of the registration on 25.12.2015/1907 (NiğdeValiliği, 2016).

CONCLUSION & RECOMMENDATIONS

In this study, the architectural tourism potential of the Greek buildings which remained after the population exchange on the selected structures were evaluated. The samples were chosen from three different villages belonging to different building groups: Greek School, Church, Fountain and Laundry. The analysis was carried out according to the determinants of the architectural tourism potential and the data obtained from the analyzes were carried out with the synthesis of other tourism types. These determinants have been comprised according to the environmental factors and the demands of the targeted tourism group by focusing on the architectural features required for the structures to be inherited. Syntheses are associated the architectural tourism potentials with cultural, ethnic, religious and ancestral tourism. At the end of the study, it is seen that the association of architectural tourism with other tourism types are more systematic by targeting tourist mass depending on the architectural features, art and aesthetic value of the buildings chosen and environment. For example, the frescoes of the Fertek Church can be synthesized with culture tourism by appealing to individual tourists in terms of art history, while the religious symbolic values in the same frescoes form a synthesis with religious tourism for a wide range of tourists. In the analysis section of the study, other Greek structures in the village except selected Greek structures were also mentioned to provide data. The relationship between different types of buildings sharing the same historical, cultural, social and physical environment has diversified the other tourism areas supported by architecture. For example, the examination of the church, the laundry and the fountain of the church in the village of Hancerli together, with the suggestion of a union between the re-use values of these buildings enables the development of recommendations for cultural, religious and ethnic tourism.

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The following suggestions were made according to synthesis of case study:

Table 13. The synthesis architectural tourism potential of Uluagac Village's Greek Heritage Structures (School, Church and mansions) with other tourism types

Cultural tourism	The continuation of the educational function of the building should be used as an area for the promotion of tourism, guidance, language school, learning and continuing and exhibiting ethnic handicrafts for the Turkish populations settled form Greece after population exchange in the surrounding villages. It is necessary to reorganize the ruins and the environment of the church. Other Greek school and civil architectural structures should be included in this arrangement. The entrance gate of the church should be evaluated, documented and restored in order to be the subject of the art history of the academics in the national and international platform. The whole structure must be restored and the building must have a cultural theme function where visitors can spend time in the layout of the space in accordance with the original function. Considering the distance of the village to Niğde Center, it should be a small guesthouse according to the size of the mansions.
Ethnic tourism	In this structure, the explorer tourists will be able to experience the ethnic culture's eating, drinking and handicrafts related to ethnic culture by connecting with the past. Civil structures should be used as housing by Turkish emigrants and ensure that they live according to their daily culture.
Religious tourism	The church ruins are not suitable for a religious organization, but the decorations of the architectural qualities it possesses may be in the destination of faith tourism in Niğde for those who study art history and religious symbols of time.

Table 14. The synthesis architectural tourism potential of Fertek Village's Greek Heritage Structures with other tourism types

Cultural tourism	The underground city owned by Fertek, its natural beauties and its proximity to the Niğde center will increase the number of tourists coming with proper planning. Restaurants, cafes and shopping venues that will ensure the reception of the tourists and economically return
Ethnic tourism	The tourism activities should be carried out with the functions to be given to the mansions in the existing historical texture at old settlements.
Religious tourism	The use of the churches as a mosqueas a respectful approach to the original building features has led to a well-maintained. The visiting Fertek Church (New Mosque) of Greek emigrants who gone this place at the population exchange period will ensure intercultural interaction and tolerance.

Table 15. The synthesis architectural tourism potential of Hancerli laundry and Church's fountain with other tourism types

Cultural tourism	Hançerli Church fountain should be added to a part of reviving the past ethnic life proposed for the Hançerli laundry. The inscription in the structure, both Greek and Caramanian shows that both Greek and Turkish orthodox lived together in the region at the past, so this fountain should be seen as a structure that shows tolerance among societies.
Ethnic tourism	The laundry made for the needs of the daily life of the migrants who went to Greece should be restored, supported by the prefabricated structures that will serve the visitors to the Hançerli Church converted into a mosque and the church fountain. The structure must be transformed into an ethnographical space that will revive the everyday life of the past. The laundry activity, which offers a cross-section of the daily lives of the Greeks living in the past, must be revitalized by sculptures made of wax in ethnic clothing in the historical laundry. Thus, the building will be supported by ethnic and cultural tourism and the tourists who are grandsons of migrants Greek will be able to connect emotionally.
Religious tourism	The church should continue to be used as a mosque, it and Monastery should be the focus structure of the tour route for tourists coming to Hancerli.

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In order to realize the syntheses, local governments should make planning studies and provide necessary budget, infrastructure, promotion and transportation services. The individual efforts of the Greeks to find the places where their ancestors lived should be supported. Festivals and conferences should be organized to provide mass visits and information. Religious tourism route should be drawn at certain times including the churches in the other villages exchanged population. In Niğde, 3rd and 4th generation Turkish immigrants should be provided to participate in the works aimed at introducing, maintaining and preserving the architectural structures inherited by the Greek immigrants. After the documentation studies for the Greek heritage structures in the cities exchanged population, architectural tourism should be considered as an instrument of conservation and improvement.

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Moving Techniques For Traditional Buildings As An Architectural Preservation Method

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Abstract

With the growth of urbanization and the economy, new ideas and technologies have been becoming more of an issue today in the preservation of the cultural traditional buildings. Moving has been a rarely preferred method in the preservation of historical buildings, and it should not be preferred unless there is a serious necessity in the field of architectural preservation. This method is the process of moving a historical building to a suitable predefined area by taking it from its original location and from its surroundings when it is impossible to preserve the building where it stands. When moving processes carried out until today are considered, it has been observed that there are two basic methods used for moving buildings: a) moving intact, b) partly or totally disassembling.

In this study, the techniques for preservation used when the historical buildings have to be relocated to a different place from their original locations due to the necessity, have been examined. By evaluating moving examples both in the world and in Turkey a comparison has been made between advantages and disadvantages of the method.

Keywords: Preservation, conservation, Traditional Buildings, Moving Techniques

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INTRODUCTION

Architectural preservation studies aim to maintain the survival of historical buildings, retain the nature of the buildings' fabric as themselves, or even the relationship of the buildings to their settings and integrity, and pass these buildings to future generations and adapt them to changing convenience conditions. This is an interdisciplinary field that includes both tangible and intangible values, which ensures the continuity of the cultural richness it represents as well as its physical characteristics. Restoration methods with physical intervention, such as reinforcement, renovation, re-integration, reconstruction and moving, applied to the buildings, which are intended to be protected, are determined according to the level of factors such as deterioration, demolition that the building exposed to; the social situation, the place in historical process and the functional requirements. In some cases, the combination of several protection methods might be necessarily used. Therefore, the preferred method should be a reinforcement method with minimum intervention. The method can be a moving method when all other possible ways for saving a structure from demolition have been investigated and when the result shows that moving method is the only proper method for the building's moving. Along with the physical damages that may occur in the building context when it is extracted from its context of original location for being moved to another area, and when this process damages the historical fabric and reference of it in the cultural memory, the tangible and intangible values of the building are both harmed in an irreversible way, as well.

Moving as a preserving method is used especially in cases that cultural heritage is threatened by various reasons such as zoning policies, or as the damage of the nature conditions to the building. If it is decided that the relocation of the monument is inevitable, it should primarily be determined which technique to be being used with the least possible damage relocation can cause to a historic building as a whole and with regard to ornamental detailing.

Being based on different factors, it has been referred to technological methods in various dimensions during the transportation process of the moving operations. In this study, the moving methods for the preservation of the historical buildings - when the situations require that the buildings should be carried to a different place from its original location- have been examined and issues to be considered during transportation have been discussed, as well. The moving cases in the world and Turkey have been evaluated by comparing the advantages and disadvantages

Note: Moving cases have been developed based on the master thesis entitled as "Analysis of the influence of moving technique for architectural conservation on cultural memory using the case of Kayseri", by Burcu Batukan under the supervision of H. Hale Kozlu in Erciyes University, Kayseri.

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of these techniques. This is significant because it allows us to compare the differences of techniques for moving. These techniques are the most complex methods of conservation, and there are very few publications in the literature about that subject

MOVING AS AN ARCHITECTURAL PRESERVATION METHOD

Moving is the process of transporting a historical building to a suitable predefined area, separated from its original location and its surroundings when it is impossible to protect it (Ahunbay, 1996). Article 7 of the Venice Charter contains the provision that;

"A monument is inseparable from the history to which it bears witness and from the setting in which it occurs. The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands it or where it is justified by national or international interest of paramount importance." (Venice Charter, 1964).

Preservation of monuments in their environment is one of the main objectives of preservation as stated in this article. However, when the environment cannot be maintained and the external factors that accelerate the deterioration process cannot be intervened, moving the monument to a new position becomes inevitable in order to sustain a valuable historical source and to sustain its existence.

The need to relocate the historical building; in some cases, it appears due to the topography problems in the current area, but it is generally due to the zoning decisions, and operations. In addition to the natural conditions such as sea/river water rise, earth movements, landslide hazard, construction activities such as dam construction, determination of new routes or road widening decisions have led to the relocation of many historical buildings. During the transportation process, which is a costly technique and usually results in the loss of original values. When the monument is moved, one of the basic principles to be considered is the least damage and minimal intervention in the integrity of the monument (Feilden, 1982; Zakar & Eyüpgiller, 2015).

After deciding to move the monument, initially, it should be determined which method is to be carried out, and all parameters according to the selected method should be considered. Physical damages of the building, topography characteristics of the current location, potential new areas where the building is to be transported, environmental factors, financial opportunities, technological needs and restrictions in the new location should be

taken into consideration when making these decisions. Accurate assessment of economic and physical conditions is important to ensure that the building is transported as soon as possible and with minimal damage. With an interdisciplinary work, it should firstly document the current situation in details, perform damage analysis of the building and take temporary measures to prevent the building from suffering more damages than existing ones during transportation. Then, the physical conditions of the new location should be adapted to the building's layout and the route should be planned. Disassembly, transportation and installation should be carried out with a company having experienced and expert staff in the application phase. Finally, after the building has been placed in its new place, re-consolidation and maintenance procedures should be applied.

THE MOVING TECHNIQUES AND SAMPLES OF MOVED BUILDINGS

First examples of the building transportation have been witnessed in the 18th century that rest on the buildings moved in New Zealand and the USA. When a historical building is moved, considering the risk of losing its historical fabric and environmental impact it is seen that this process requires a very serious cost and experience if the historical character and the environmental impact will not lose (Peltola, 2008). During transportation, different techniques are applied depending on factors such as the location of the building, its static situation and economic and technical facilities. (Curtis, 1979; Lamar and others, 1999).

When moving processes until today are examined it has been seen that there are two basic techniques used in moving. These techniques are grouped under two main headings: moving partially or totally disassembled; and, moving intact.

Moving Techniques by Disassembling or Dismantling of The Building

In some cases, where moving intact is not possible it is preferable to move the monument by disassembling it into its components. In this case, the building is rebuilt in its new place with its own materials and construction technique. During the planning, follow-up and implementation of the rebuilding process, working with an expert team on the subject are the basic steps for the building to avoid damaging the structural elements (Zakar & Eyüpgiller, 2015).

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In some cases, the monument is severed into pieces, but in some cases components of the building are extracted by enumerating them and reassembled at the new site. In both cases, the first stage is the process of documenting the building in detail. Before carrying out the transport process, the detailed survey study should be completed. This study must be supported with photographs, videos and 3D models.

Techniques by Disassembling The Monument

This technique is generally applied to works that cannot be dismantled as sculptures and carved rock structures. The building is divided into large blocks and these parts are reassembled at the new site. During this process, the construction technique loses its originality, while the blocks are joined together, new binding materials such as binders, clamps etc. are used. Although produced mortars will not harm the original building materials with laboratory analysis, these new mortars or metal binder elements are the components of a new construction technique, such that the building is not at the time it was first designed.

One of the most known works moved by this technique, is the Temple of Abu Simbel in Egypt. The temple, taking place in the World Heritage List of UNESCO, was carved into sandstone cliffs in 1250 B.C. (Figure 1) As a result of the rising water of the Aswan Dam on the Nile in the 1960s, a rescue project was initiated by UNESCO. Within the scope of the project between 1960 and 1968, the temple was removed from its place (Figure 2) and relocated in a higher position (Allais, 2013).

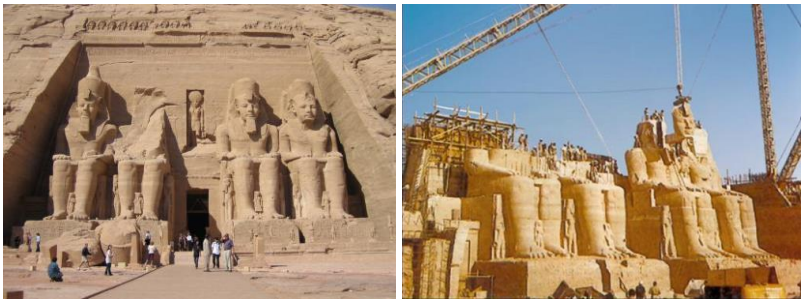

Figure 1., 2. Abu Simbel Temple (URL 1) and process of moving (URL 2)

Prior to transporting, the monuments were filmed, photographs were taken, and photogrammetric measurements (plans, sections, facades, details) and survey were prepared. (Figure 3, 4). The soft sandstone which forms the main rock has been stabilized in an effort to save the monuments from being torn down, and dispersion during transportation. The giant sculptures processed on the rock were severed to form large blocks with fine stone saws. The 7047 blocks are numbered and removed by hydraulic

jacks. The sculptures were located 200 meters behind and 65 meters above the current location (Figure 5, 6)

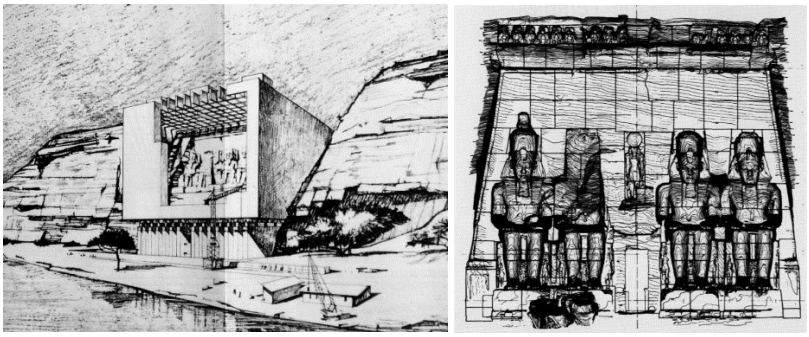

Figure 3., 4. Abu Simbel Temple moving schemes (Allois, 2013)

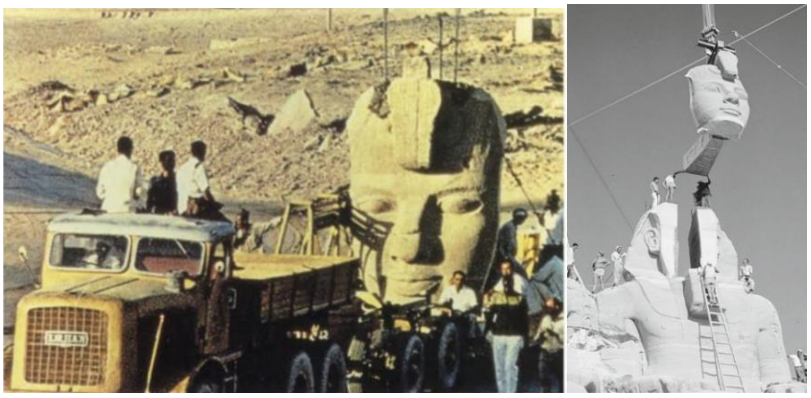

Figure 5., 6. Transporting process of building components (Hawass, 2000; Kirwan, 1963)

When assembling the blocks, a mortar produced from the sand of the area was used, and epoxy mortar was injected on the surface to secure it. In the new location of the monuments, an artificial hill with concrete shell structure was formed behind the large sculptures in order to simulate the surrounding landscape. After the rock blocks had been severed, it was mounted on this reinforced concrete structure (Kirwan, 1963; Ahunbay, 1996, Allois, 2013).

Techniques by Dismantling and Reassembling The Building Components

This technique is generally preferred in buildings constructed with materials that can be dismantled and reassembled, such as wood and stone. In this process, all the elements of the building structure are numbered, dismantled and reassembled elsewhere. Since the joining technique is very complicated, it is not suitable to move the buildings made of rubble stone by this technique. It is impossible to associate the stones that are dispersed during the dismantling process with the same stones.

Before the dismantling stage, each stone row and each stone in the interior and exterior facades are numbered at ashlar buildings. Horizontal and vertical lines are drawn to show the relation of stones with each other and with adjacent stones. Detailed pictures

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of the general condition of the building are taken (Figure 7). Then the stones are carefully dismantled and stacked in order so that the horizontal rows are not mixed. The blocks that are disintegrated during the dismantling and which cannot be reused are replaced by a new material which is compatible with the original. Stone parts are then assembled on the prepared base in accordance with the previous numbering scheme (Ahunbay, 1996).

Figure 7. Ledger lines used in the numbering and dismantling stage (Curtis, 1979).

Enumerating each piece during disassembly and reassembly process is commonly applied procedure in many countries of the world and in Turkey, as well. Small buildings such as fountains have been usually moved, sometimes to nearby to current location, sometimes to different settlements of the city. In particular, there are many examples of historical fountains that remain on the route during road widening or new road works. Tophane Kılıç Ali Pasha Fountain was moved to the corner of the complex when it was at the corner of the barracks opposite the mosque. The Hekimoğlu Ali Pasha Fountain, which was originally on Kabataş embankment, taken to the Kabataş pier square when Meclisi Mebusan Street was opened in 1957. Sadrazam Koca Yusuf Pasha Fountain, next to the Fındıklı Mosque, was removed from its original place to Kabataş during widening the Tophane-Dolmabahçe road. II. Abdülhamit Fountain located in front of the Nusretiye Mosque was moved to the corner of Maçka Park because of road widening works, too. The Bereketzade Fountain (Figure 8, 9) located next to Bereketzade Ali Efendi Mosque in Galata, was moved to the square where Galata Tower has been located (Can, 1993; Pilehvarian & others, 2000; Urfalıoğlu, 2008; Memiş, 2013).

Figure 8., 9. Old and new views of the Bereketzade Fountain (Pilehvarian & others.)

Unlike above mentioned examples which were carried to a nearby place of the same street, or district where they were originally located Hacı Mehmet Fountain (Figure 10, 11), Hüsrem Fountain (Figure 12, 13), Binbaşı Hacı Hayri Fountain and Kalemkırdı Mosque were moved to completely different districts of Kayseri Town Centre. Some of these fountains were moved to Seyyid Burhaneddin Cemetery from different locations of the city during the road widening works, and it was tried to be exhibited in a kind of open air museum. Similarly, Kalemkırdı Mosque was moved near Seyyid Burhaneddin Cemetery and opened for worship services.

Figure 10., 11. View of Hacı Mehmet (Kaptan Pasha) Fountain before moving (Archive from K.K.V.K.B.K.) and its location in Seyyid Burhaneddin Cemetery (Batukan, 2017)

Figure 12., 13. View of Hüsrem Fountain before the relocation (Archive from K.K.V.K.B.K.) and its location in Seyyid Burhaneddin Cemetery (Batukan, 2017)

Baysungur and Çelebi Ali Mosques in the district of Pertek in Tunceli were moved from the old Pertek to the new Pertek because of the threat of falling under the waters of the Keban Dam Lake. The stones, that were enumerated and dismantled, were

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transported to Pertek Town Centre depending on study outcomes found at Faculty of Architecture of the Middle East Technical University between 1971-73, and were re-assembled in the place where it is today. (Figure, 14, 15). They have been opened to worship service. In this process, the stones were separated from each other by means of pickaxes hammers and levers. The dismantling process was started from the minaret, then the mihrab, minbar, windows and other stone faces were removed, and all of them were put and arranged in a row around the building. The dome and rubble stone walls were taken in the last stage. The structural elements were reassembled on the concrete foundation and reconstructed in the place (area) where it was moved. During reconstruction new materials were used. (Tükel & Bakırer, 1970; Danık, 2004; Parlak, 2004; Burat, 2006).

Figure 14., 15. The state of the Baysungur Mosque before the moving (Danık, 2004) and the numbering of its stones during the transportation process (Parlak, 2004).

Moving Techniques used to Move The Building Intact

The process of moving buildings intact is a technique applied in many countries, especially in the USA. Unlike the techniques of separating the structure into its components it is essential to maintain the integrity of the building while performing this process. In this context, first of all, after the preparation of the survey, restoration and static projects, the building structure is separated from the existing foundations with the help of temporary supports or with the suspension technique (Figure 16-18). If necessary, precautionary measures are taken to reinforce structural elements by strapping or connecting equipments. The building, which is lifted with the help of lever jacks, is transported to the new location with the chosen technique and the assembly process is carried out on the reconstructed foundations.

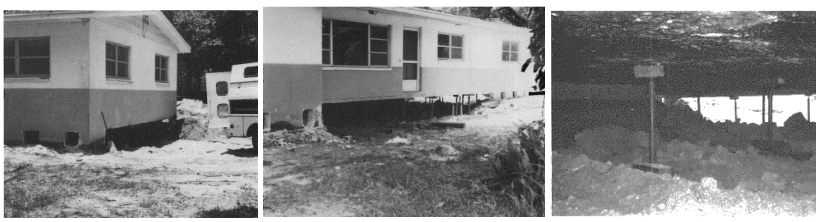

Figure 16., 17., 18. The process of separation from the foundations of the structure (N.F.P.C., 1990)

In the earlier applications, buildings were mainly drawn by rolling over stumps or rubber rollers with human and animal labour.

With the advancement of technology, this process has been being fulfilled by using equipment such as railroad tracks, skids, hydraulic jack and pistons, pallets (Figure 19-21). In general, three different ways are observed by tracks, by cylindrical rods and slides or by road vehicles such as trucks and trailers (Lu & others, 2010)

Figure 19., 20., 21. Examples of equipment used in traditional and modern methods of moving historical buildings (Goblet, 2006)

Moving by Tracks

Implementation of the technique of moving buildings has been seen commonly in the United States that goes back to the 18th century. However, examples of moving by tracks have been usually seen in the 19th century. Considered to be the first example of a large masonry structure in the country, the Boston Pelham Hotel was built (Figure 22). The hotel, built with stone and brick material (Figure 23) has weighed about 5000 tons. In order to expand the road in the first stage, it was thought that some of the spaces in front of the hotel were to be demolished but it was determined that the transportion of the hotel could be fulfilled (realised) at a lower cost than the cost of this process and the building was suitable for moving. With a carefully prepared rail system, the hotel was towed about 2.54 cm in 5 minutes towards its new place, and, finally total replacement distance reached to 4.21 meters (Figure 24). During this 3-month-long transportation process, non-stop services were provided by utilising flexible pipes in plumbing and gas services, while workplaces and some hotel rooms on the first floor continued to serve during the moving process (Close, 1875; Curtis, 1979).

Figure 22., 23., 24. Transporting process and new location of Pelham Hotel (Close, 1875; Curtis, 1979; URL 3)

Due to coastal erosion in 1888, New York Brighton Hotel, which has been accepted as one of the first examples of a wooden frame building's moving in the US, was relocated in its new place. The transportation process was not carried out with the concern of protection, but rather to allow the long-term use of the building.

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Although the hotel was not a historical building and only a twenty-year-old building when it was moved, it was replaced by technological equipments instead of human or animal labour. The Brooklyn and Brighton Coast Railroad, the owner of the hotel, thought that moving the building in parts would cause the cost to rise. Thus, they decided to carry this building, which weighed approximately 600 tons, by using locomotives for towing. At a cost of about $ 12,000, the building was carried 180 meters from the sea to the land (Figure 25). 112 platform cars were used for the transportation of the hotel and cars were connected to each other by using 168 lumber. In order to place the building on the platform cars, 13 hydraulic jacks with high weight lifting capacity were used. After the building was lifted, the cars were slid underneath the building and the building was towed to the new location by 6 locomotives (Peltola, 2008)

Figure 25. Transporting process of Brighton hotel in 1888 (Peltola, 2008)

A similar process applied to the Brighton Hotel was held in Nebraska in 1889 for the Box Buttle Courthouse, as well. As the Burling railway passed through the entire town of Box Buttle, it was decided to move the district centre to the Alliance district, and decided to move the existing ten-year-old courthouse instead of constructing a new one. Approximately 95 tonnes of masonry building, by using 9 platform cars, was moved 14 km far away from its current location at the speed of 10 miles per hour (Figure 26) on the Burling railroad (S.A.A. 1899; Curtis, 1979)

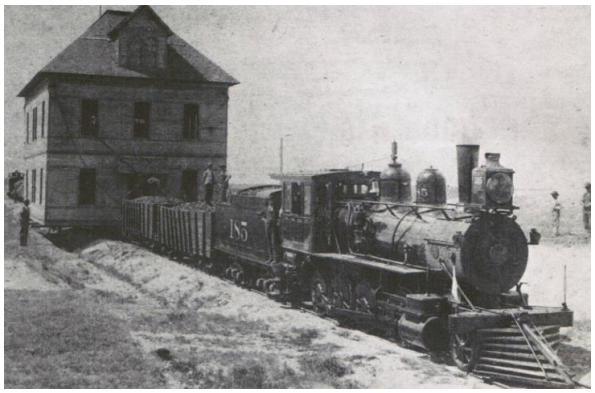

Figure 26. Transporting process of the Box Buttle Courthouse by the locomotive (S.A.A. 1899; Curtis, 1979).

North Caroline Cape Hatteras building, the highest lighthouse in the United States, was moved 880 m away from its current location in 1990 due to ground abrasions caused by ocean waves.

The lighthouse, which measured 63.4 meters high, and a 2540 tons weight, was transported on tracks to its new place (Figure 27). Moving process took 23 days and cost about $ 10 million (Booher ve Ezell, 2001; Peltola, 2008)

Figure 27. Transporting process of the Cape Hatteras lighthouse (Booher ve Ezell, 2001)

One of the examples of transportation of a building on tracks outside the US is the Harakhty and Amon Temple's relocation in Egypt Amada (Figure 28, 29). Due to the rising dam waters, it was moved to its new location, where was at a distance of 2.5 km and at a height of 65 m., and was carried on tracks and mounted there by utilizing hydraulic system between 1964-75 (Wilkinson, 2000).

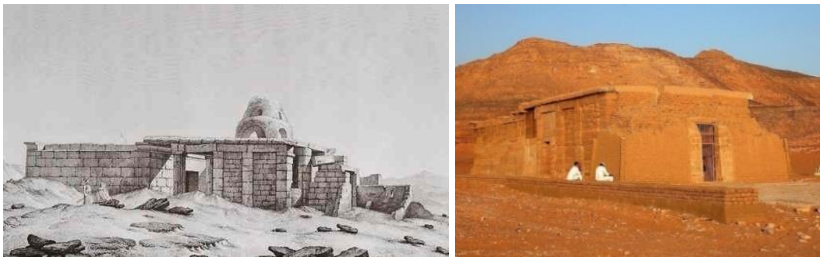

Figure 28., 29. Amada Temple in 1800s (URL 4) and now (URL 5)

During the transportation process, after the temple was placed on the reinforced concrete foundation beams, its circumference was strapped tightly. Pulling on tracks was carried out with the help of beams passing through the monument, and through two sideways of it (Figure 30) (Ahunbay, 1996).

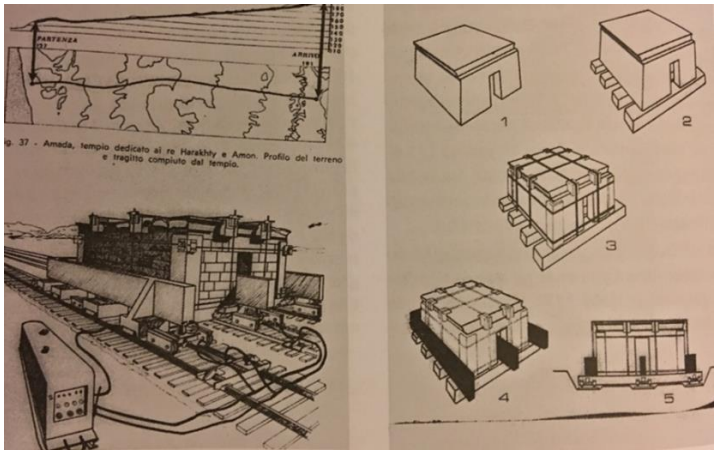

Figure 30. Transporting process of the temple (Ahunbay, 1996)

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One of the historical relics carried by tracks in Europe is the Cathedral of the Assumption of the Virgin Mary in the Town of Most in Czechoslovakia (Figure 31). Due to the weakening of the ground by the tunnels dug during the operation of the coal mines, and collapses in the tunnels, it was lowered to 841 meters down from top of the hillside where it was constructed in the mountain in 1975. Firstly, the structure of the cathedral was reinforced, then, the walls of the cathedral were severed close to the ground and it was taken on a track system. The structure cut off from the ground was placed on the steel truss and carried down from the hillside at a low speed (Curtis, 1979; Ahunbay, 1996)

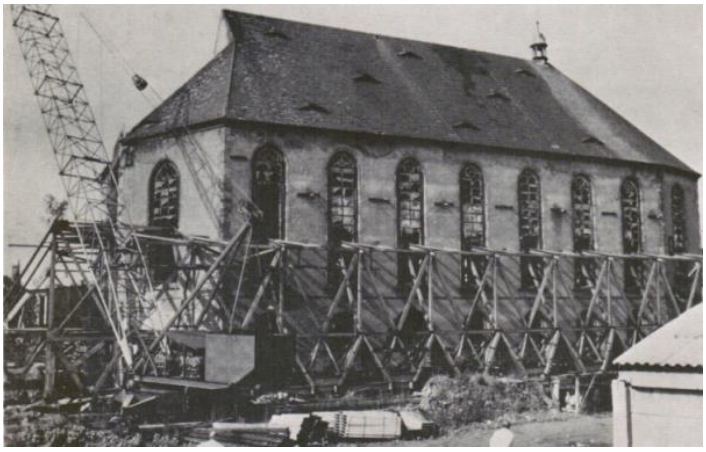

Figure 31. Transporting process of the cathedral (Curtis, 1979)

The Oerlikon Machinery Factory (Maschinenfabrik Oerlikon (MFO)), a 122-year-old building in Zurich, Switzerland, was moved 60 meters forward from its settlement by sleds as it intersected a railway being overhauled (Figure 32). The structure, which was separated from the foundation, was placed on the piles and was placed on the foundation previously excavated after being transported by tracks. The transport of 6200 tons of building at a speed of 4 km per hour was carried out at a cost of $12.7 million. (URL-6)

Figure 32. Transporting process of Oerlikon Machinery Factory (URL-6)

In Turkey, Atatürk Mansion in Yalova Thermal District is the oldest example of moving a building on the tracks. When Atatürk visited the mansion in 1930, the workers informed him that a branch of the plane tree next door was wreaking damage on the roof and wall, and asked for permission to cut the branch of the plane tree stretched out on the mansion. Atatürk, instead of cutting the branch of the plane tree, wanted them to move the building on the tram tracks to a place a little forward of the building. The relocation of the mansion was carried on in two stages. First, the terrace part of mansion was hauled, and then, the main building was moved on the tracks so, the building was moved about 5 meters away to the east (Figure 33, 34). Thus, the Mansion was rescued from being demolished, and plane tree survived. After that the mansion began to be called as the "Walking Mansion" (Ulusu, 2008).

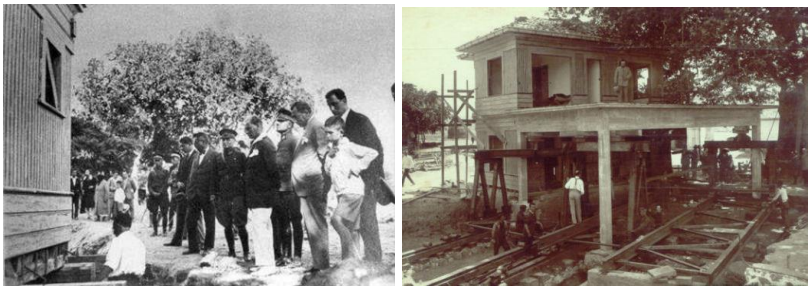

Figure 33., 34., Transporting process of Yalova Atatürk Mansion (Bulut, 2013)

Moving by sliding technique

Sliding platforms, skids or cylindrical rods have been generally used in sliding method of moving buildings. The sliding technique on cylindrical rods is a preferred method especially in small span structures. In this method, the cylinders on which the building will be placed are steel or concrete filled tubes. This method can be advantageous if the new location of the building is close to its current location. On sliding platforms two fixed or movable runners are used. This method is preferred in buildings with spans of different widths. It is especially used in buildings that will be moved up or down in the vertical plane (Lu and others, 2010).

"*The relocation of buildings by the sleighs, wheels and rollers has been a fairly common occurrence in the United States since the late 18th century. The cross bracing was used to provide added support for the structure during its move on wooden wheels*." (Figure 35) (Curtis, 1979)

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Figure 35. Moving a building in Walnut Street-Philadelphia in 1799 (Curtis, 1979)

Moving by sliding has been often preferred in China. The Shanghai concert building, which has weighed 4500 tons, was moved up to 66.46 meters forward and 3.38 meters upwards in 2004 by using a sliding platform to prevent noise and environmental pollution coming from the motorway next to it (Figure 36, 37) (URL 7)

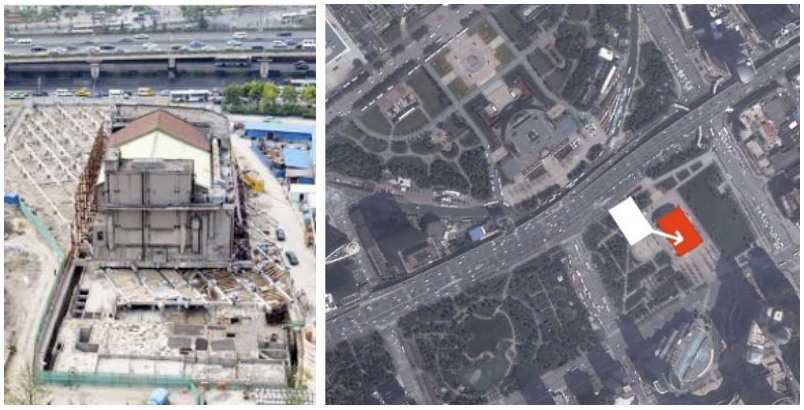

Figure 36., 37. Transporting process and the new location of the building (URL 7)

The place of the Jinlun City Hall in Qing Dynasty, China, was relocated by sliding 102.5 meters using cylindrical rods in 2001 (Figure 38, 39). Another example of the method of moving by cylindrical rods is the Quyuan temple in China (Figure 40, 41). The temple was moved to a location 3 km further in 1976 in order to be rescued from being underneath the water of the river (Lu and others, 2010).

Figure 38., 39. Old and new view of Jinlun City Hall (URL 8)

Figure 40., 41. Transporting process of Jinlun City Hall and Quyuan Temple (Lu ve diğ., 2010)

Bakırköy Train Station Building was moved to the opposite side of the road during the construction of Marmaray, in 2018. In order to realise this process, firstly a cage system was prepared which surrounded the building both inside and outside. The building was lifted with hydraulic jacks from the ground, then the skids were installed underneath and a bridge system was installed on the stone blocks because it had to be placed against the road. The building was slid and placed in the new space on the opposite side of the road with the help of hydraulic pistons. (URL 9) (Figures 42-44)

Figure 42., 43., 44: Transporting process of the building (URL 9)

Transport on Highways with Vehicles such as Trucks and Trailers

In this technique, similar to the others, the building, which is separated from the foundation and reinforced where necessary, is loaded onto the road vehicles with the help of cranes and jacks and is transported to the new location. The size and weight of the building is important during this process. When heavy buildings are transported, it is possible to face situations such as the collapse of highways. It is a preferred method especially for small and light structures in many countries of the world.

The mansion of Captain Samuel Brown, on the edge of the Monongahela river in Pennsylvania, USA, was moved in 1903 due to its existing site's being stood on the Baltimore and Ohio railway route. The landlord decided to move his property to a big orchard belonged to him, and it was 50 meters above the building's existing location. In order to move the building weighed about 800 tons, 8 planks 30x40 cm of size and 25 m. of length were placed underneath of the building. First, the structure was lifted up to 9 meters by means of two cranes connected to the peak of the cliff next to the house. (Figure 45), Each crane used in this process was pulled by two horses. This process was repeated 4 times, and was

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moved 60 meters back and 48 meters up the original site of the house (S.A.A., 1923; Curtis, 1979).

Figure 45. Transporting process of Captain Samuel Brown's mansion (S.A.A., 1923; Curtis, 1979)

After the discovery of iron mines under the ground of US city of Minnesota Hibbing, it was decided to move one third of the city to another location in 1919. The buildings were moved slowly to the outskirts of the city in approximately three years (Figure 46, 47). In this transport process, buildings were usually towed by locomotives, and pulled by horses and platform cars (Fisher, 1971; Curtis, 1979).

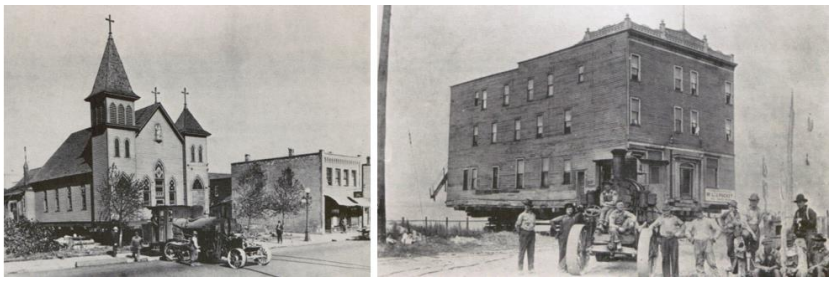

Figure 46., 47. Moving the buildings made of different materials and used with different functions in the city of Hibbing (Fisher, 1971; Curtis, 1979)

Lucy, The Margate Elephant is one of the most unusual structures that has been replaced by moving method in USA. It was built in the form of an elephant in New Jersey-Margate in 1881 on the ocean side using wooden materials and steel plates. The structure was damaged by the ocean waves, tornadoes, and currents over the years. In 1970, it was decided to move the building inward further away from the sea shore. In order to carry out the transportation process, the structure was lifted by using hydraulic jacks and placed on a steel platform supported by three sets of wheels and moved to the new location by means of trucks (Fig. 48, 49). After the building was moved, it was restored and started to use as a museum (Curtis, 1979; Page, 1976).

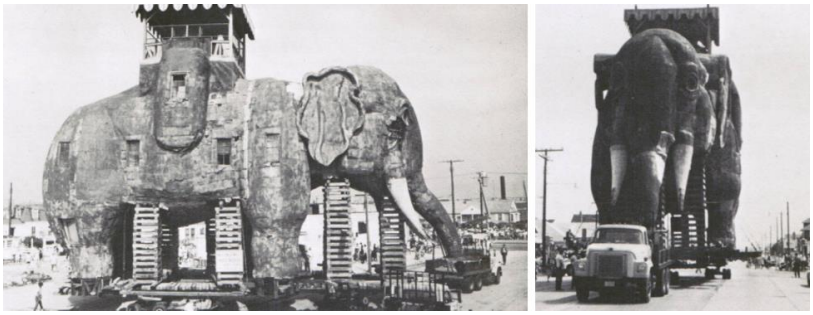

Figure 48., 49. Transporting process of Lucy (Curtis, 1979; Page,

The building numbered 51 at the New Jersey Newark International Airport was moved 1.2 km away from the airport during the renovation and expansion works there (Fig. 50, 51). The moving process of the terminal building, which weighed 7400 tons, lasted for 5 months. Before moving, the terminal building was disassembled into three parts and transported by 176 wheeled vehicles at a speed of 30 meters per hour. The building is currently used as an airport administration building (PANYNJ, 2017).

Figure 50., 51. Transporting process of the terminal building (URL 10)

Another example of moving buildings in Turkey is Kalkandere Hüseyin Hoca Köyü Sahil Camii's relocation in Rize. The wooden mosque, left unattended in Keler, where was an over-migrating village, was moved to Hüseyin Hoca Köyü in 1977. For the mosque was constructed by timber only and without a foundation it was, for the first step, placed over a warehouse for tea purchasing. After the warehouse became dilapidated after 34 years it was moved for the second time. After removing the non-original roof, steels laid diagonally under the building, and steels laid over the building were attached together by calculating centroid of area, and formed a steel cage in which the building was placed. The building was lifted by a crane and placed in a lot 20 meters far away (Sav, 2012) (Figure 52-55).

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Figure 52., 53., 54., 55. Relocating the mosque in its new position by means of a crane (Sav, 2012)

There has been an on-going dam construction on the Stream of Kars in Susuz district of Kars. Whereas, the historic Çamçavuş Iron Bridge, built by Russians in 1899, was located on this stream. The bridge was 65 meters long, 5.60 meters wide and weighed about 100 tons. Since the construction of the dam has been on-going, and by the time it will have been finished it will have had a dam reservoir, and the bridge will have been underneath of the waters, the bridge has had to be moved to the Campus of Kafkas University. Thus, the bridge was taken by the General Directorate of Highways from its location by means of hydraulic system vehicles in 2015, and it took them two days to transport it to the Campus[58] (Sömen and others, 2015) (Figure 56).

Figure 56. Transporting process of the bridge (Sömen and others, 2015)

During the construction of Marmaray, it was decided to move the Yeşilköy Train Station Building between 2016-2017. In order to accommodate the 4.16x5 m sized structure on the truck's trailer, a cage system that inwardly and outwardly surrounded the building was designed and the total weight of the building increased to 90 tons. The building was removed from the ground

with hydraulic jacks and tracks were installed underneath. It was placed on the truck's trailer with the help of tracks and hydraulic pistons and moved to its new position at a distance of 90 m. Before transportation ground was reinforced on the road in order to prevent any collapse due to the weight of the vehicle and the load on it (Kösebay, 2007, URL 9). (Figure 57-60)

Figure 57., 58., 59., 60. Transporting process of Yeşilköy Train Station Building (URL 9, URL

One of the significant operations of moving buildings, carried out in recent years, in Turkey, has been the relocation of Zeynel Bey Tomb and Artuklu Bath, located in Batman's Hasankeyf district. (Fig. 61, 62). A science commission has been established against the threat of the buildings being flooded by the Ilisu Dam. This commission has evaluated the alterations including protection, and recommended that the buildings be moved intact and should be placed in the Cultural Park in new Hasankeyf (Ulucam, 2016).

Figure 61., 62. Zeynel Bey Complex and Artuklu Bath (Ulucam, 2016)

Before the tomb was moved, firstly, damage assessment and reinforcement studies were carried out (Figure 63-65). A high foundation for lifting the building was constructed around the tomb and 28 lifting beams were produced for being used on the lower parts of the walls. Lifting plate was completed by applying post tensioning of a 90 cm height, and 44 hydraulic jacks were installed. For transporting the buildings, SPMT (Self Propelled Modular Transporter), a vehicle capable of carrying the desired weight up to 4% of the slope on standard road conditions, was used, and tomb was transported by 6 SPMTs. In this context, accelerometers were placed on the building to measure the

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movement of SPMTs during transportation. All these sensors and systems were integrated with the control module of the SPMTs that would carry out the transportation, and integrated with a special computer program prepared only for this building (URL 12). The Artuklu Bath, which was moved in 2018, was also relocated by a similar system. (Figure 66).

Figure 63., 64., 65. Restoration process before moving (Ulucam, 2016)

Figure 66. Transporting process of Artuklu Bath (URL 13)

CONCLUSION

Preservation is a form of advocacy that promotes the applicability of limited resources, encourages the appreciation of works produced by previous artisans, and respects previous cultures. The moving method used in obligatory situations is also one of the ways to extend these limited resources as a preservation technique (Goblet, 2006).[66] With the advancement of technology, the development of techniques used in the field of preservation has led to the discussion of the potential for moving the buildings and their application in many countries.

Factors such as the ones having negative impact of moving on cultural memory and social perception, as well as changes in physical properties of structural elements and materials, has been questioning the necessity of moving buildings. In addition, in case of relocation of the monument, it is the subject of discussion among the conservators about the possible damage on the structural integrity and design of the traditional building. However, in some cases, the existence of the building may be more

prominent than other factors. When the moving a building becomes unavoidable for protection, it's decided that one of the different moving should be chosen by evaluating the current position of the building, and new environment of the site where the building is planned to be moved. Parameters, additionally to the above mentioned ones, such as conditions of the transportation route, the size of the building, construction technique, building materials, physical condition, and damage levels should be taken into consideration, as well.

When the samples of moving buildings in different countries of the world have been examined, two main methods come to the fore: a) moving partly or totally disassembled, and reassembled in the new location or b) moving intact and grounded on a new foundation. In the case of moving small-size and ashlar buildings, or rock-carved structures, the technique of disassembling the components is generally preferred. However, moving intact can be applied to all kinds of buildings as long as the economic and technological facilities allow. In this technique, the equipment that can handle the maximum capacity is used according to the weight calculations of the planned building. If the building is to be moved intact, what kind of transportation is carried out, is decided according to the distance between the current and the new locations, as well as the condition of the road route.

When the examples are examined and the applied moving techniques compared, it is seen that the method of disassembling the structure into components is more inconvenient than other methods in many aspects. No matter how much carefully is drawn the schemes, and written the numbers on the components, during dismantled building components are transported, it is very likely that wrong applications and damage in the fabric of the building will occur during reassembly process. Furthermore, considering the authenticity of the traditional building as well as the construction materials and its system characteristics, it is inevitable to damage this value even if a material close to its original one is used as the joining material, and combined with the same construction technique.

Moving the building intact that preserves its structural integrity and, is not being reassembled, minimizes possible wrongdoings in reassembling details, is more advantageous than moving the building by dismantling technique. However, creating a new and artificial context by disconnecting the building from the original context, and also by constructing a new structural foundation system and forcing the historical structure to adapt to this new

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system is one of the main disadvantages of both moving techniques.

Historical relics, which are defined as "immovable cultural heritage" become "transportable" as a result of having the choice of moving method of protection. This issue has been handled with special importance in the field of architectural conservation. It is very important to determine an interdisciplinary working method and to study with a team of experts in order to achieve a successful moving application and principles of preservation ethics. The first stage is the decision to move. In order for this decision to be taken, restoration experts, conservation institutions and local government units should ensure that there is no other means to protect the building and it is mandatory to move it to a new site. If the necessity of moving the building is arised from the ground's weakness, ground stabilization and reinforcement solutions should be tried; if it is caused by environmental factors, deterioration factors should be cleared away; if it is caused by zoning decisions, these decisions should be changed by local administrations/municipalities. After the decision is taken, the second stage comes as the process of identifying alternatives for the new location where the building will be moved. The primary preference at this stage should be possibly as close as to the current location in terms of the sustainability of the cultural memory.

The project stage is a process that must be meticulously fulfilled. Surveying, restitution, restoration, conservation, static, mechanical, soil strengthening and transportation/ reconstruction projects prepared by experts from different disciplines should include all the details that can be anticipated. After obtaining the necessary permits from the affiliated institutions, detailed reports should be prepared for the application and the projects should be revised in unexpected situations during implementation and every stage of the application should be documented with drawings, photographs and videos.

The first stage for implementation is the agreement with the carrier. It is important that the company that will carry the building should be familiar with the historical buildings and especially the new location where it will be moved. Local carrier firms are usually familiar with the official institutions and rules of the region and they have the control of the transportation method which is suitable for the region (Peltola, 2008). Carrier should be selected according to timing, moving technique and type of building. The reason for timing as the criterion is the importance

of the process required for the transport process. In the contract to be made with the carrier company, it is necessary to include the terms for determining the responsibilities of the owner of the building and the carrier company, as well as for the solution of the damages that may occur with natural or environmental factors and the possible financial problems. In addition to providing reliable sources and references, the level of experience of employees is also one of the most important factors that should be taken into consideration (Paravalos, 2006). During the transportation process, if the contracted firm does not have the necessary technical equipment or if an alternative agreement is made with another alternative firm as a precaution against the possible violations, the process will ensure a healthier process (Curtis, 1979).

Another step in the implementation stage is to determine the route for the transport of the building. According to the weight of the building and the method of transport, it is planned to repair the roads in the route, to strengthen and to place temporary equipment such as tracks, bridge and platform. It may be necessary to remove, cancel or repair the heating elements such as heating, electricity and water before carrying out the construction. Before or simultaneously with the preparation of the building, ground and foundation preparations at the new location are completed. Then, the transport process is carried out with the chosen technique and the rebuilding of the building is constructed with the same meticulousness in the dismantling phase. In this process, restoration and re-use projects are prepared if necessary. Implementation of regular maintenance and inspection procedures after carrying out the transportation process is important in order for the building to continue its life in a healthy way and to avoid new conservation problems.

Although the techniques used in the transport of monuments vary, it is observed that there are different disadvantages in all methods, especially in terms of contextual and authenticity values. However, as stated in the study, it is seen that in some cases, these negativities remained more in the background and that the continuation of the existence of the building gained importance. For this reason, considering the moving as an architectural protection technique, it is necessary to act carefully in decisionmaking, project, application, maintenance and inspection stages. Conducting all stages by expert teams and carrying out the process, knowing that the moved building is, above all, a cultural asset and a world heritage, will enable the minimization of possible contextual and structural problems.

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New Uses for Old Buildings: The case of 'Soğukçeşme' Street, İstanbul, Turkey

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Abstract

İstanbul has served as the capital of three great empires and is a cultural centre of outstanding importance not only for Turkey but also for the world as a whole. Its historical and cultural heritage should be fully exploited and its inheritance carefully preserved to serve as an inspiration to future generations. The most effective way of lending educational end inspirational significance to the old buildings that fall into this category is to convert each one of them into a living entity. On the basis of these arguments, this article aims to explore changes to important examples of such original buildings over time and how to convert them to suit contemporary usage values.

Keywords: *Continuity, cultural heritage, re-architecture, sustainability.*

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INTRODUCTION

What make society a society are its cultural values and traditions. Unless these can be protected, it's impossible for healthy development to occur. It is essential that our historical and cultural wealth be properly evaluated and that is accumulation will result in a process that will inspire future generations. Buildings to affect society and in the end the most educational and effective way for each one of them to gain meaning is to make them 'a living inheritance'. There is no doubt that this goal must be for buildings to acquire a functional content, be benefit society and ensure that society lives in it and the neighborhood benefits from it.

On the other hand, the subject is 'cultural continuity'. In order for cultural continuity to have 'identity' approaches have to show that they are based on the past. The re-use of historical buildings can succeed provided that the process engaged in is a sound one. Buildings have been used for new and different purposes throughout history. The place of a building among existing ones, its re-use and the economic, social an environmental results of this usage are as important as the architecture of the building during construction as the 'primary function' and the new dimensions of function, which are added to building through changes over time and in terms of environmental conditions, as the 'secondary function' even if its purpose does not change.

This article is mainly based on research carried out by the authors to investigate and discuss the re-use of old buildings in Istanbul and to illustrate the topic with a specific case. Its purpose is to examine changes to the original buildings over time and how to handle them in terms of contemporary usage values. On the basis of the above-mentioned research, it purposes a function for old buildings from designer's point of view and how to make the international arrangements according to those functions and emphasizes the original specifications of the building with the support of data and information from art historians. The requirements of Istanbul, as one of the main focuses of universal culture and Turkish culture, are also considered and the subject is approached in this study in terms of 'architectural design'. Subjects such as organizations, administration, financing, and optimum performance determination are not considered (Altinoluk 1990).

In the second part of the article a structural analysis as a conceptual framework is established, explaining and discussing 'why the buildings need to be reused', 'how the historical, cultural

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and structural properties of the building can be evaluated' and how Istanbul has developed historically'.

CONCEPTUAL FRAMEWORK: RE-USE AND ITS IMPORTANCE FOR İSTANBUL

Heritage buildings are important in transferring the culture for future generations. So, these buildings are important in demonstrating the cultural identities of cities and, consequently, communities throughout the world. In the contemporary era, adaptive reuse has been considered as a strategy for protecting these buildings for both present and future generations. At present, the 19th and 20th century conservation and restoration theories are the backbone of the contemporary adaptation movement by introducing different forms of adaptive reuse over time (Günçe & Mısırlısoy, 2019; Yazdani Mehr, 2019).

Those who research this subject have adopted the principle of 'protecting essential cultural riches' where it has become necessary to protect buildings that carry universal values (Madran, 1998; Kuban 2000). If we identify a building as the spatial reflection of the social, cultural, economic and political relations in the user's life style that is no longer extant, the character of the historical heritage and how it was used emerges. This situation shows that the essence of contemporary life has to be adapted in order to use these types of buildings (Aydın & Yaldız 2010). The values will be protected by adaptation without their construction as they are replaced with whatever is necessary for the new function and this can be carried out through a process that relies on a 'protection /use balance'. Whatever the characteristic of the function may be, no compensation must be given from what is valuable about a cultural heritage building. In particular a topic discussion of these involves 'authenticity'. According to modern definitions authenticity is not just the first design of the building but it must include the structural and functional changes that have occurred during its existence (Jokilehto et al. 1993).

In addition to what the buildings are being used for –house, school etc.--, the functions of the buildings 'themselves' also constitute a basis for identifying the buildings in accordance with internal-external elements. These are functions of the architectural communications process. These lines which may be classified according to the following functions: (a) connotative, (b) aesthetic, (c) territorial, (d) expressional, and (e) stimulative; it is not exclusive to the architectural field. Every object has a communicative function of a proper type. In this case, the building

values provide the objective basis for functional changes (Altinoluk, 1998). This values can be classified as:

- Intellectual (its place in terms of art history)
- Emotional (its effect in the silhouette of the city or in the natural environment)
- Material (its usage value)

These values can be present in a building singly or collectively. However, it could also be possible that one of these my dominate the others, for example, while the usage value of a building may be low, its aesthetic value can be much higher (Frodl, 1975). Starting from here, one could debate the necessity of studying how the buildings changed from what they originally were over time and what their usage values are today.

THE REASONS FOR THE RE-USE OF THE BUILDINGS

The main reasons for re-use are 'the loss of a building's original function' and the functional ageing of the building'. Despite some buildings such as palace, madrasa (theological school) and caravansary (inn) completely losing their original function, some buildings have aged but remain functional. If one believes that buildings physical properties are longer-lived than their functional, the also may be problems for the buildings that continue to function because of developments in every field. It could be that the function belonging to that building may have completely changed or its function may have developed.

Why buildings have changed of their own accord is social in character and an expectation of catching 21st century quality of life comes to the fore (Coll et al., 1992). In structures in which the planning process was not applied, these expectations most times became the reason for excessive use and degeneration. In commercial buildings especially the growth in the volume of business undertaken produces problems when it grows to be bigger than the models on which that building was created.

Historical and Cultural Reasons: Functional developments or new requirements may cause problems of varying size. We live in a century when conditions, standards of judgment and many other things change rapidly and the social character calls for new forms an arrangement. In time, functions may change but the structures remains. This situation may require new uses with different functions for old and new buildings in the future. That day, that year, that city or somewhere outside that city needed that function and the building with its all characteristics, colours, details, richness or poverty was built according to that data (Warren et

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al., 1998). Today, there may be no need for that function. But the building might have to be used because of historical, social and economic reasons. Looking at old buildings as a way of earning money in addition to evaluating them as important and using them, making them live and passing them on to future generations is a more correct way of looking at cultural products (Groff et al., 1978; Cantacuzino, 1989; Kee, 2019).

Economic Reasons: Re-use of buildings equipped for contemporary functions can either be a result of the products of culture and civilization or its economic dimensions. The economics of re-evaluating an old building for a specific function or constructing a new one for the same function dominates the decision to be made (Johnson, 1998). While a new building requires "energy intensive" effort, giving a new function to an old building requires "labour intensive" effort.

Environmental Reasons: Changes in the environment may cause a new evaluation for the building. For example residential areas may be constrained by trade or it can be decided to use the areas for other purposes. These are reasons for change. Predominate values must be determined on a street scale, a city-block scale or in a limited environment. Artificial objects, old-new buildings, walls, roads, energy lines, city furniture, noise (car, train…), good-bad smell, etc. form the environment and good are bad additions by mankind. One should first research and analyse if they can be re-used. After these analyses, the buildings that would be used can be gathered in four groups:

- Buildings that would be used while preserving their interiors and furnishings;
- Buildings that would be preserved completely but would be given a new function;
- Buildings whose structure would be preserved and given a new function only changing the walls; and
- Buildings that would be used by constructions additions in or near old buildings.

A METHODOLOGICAL PROPOSAL THAT CAN BE USED IN RE-FUNCTIONING THE BUILDINGS

We should first separate the re-use of buildings into two main subjects:

- Buildings that the architecture historians and archaeologists evaluate as "a building or buildings that

should be preserved" (historical building, architectural monument),
- Buildings that architectures and constructions engineers evaluate as "can be evaluated/can be used" depending on the amount of capital for building and the construction.

So a functional outline for old buildings should be created just as is done for new buildings, and a plan initiated that included *programming + design + application + usage* phases. The designer has also to determine sources, cost prices, feasibility studies, decisions, functions and everything else that ought to be done. A 'Guidelines for Use' list must be prepared for the usage phase.

Forming a scheme and following through on it to the end would make it possible to see the problems from the start. Tables, lists, programs and actions cards have to support the method chosen and the following is a proposal for re-functioning a building (Fig. 1).

1. To identify the building: (a) the address of the building, (b) Historical- Cultural- Functional- Architectural summary of information about the building, definition.
2. To specify the functions proposed for the building
3. To define the function of the building over time. Program scheme of the existing function
4. To propose functions for the building
5. To prepare a work report
6. To summarize the scheme for the building in the form of: (a) site plan, map, engraving, old plans, (b) map, photographs and plans of current situation, and (c) building: plans, cross sections, views, details.
7. Sources

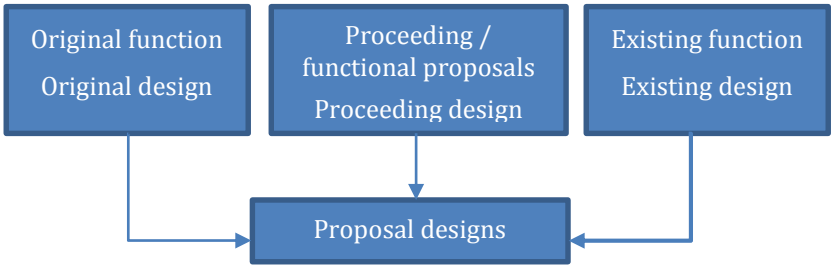

Figure 1. A model of the method for re-functioning the buildings

HISTORICAL DEVELOPMENT OF RE-USE IN ISTANBUL, TURKEY

Turkey possesses many important and valuable works of art and architecture starting from prehistoric times that, in terms of

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quality and quantity, are very important and valuable for art and architecture history. The variety of these constructions ensures that Anatolia, Turkey's heartland, holds a distinguished place among other countries, as it possesses architectural works that can only be described as milestones.

Istanbul is a major centre of universal culture. In some three thousand years of settlement the city has inherited the art and architecture of the Roman, Byzantine and Ottoman Empires as well as that of the Turkish Republic. Old buildings in Istanbul in particular ought to be evaluated for contemporary use by institutions such as associations and ministries and by the private sector, primarily because of the above-mentioned reasons, and have been from time to time. For example, first and foremost Topkapi Palace was restored and part of this collection of authentic pieces of art was designated a museum in 1924. On July 1, 1927 Ataturk, the founder of the modern Turkish Republic, declared that Dolmabahce Palace would be open to the public. In 1932, he organized science-language-history assemblies and held classes on the Latin alphabet there. St. Sophia Cathedral, which had been used as a mosque, was transformed into a museum in 1935. Ataturk ordered that the princes' rooms at Dolmabahce Palace be transformed into the Istanbul Museum of Painting and Sculpture in 1937. What has been revolutionary for Turkey have been suggestions and measures for ornamentation that take advantage of all the possibilities that modern science and techniques afford for old buildings that normally would stay as ruins or at best be restored and left without any function; that had all their lighting, heating, air-conditioning and fire problems solved; and could be used as music halls, tea-rooms, cocktail party and reception halls, hotels, pensions, museums, conference and ceremony halls and various, valuable cultural and tourism purposes. Turkey is a society accustomed to using historical structures such as schools, hospitals, etc. because of habits and obligations stemming from the last years of the Ottoman Empire and the first years of the Republic; in addition museums, conference halls and hotels as well as areas used for music functions symbolize this new period.

Today we have to benefit from our cultural background, meet contemporary requirements and transfer this attitude to future generations (Council of Europe, 1977). Every strip of "time," every piece of art is a bridge from past to future. Today's cultural build up is valid now but over time, while functions change, the buildings stay. In the future this situation may require that old buildings too be opened for a new and "contemporary" use, this

time from a different perspective. Constantly changing requirements encroach on old buildings and the situation becomes more complicated in such buildings.

If we examine today's situation, in the big cities and in particular in Istanbul the development of industrial and commercial functions in a rapid, disorganized manner, migration from rural areas and the development of new prestigious areas were the reasons why historic city centre districts became impoverished. Among the successful examples of re-use to protect these types of environments, Sultanahmet Square and its surrounds can be counted and it has been taken in hand for these reasons and examined.

SOGUKCESME 'COLD FOUNTAIN' STREET: A CASE STUDY

In this article, Sogukcesme Street will be used as an example of the first examples on the reuse of a street. The Sultanahmet area in which Sogukcesme Street is located has historical and cultural content. It is one of Istanbul's important historical-urban centres. Here are located such monumental works as Topkapi Palace, St. Sophia Museum, Sultanahmet Mosque, the Binbirdirek Cistern and the Underground Palace Cistern (Fig.2). This region contains Works from Rome (330-395), Byzantium (395-1453), the Ottoman Empire (1453-1922) and the Republic of Turkey (1922).

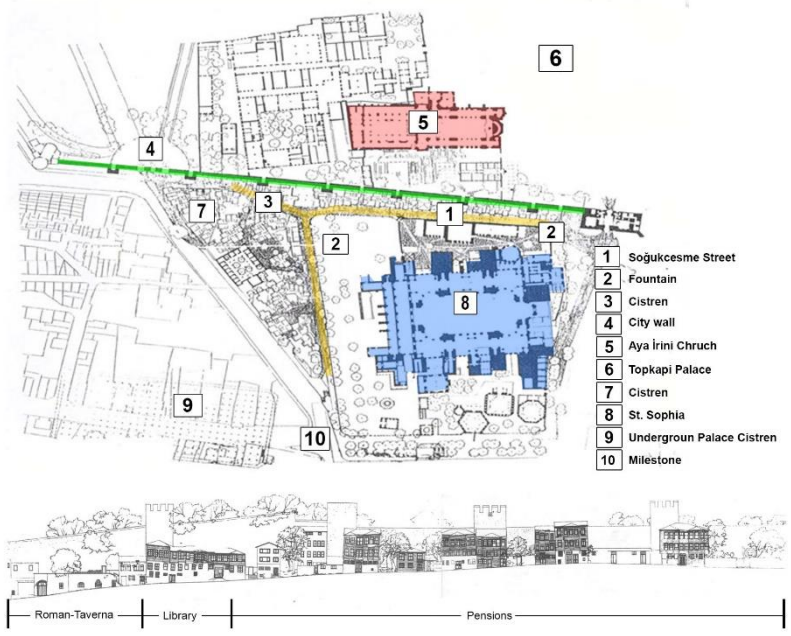

Figure 2. General Layout of Sultanahmet - St. Sophia Mosque Rehabilitation Area and "Sogukcesme Street," (Based on N. Eldem et al; 1980)

The remains of the Lausos Palace that is the single civil architectural example made in the 5th century A.D. to come to us today intact from the ancient world in Istanbul and of the St. Euphemia Church that is part of the Antiochus Palace from the

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same century are also found in this region. Within Istanbul's historic development, the Sultanahmet area that is an archaeological whole from ancient times to day with the addition of various cultures has an important characteristic at the universal level. The statues brought from Greece and from Rome, all the magnificent works of these cultures during the ages in advance of Rome collected here as well as the senate and the markets. The Byzantines even marked where they thought the center of the earth was with a milestone.

The palace of the Ottoman sultans with its various kiosks, monumental gateways and gardens was also to be found on this hill for nearly 400 years. Sogukcesme Sokagi is made up of old Istanbul houses [1] where Fatih Sultan Mehmet after he conquered Constantinople had a Wall made that bounded Topkapi Palace on one side and St. Sophia's gardens on the other. The street contains the remains of a school and horse chestnut trees and in back the monumental church, St. Sophia, rises. It is possible to see via the buildings on this street synthesis the three empires (Roman, Byzantine, and Ottoman) created.

But ever since the 1980s the district has become more important for tourists and the problem of accommodating them appeared. This problem was solved when the traditional Turkish houses that made up Sogukcesme Street were converted into accommodation units. The buildings here were taken up as a cultural identity problem. In converting them into functional buildings, they were turned into pensions that recreated the period in the 19th century when they were built through the selection of interior space furnishings and furniture Sogukcesme Street consists of an early-period Byzantine cistern, two cisterns discovered in recent times close to the ground and the other on a lower level, the palace's outer wall, two monumental gateways of Ottoman construction from the period when St. Sophia was used as a mosque, a fountain dated 1800 that gives its name to the street and a guest hamam over time.

According to registers and documents, the houses on this street which are estimated to be 300 years old were used by those who worked in the monumental buildings in the area. Sogukcesme Street always drew attention from of old. In 1830 the British artist Lewis drew an etching of the street, and in the 1840s the Italian Fossati made lithographs of the street and the courtyards of Topkapi Palace from one of the minarets at St. Sophia (Figure 3).

[1] The traditional Turkish house displays a form and plan characteristics suitable for the traditional Turkish family's living culture and customs and it satisfied the peoples' requirements for many centuries. It's most interesting and permanent feature is the existence of a common spatial setting in spite of various regional differences and development over time. Regional differences can be put done to seasonal effects and available construction materials, although the spatial setting, which depends on the formation and orientation of multifunctional rooms, doesn't change. As a result plan types are classified according to the place of the "SOFA," the main circulation space and central area among these multifunctional units, as follows: Without Sofa, External Sofa, Internal Sofa and Central Sofa. The sofa is the main circulation space that connects rooms and serves as the meeting place for the nuclear families living in the home. It also the most appropriate place for social relations and gatherings such weddings, engagements or funerals.

Figure 3. Fossati's Lithograph in 1840

In the 1860s until the 1880s with the coming of photography to Istanbul many photos were taken of this street. Just as in Lewis' etching, the oldest houses on the street were in the character of the traditional Turkish house from prior to the Ottoman modernization process with skylight windows, shelves that could be seen outside, wooden buttresses left in natural form and a wooden floor that turned inwards (Fig.4). In time when the houses were renewed, there began to be room given to decorative elements in the buildings, the wooden buttresses were shaped, form was given to the window casings and the street was lit with gas lamps.

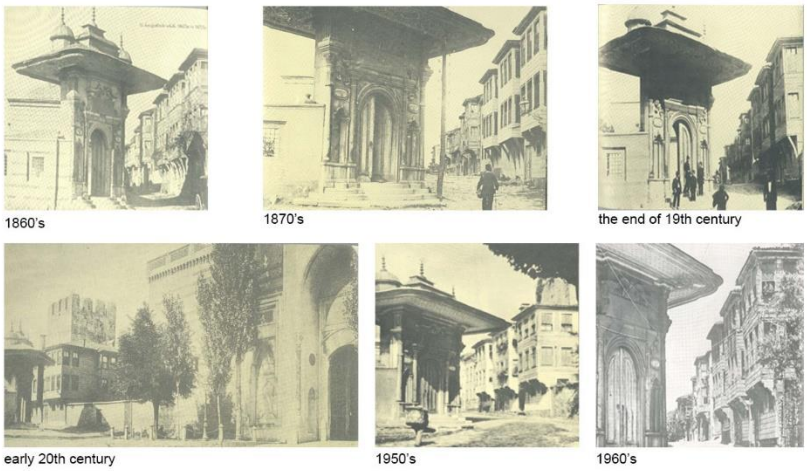

Figure 4. Sogukcesme Street in historical process

Various initiatives occurred over time to renew Sogukcesme Street and in spite of the approval of the Culture and Tourism Ministry of the time (1977), the Council of Ministers (1982) and the President (1983), the Istanbul metropolitan municipality wanted to tear them down and create a park. The right t o Sogukcesme Street was given to the Touring and Automobile

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Association of Turkey[2] on the intervention of Turkey's president. It began providing the old buildings on Sogukcesme Street with new functions; the houses began to be repaired in 1984 and were opened step by step starting from 1986 as a street with a cultural and touristic character.

[2] Turkish Touring and Automobile Association is a non-governmental organization active in tourism and providing documents for Turks intending to take automobiles abroad or foreigners renewing international drivers' licenses. It was founded in 1923 based on European examples. It has a general assembly of members and is managed by an executive committee selected for a two-year period. The association has published Turkey's first tourist guides, the first historic-cultural books and has done practical work on the re-use of old buildings. The old Istanbul Street - Sogukcesme Street - mentioned in this article, was also given the function of providing accommodations.

Figure 5. Sogukcesme Street before and after the restoration (Based on Celik Gulersoy, 1987)

The types of construction at Sogukcesme Street and their new functions are shown below. As for examples of the re-use of Sogukcesme Street, it is seen in detail in Figure 6.

Building Types		***New Functions***
Biggest house on street	→	İstanbul Library
Other houses	→	Pension chain
Water cistern	→	Roman Taverna
Other palace walls	→	Protected as same
Guest hamam	→	Hamam *(as a part of the pension found there, protected as same)*

Figure 6. The types of construction at Sogukcesme Street and their new functions

The houses that were built during the Ottoman modernizing period have been furnished in the 19th century style, the time when the houses were constructed. Brass bedsteads, mirrors, landscape paintings, etchings and consoles make up the furnishings in the pension rooms. Music played in the buildings, the colour of the buildings, their decoration and the style of the interior furnishings suit that period.

Chain of pensions: The communications center of the street is between the library building and the cistern. Those staying in the pensions get their keys here. There is a key for the outside door and one for the room in which they will stay. The result is that the guest can use the building as if it were his or her own home. On the street there are nine houses with at least five rooms and at

most ten rooms and these are used as a chain of pensions that have a capacity of 120 beds. Names have been given to the rooms such as yellow, blue or green while the houses have been called by floral names such as jasmine, lilac and violet.

Istanbul Library: The biggest house on the street has been made into a library. This house that has been named the Celik Gulersoy Foundation Istanbul Library is a city library in which have been collected books, paintings, etchings and all documents "only connected with Istanbul." This situation has brought an important cultural dimension to the street. The library at the same time has the characteristi c of being a "research library in which one may find books and documents written about Istanbul in foreign languages that are to be printed in Turkish.

Sarnıc Restaurant: The Sarnıc Restaurant at the corner of the street and Gulhane Park is a Roman cistern that became largely filled with dirt over time. It has been cleaned, repaired and made functional as a restaurant within the scope of renovating the entire street. Interior elements like chairs, tables, candlesticks and black iron chandeliers have been made in the style of the Middle Ages.

While there is a 1200-meter-square car park at Gulhane Park that is used by Sogukcesme Street, it was only connected with the street at the end of 1989. There what is deep inside is one of the two Roman cisterns on this ground and it is still used as a water cistern today. The other cistern that has brick bands and domes, two massive stone columns has been made a functional "bar." A greenhouse has been added to the side of the wall and a long marble counter and there are iron chairs that can be carried outside in summer. After the many stages through which Sogukcesme Street passed, it was judged on opening to be a modern place that uses the following characteristics:

- archaeological-historical
- morphological (topographic and spatial)
- functional

In collecting information, about the street: The fundamentals of program, design, practice and usage have been separately identified, and since the day this special street in Istanbul opened no cars have passed by. It has an occupancy rate of 50% in winter and 80% in summer, bring with it a new function for Turkish culture and tourism.

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CONCLUSIONS AND RECOMMENDATIONS

The environment both influences and leaves traces on life styles. It creates changes in social and economic structures, that line that develops knowing and being able to do, new expectations within the value system that unites these, new preferences and new necessities. Environmental organizations that destroy functions through the new life style will change and be renewed. Basically this is an unchanging process.

The building is a whole with its environment. The building's ability to live, to be united with its environment is possible if it is taken up with its surrounds. While a model is developed, a design field created and this design field tracked, it is necessary to conduct complete studies of the structure of the area, gather all the documents in one central place, publish books with the support of visual material and provide continuity. Bringing the building to life and making it a part of daily life will bring about "cultural continuity." Experiments at the level of the accumulation of documentation, design and application are important for continuity. While evaluating all the data concerning the conditions of the ground and time and without making mistakes in time, evaluating old buildings with the intent of giving a modern usage to them provides them with continuity.

Today people have to know very well what "modernity" is and be conscious of living in a very rich environment. Designers have to the data that comes from art and architecture historians and archaeologists, historical heritage, documents and all these sources in order to use them consciously. It is important to aim correctly to understand just how far old buildings can be used and to what extent they can be given a contemporary function. The basic purpose in giving contemporary function to old buildings must be that of a universal communications centre' that gives importance to 'culture and art atmosphere – communications -, imparting information and just information. Istanbul as the possessor of a universal culture must strengthen this purpose in showing the varieties of civilization that are the products of culture.

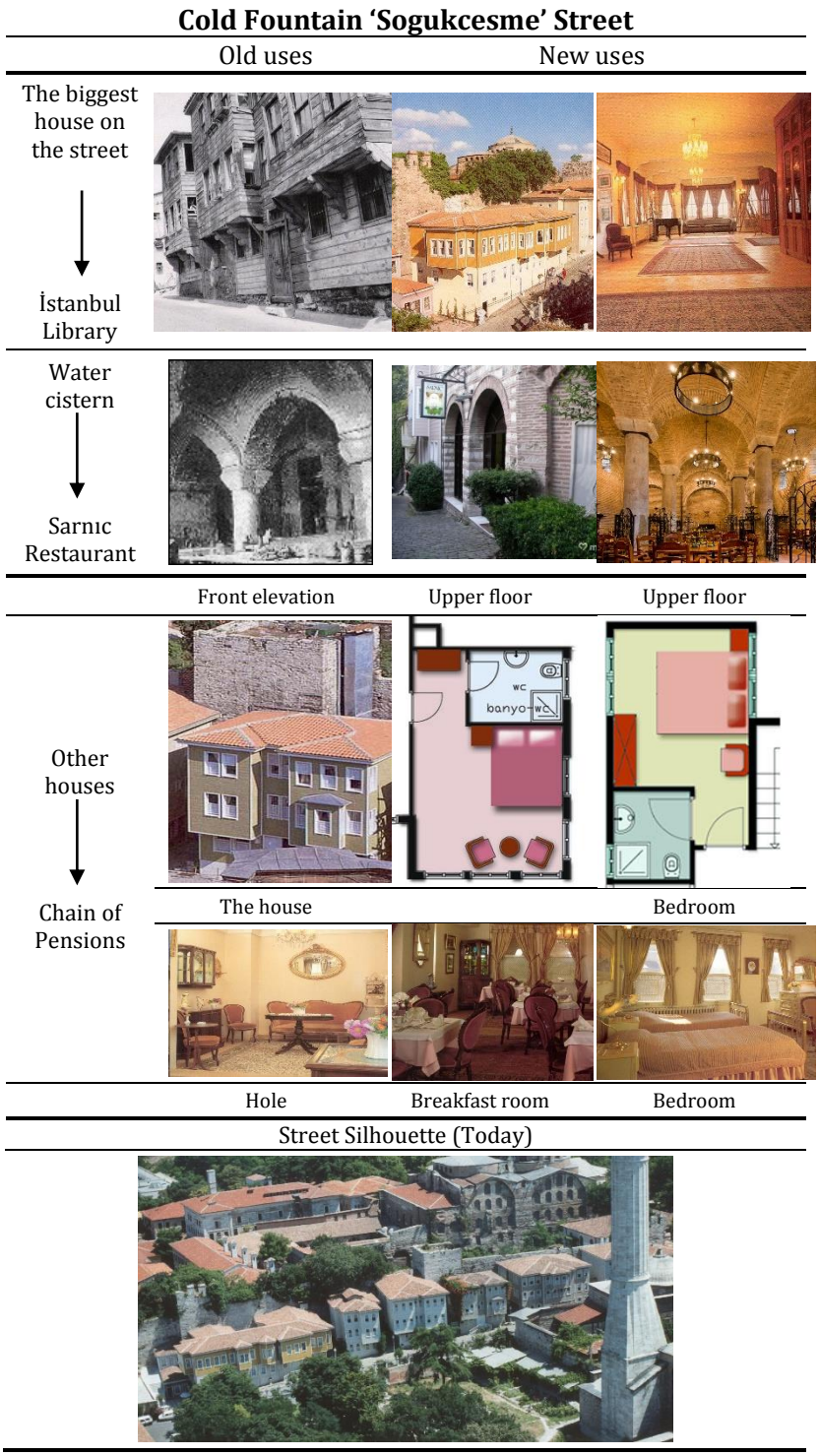

Figure 7. Examples of Sogukcesme Street's Re-use

In a 'certain period in time' in giving function to an old building, imputes like cultural accumulations, technology and whether or not the building will be destroyed are important. Sogukcesme Street has been given functions in line with the fundamentals given above and the environment. On this street that has Roman, Byzantine and Ottoman Period works, every era has been restored according to its own characteristics and given functions. The structural continuation of the buildings in terms of selecting

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functions and furnishing the interior spaces has been assumed with a view to cultural continuity.

In short, in order to create a human environment, what is important is to succeed in being modern but within the terms of historical consciousness and construction experience. What is essential is an awareness of real and sound history. This is an educational problem. But to provide a lifestyle for man it is not the planner or the architect who does that, but educating the intellectual and the man on the street.

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Resume

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