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CONTENTS

Chapter 1

URBAN ARCHAEOLOGY AND TOURISM

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1. THE CONCEPT AND SCOPE OF URBAN ARCHAEOLOGY

It is stated that urban archaeology studies first started in Europe with the rapid urbanization experienced during the industrialization process. During the construction works in Oslo, Norway in the 1870s, many remains of the Medieval settlement were unearthed. This discovery, which was not emphasized much at that time, can be regarded as the beginning of urban archaeology studies in Europe. It is stated that the excavations in Novgorod city, located in the northwest of Russia, where layers of various periods were unearthed, are an important turning point in the development of urban archaeology. In addition, wood, bones and similar organic finds were found in a very well preserved state, thanks to the relatively constant humidity in this city. While the new and fairly regular grid city texture of the 18th century on the medieval layers was quite different from the old organic texture in many cities, it was revealed as a result of the excavations that the new structuring in Novgorod city was carried out without damaging to the characteristics of the medieval organic texture. As a result of the good condition of the medieval building levels, which were mostly made using wooden materials, 28 successive building phases were determined in the old streets. Since 1932, Novgorod city has been continuously excavated and its uninterrupted development has been achieved due to the multi-layered structure of the settlement history. Novgorod therefore represents one of the best examples of the wealth of archaeological data underlying historical cities (Tuna 2000). During the reconstruction process carried out in the city centers that were destroyed after the war, due to the threats on the archaeological sites, the search, documentation and recovery of such areas has emerged as an important situation (Belge 2005).

Sarfatij and Melli state that the documentation of ancient life traces by engineers in European cities such as Oslo and London at a time when the concept of urban archaeology did not develop in its present sense can be regarded as the beginning of modern urban archaeology. In the 1930s, the importance of archaeology changed from large underground monuments to underground settlements. This emphasis on new settlement in archaeology has played a very important role in the development of urban archaeology as a discipline separate from archaeology (Sarfatij and Melli 1999, Gönüler 2011).

It was understood that there was a common settlement stratified with 17 cultural layers from the 10th century to the beginning of the 14th century in the city of Gdansk, which is located on the Baltic coast of Poland. Here, the spatial transformation of important urban functions such as administration, trade, and small production has been documented with archaeological data that will be model to the typical features seen in other Slavic cities (Yıldırım 2010). Tuna (2000), who stated that the

development of the cities was allowed to be examined during the periods when written sources were not available with the rescue excavations and restoration works carried out in these cities, states that the excavations made in this city made it possible to examine the urbanization process by showing Gdansk city of Polish as an example. In this way, he adds that archaeology emerged as a discipline independent of written history (Tuna 2000, Sakar 2019). In addition, thanks to these excavations, it was seen that urban archaeology as a special type of settlement archaeology, as an independent research discipline, is only possible if archaeological data can be handled in a settlement area. This new approach, which handles the entire settlement since the 1940s, is the main starting point in today's urban archaeology studies (Yıldırım 2010).

Another important development affecting urban archaeology in Europe after World War II was experienced in removing the ruins of important buildings in historical cities destroyed by the war. Due to the need for repaire and restoration works of historical cities to be completed in a short time, for example, Archaeological excavations of many monumental buildings in Europe such as St. Parthaleon Church, Charlemagne Palace in Aachen, Münster Cathedral were carried out (Yıldırım 2010).

Research works have been intensified in Germany, Poland's Baltic Coast and in the west of the Soviet Union which are at the forefront of the regions most damaged by the war and as a result of these researches, the first important results of urban archaeology in its present sense were obtained from these countries (Tuna 2000). With these studies, it has been seen that uncovering the building stocks located in the city is complex and difficult, and it was understood that it was different from the known archaeological methods in terms of excavation and method (Bilgin 1996).

The concept of conservation, including urban archaeology, found its place on an international platform in the 20th century (Ahunbay 1999, Sakar 2019). The first step towards this was the "I. International Organization of Museums" proposed to create funds for the development of monumental buildings of high historical value gathered in Athens in 1931 International Conference of Architects and Technicians Related to the Conservation of Historical Monuments (Ahunbay 1999). All the principles proposed in this conference, also known as the "Athens Conference", gained a legal identity as "Carta del Restauro" in Italy in 1932 (Ahunbay 1999). In this conference, decisions were taken regarding the protection of historical elements or structures together with their surroundings and respect for their external appearance; these decisions were accepted as a legal document in 1932 (Ahunbay 1999). The principles determined by the International Congress of Contemporary Architecture (CIAM) held in 1933 after the Athens Conference were published under the name of the

Athens Convention and this time was signed by various countries (Kamacı 2014, Sakar 2019). With this contract, it is stated that the issue that some of the similar buildings can be demolished after the documentation is accepted and implemented in order to ensure new construction, especially in the cities that were destroyed after the World War II (Kamacı 2014, Sakar 2019). In the meantime, it is known that organizations and unions supporting the concept of protection were established. The most important of these can be counted as the United Nations Educational, Scientific and Cultural Organization (UNESCO), which was established in 1945, the International Council of Museums (ICOM), which started its activities in 1946, and the International Center for Conservation and Restoration Studies (ICCROM), which was established by UNESCO in 1959. These and similar structures provide technical and economic support to the protection and rescue efforts carried out in the progressive processes since their establishment (Sakar 2019).

In the studies carried out in the 1960s, it is stated that a rapid documentation and recovery process was carried out with limited time and possibilities, and in this process, the term considered as rescue archaeology developed and evolved into urban archaeology (Belge and Aydınoğlu 2017, Sakar 2019). Again in these years, deeper foundations were opened for the reinforced concrete foundation systems of multi-storey business houses and underground car parks with the modern construction techniques used in the construction activities in historical city centers, and more negative effects were seen on the archaeological layers. Rescue archaeology studies are not planned and systematic, but have been studies aiming to obtain as much data as possible before the destruction of the zoning activities carried out in a specific area with limited time and resources (Cleere 1984, Gönüler 2011).

Archaeological studies were carried out within the framework of projects seeking answers to the problems regarding the whole of the historical settlement in the developments that would be qualified as the second wave for post-war urban archaeology. As a reaction to the urban development and the destruction of the historical textures of the reconstruction processes of the destroyed cities, the importance and effectiveness of the concept of conservation increased after the 1960s, and the concept of "integrated protection" came to the fore in this process (Bilgin 1996). With this concept, it has become necessary to consider the natural, social, economic, cultural and historical integrities of cities together (Sarfatij and Melli 1999, Gönüler 2011). Archaeological excavations carried out in historical city centers were handled within the framework of a well-defined research project rather than as random excavation operations; The new approach has become widespread in many Western European countries, especially

in England (Yıldırım 2010). In this context, the evaluation of the concept of urban archaeology in all its dimensions can be traced in the study conducted for Winchester in the late 1960s and early 1970s (Bıdlle 1982). Another example is the excavations in the historical city of York in the north of England.

Figure:1 Urban archaeological studies in York, an important Roman settlement in Northern England (Tuna 2000).

Venetian statute, which was prepared as a result of 'The 2nd International Congress of Historical Monuments Architect and Technicians' held in Venice in 1964, is considered an important turning point in the development of conservation and archaeology concepts. Some of the important factors in accepting the Venice Statute as a turning point in protection are; Article 7, which states that the historical monument should be preserved together with its surroundings, Article 9, which includes the necessity of stopping the repair in cases where random works are started during the restoration and the authenticity of the monument is deteriorated; can be considered as an item (Ahunbay 1999).

The International Council of Monuments and Sites (ICOMOS), which was established by UNESCO with the participation of 25 countries that had previously signed the Venetian statute, started its activities in the field of protection in 1965. It is emphasized that the European Convention for the Protection of the Archaeological Heritage, prepared by the Council

of Europe in 1969, has gained importance as a document that includes the work to be done for the protection of archaeological sites under threat (Girişken 2010, Sakar 2019).

Urban archaeological studies in the 1970s, especially in the UK, really boomed (Yıldırım 2010). Although most of the studies were not supported financially, the sensitivity of the city user to the archaeological cultural assets that are being lost has increased and thus, the necessary interest and support has been provided to these studies. With the Split Declaration on Cities of Historical Importance published in 1971, the duties of local and central authorities in cities with historical values were tried to be determined (Kamacı 2014, Sakar 2019). With the Convention on the Conservation of the World Cultural and Natural Heritage, which was signed by UNESCO in 1972 and entered into force in 1975, strategies for planning studies began to be determined. In the clause a of the 5th article of this convention, the principle of "To adopt a general policy aiming to give cultural and natural heritage a function in the life of the society and to include the protection of this heritage in comprehensive planning programs ..." is included. With this principle, it is seen that in the planning studies, it is emphasized that the areas with cultural value should have a functional place in urban life (ICOMOS 1975).

With the Amsterdam Declaration adopted at the congress held within the scope of the European Year of Architectural Heritage in 1975, it is stated that archaeology studies in cities find a common platform (Tuna 2000). With the Amsterdam Declaration, the concept of urban archaeology started to be separated from other conservation concepts and archaeologists were allowed to participate in urban planning studies (Sakar 2019).

In 1976, UNESCO's Recommendations on the Conservation of Historical Sites and Their Contemporary Role in Nairobi were published (Sakar 2019). In the Archaeology and Planning Colloquium held in 1984, it was stated that the necessity of following scientific and technological developments in archaeological studies and ensuring the integrity of archeology and planning was emphasized (Girişken 2010). It is emphasized that the dilemma between this colloquium and archaeologists and planners was addressed for the first time on an international platform (Belge 2005, Sakar 2019). In this context, establishing databases based on scientific research, developing dialogue and joint studies between disciplines, changing the draft plans in case of damage to archaeological fillings; financing archaeological studies as part of any design project; elimination of incompatibilities between legal regulations regarding planning, implementation and protection; increasing the awareness of city residents for the city they live in and giving importance to promoting these assets to the public; The development of cooperation and information exchange

between participating countries constitute the basic principles accepted in the "Archaeology and Planning Colloquium" (Madran and Özgönül 1999). The Conservation of Historic Towns and Urban Areas (Washington Statute) prepared by ICOMOS in 1987, and the Recommendation Concerning the Conservation and Enhancement of Archaeological Heritage within the Framework of Urban and Rural Planning Studies were adopted by the Council of Europe in 1989 (Girişken 2010, Sakar 2019). In the recommendation made in this context; preparation of a national archaeological inventory as a prerequisite for policies to protect and develop archaeological sites Establishing an infrastructure that can carry out development projects to be prepared in the light of archaeological data and developing international cooperation; Establishing the legal and administrative infrastructure necessary for archaeological data to be included in the planning processes and increasing the communication between archaeologists, planners and entrepreneurs in the planning processes, changing the development plans accordingly in cases such as damage to the archaeological heritage; It has decided on the preparation of agreements that determine the rights and duties of persons involved in the development of archaeological sites (Aydeniz 2009, Gönüler 2011).

With the decisions of the Archaeological Heritage Conservation and Management Regulation prepared by ICOMOS members in 1990, integrated conservation policies, international laws, documentation, research, maintenance and preservation, presentation and reconstruction were mentioned; In particular, the presentation focused on the necessity of observing the approaches to understanding the past (ICOMOS 1990, Sakar 2019). With this regulation, it is emphasized that the presentation and promotion should be considered as a popular interpretation of existing scientific data and therefore should be constantly updated (ICOMOS 1990, Sakar 2019). With 'Planning Policy Guidance 15: Planning and Historic Environment' (PPG 15) (Planning Policies Document No.15), which constitutes the first stage of the two-stage document prepared and published in England in the 1990s, archaeology, historical environment and planning It was decided to transfer some of the resources allocated for cultural heritage to the urban archaeological heritage sites by defining (Yıkıcı 2010, Gönüler 2011).

Planning Policy Guidance 16: Archaeology and Planning (PPG 16) (Planning Policies Document No. 16), which constitutes the second stage of the document, which was prepared and published in the UK in 1992, and urban archaeology strategies for historical cities and towns, in which local governments participate in the process. production has been encouraged. This document aims to eliminate the uncertainties experienced by urban planners and other disciplines in the excavation process by ensuring the

understanding of the value and importance of urban knowledge, space and archaeological remains in cities (www.communities.gov.uk/documents/planningandbuilding/pdf/156777.pdf) (Gönüler 2011).

It is stated that with the European Convention on the Protection of the Archaeological Heritage (Malta Convention) prepared by the Council of Europe in 1992, inventory studies and the importance of interdisciplinary work are emphasized (Girişken 2010, Sakar 2019). With this contract; It is aimed to classify the archaeological heritage by inventory and to create archaeological reserve areas to be examined in later periods. It also includes statements such as making legal regulations to ensure the scientificity of archaeological research, participation of archaeologists in the planning process, creating a systematic mechanism between disciplines, changing plans that will damage the archaeological structure, providing the necessary time and opportunity for scientific investigation and studies, and preserving archaeological remains as much as possible (Madran ve Özgönül 1999, Gönüler 2011).

In line with these reports prepared in 1992, the 'A European Code of Good Practice' was approved in 2000. With this law approved by the Council of Europe, the importance of urban planning in conservation was emphasized. It is aimed to increase the value of the planning to be made by facilitating the unity between different disciplines, by protecting the urban archaeological heritage of Europe. With the report prepared in 1992 in Valletta and the law signed in 2000 in this direction, the importance of urban planning in conservation and the importance of cooperation by coming together of different disciplines in urban design was emphasized for the first time (Council of Europe 2000).

The "Accesibility Projects: Sustainable Preservation and Enhancement of Urban Subsoil Archaeological Remains" (The APPEAR Project) project carried out by the European Union between 2003-2005; It is a guide that contains information for each process to develop different methods for the conservation, exhibition and presentation of archaeological remains. This document serves 4 purposes.

- Balancing efforts to protect archaeological sites, taking into account issues related to the growth of modern cities.

- Allowing the exhibition and preservation of archaeological remains by allowing access to as many visitors as possible.

- To ensure the place of the area in the existing urban fabric in harmony with this texture and to physically integrate the area with the city.

- Balancing the costs created by projects with these and similar purposes in line with the other needs of the city (The Appear Method 2006,

Sakar 2019).

In line with these purposes, it is seen that a process determination consisting of six different stages has been made. These stages are respectively; evaluation of the project area, conducting feasibility studies, determining the options, designing the project, starting and monitoring the applications. It is stated that by following the steps listed, road maps for the future of archaeological sites can be created. Especially during the project design phase, it is emphasized that the protection of archaeological remains is the first priority, therefore the design, selection of the elements to be used in the design and the determination of the function of the site are emphasized. The success of the project is checked with the evaluation and observation reports prepared in the following years. It is seen that an interdisciplinary study is also tried to be carried out in all applications carried out within the purpose and scope determined by this Project (The Appear Method 2006, Sakar 2019). During the conferences and meetings organized related to the project, the French Vésunna, the Périgueux Museum, the London Rose Theater, the Roman Crypta Balbi Museum, the Zaragoza Caesaraugusta Museum, the Hungarian Early Christian Tombs, the Bulgarian City of Plovdiv, the Netherlands Maastricht City and the Belgian Archéoforum Museum, included different examples of successful archaeology was given and discussions were made on the applicability of the project through these examples (ICOMOS 2005, Sakar 2019).

In 2008, in the Regulation on the Perception and Presentation of Cultural Heritage Sites, another publication of ICOMOS, important inferences were made directly on the interpretation, perception, presentation, urban integration, security, sustainability and originality of archaeological sites, various principles were determined on these issues, It has been observed that the effects on the perception and presentation of the areas and the applications that can be done are listed in a way that can create a road map that serves conservation and survival activities.

(ICOMOS 2008, Sakar 2019). Principles have been determined for the perception and presentation of the areas to be protected. The purpose of these principles;

- To facilitate understanding and appreciation of protected areas; to encourage the user to raise awareness and participate in protection and protection needs.

- Communicating the meaning and importance of protected areas to a range of users through accepted scientific methods as well as living cultural traditions.

- To secure the concrete and intangible values of protected areas in

their natural and cultural environments and social context

- To strengthen the importance of its historical textures and cultural values; Respecting the authenticity of protected areas by protecting them from intrusive work, visitor pressure, and the negative effects of false or inappropriate interpretation.

- To contribute to the sustainability of protected areas by promoting public understanding, participating in ongoing conservation efforts, ensuring the long-term continuity of the interpretative infrastructure and regularly reviewing its interpretative content.

- To promote inclusion by facilitating the participation of stakeholders and relevant communities in the interpretation of protected areas.

- To train technical and professional guides for interpretation and presentation, including technology, research and education (ICOMOS 2008, Sakar 2019).

In the Valetta Principles Regarding the Protection and Management of Historical Cities and Urban Areas, which belong to ICOMOS and adopted in 2011, the intervention criteria for archaeological sites such as quality, quantity, consistency, balance, harmony, cooperation, diversity, new function, dynamism and time, It is seen that detailed explanations are given on issues concerning the future of protected areas (ICOMOS 2011, Sakar 2019).

With the concept of urban archaeology coming to the agenda after World War II in the international process, meetings and conferences were held on international platforms regarding the content of this concept, and the importance of urban archaeology studies was emphasized in the conventions and laws. Developments in urban archaeology studies have increased over time and the importance of the subject has begun to be understood more. Studies conducted in England in the 1960s pioneered the concept of urban archaeology. Later, these studies were followed by studies in France in the 1980s, then Italy, Spain and Germany. It then spread to all European countries and the world. It is understood that urban archaeology studies, which differ in legal, administrative and institutional framework in each country, should be considered together with planning studies. In this context, it has been understood that the importance of a holistic planning process, strong financial support and raising awareness of the city users should be emphasized, which will carry the traces of the past in the cities to the present.

Current conservation concept for urban archaeology has emerged and developed as a scientific field of study due to the fact that methods and legislations are insufficient due to the problems encountered in the

multilayered cities so far inhabited by different civilizations at various periods of time and containing physical remains belonging to numerous civilizations under and above ground.

The concept of urban archaeology was first defined in accordance with the Resolution no. 338 in Turkey in 1993 (Belge, 2017). Archaeological sites and areas containing urban textures required to be conserved and subject to special planning approaches for the conservation and maintaining integrity of these features that have been defined as urban archaeological protected areas (Belge, 2004).

The physical remains of the settlements belonging to different civilizations and periods that were superimposed either one above another or side by side were defined as multi layered cities. The combination of these settlement layers belonging to various civilizations and cultures were the reflections of such settlement patterns giving information about the space organizations, life styles and building technologies of their periods through history. Multilayered cities/settlements are the areas having original urban identity having spatial and periodical diversity with these cultural values that they have accumulated superimposed in the same urban fabric. However, rapid changes in urban areas in the name of uncontrolled urbanization and contemporary construction activities damage these layers and swiftly erode the urban texture. As traditional conservation methods and approaches are insufficient in the preservation of multi layered cities because of multi-dimensional problems and complicated scientific data for each unique archaeological layer of such urban environments; the concept of 'urban archaeology' has developed as an alternative approach.

Urban archaeology is mainly dealing with the integration of archaeological remains with the actual uses and needs of the urban environments.

The connection between the features of the past and future of the settlement should be established in multilayered cities and periodical images and all cultural layers should be conserved all together in the same urban tissue (Figure 1.1). Urban archaeology is highly successful in terms of revealing the layers of settlements in İstanbul historical peninsula carrying the memory of various civilizations that are important in World history. As the capital of Eastern Roman Empire and Ottoman Empire; the historical peninsula has universal value with it's unique cultural values and archaeological settlement layers one above another. The historical peninsula of İstanbul include monuments and unique cultural values recognized as architectural masterpieces of Roman, Byzantine and Ottoman periods such as Sultan Ahmet Mosque, Topkapı Palace, Ayasofya, Süleymaniye mosque, Zeyrek Mosque (the former church of Byzantine

period), Byzantine fortifications and cistern, vernacular timber houses. Moreover, it also have ancient Roman period hippodrome and ancient ruins of Byzantine period beneath these values as the memory spaces of various civilizations bearing unique testimony to important civilizations through cultural assets and settlement layers that has to be conserved with it's outstanding silhouette as well as archaeological values blended in the historical peninsula with specific planning and design legislation. Besides, the building formations and cultural values concerning different civilizations in the evolution of physical environment need to be evaluated as far as historical continuity and totality are concerned.

Figure 1.1 İstanbul-Historical Peninsula (Anonymous, 2015)

The main purpose of urban archaeology is to enable the sustainability of the continuation of the physical and cultural accumulation in multilayered cities, as far as changing life conditions are concerned, without damaging the layers and settlement pattern. The purpose of this discipline is not only to enlighten the history of the city and form the urban structure; but also to contribute to the social and cultural development of the city.

Within this scope, planning and design activities/approaches in urban areas which are subjects to urban archaeology needs detailed cultural and historical researches as well as the implementation of accurate restoration techniques and methods. In this case, documentation of historical background of the settlements, their conservation and maintenance and urban service utilities as well as provision of the equipment of the requirements of the actual urban life style should be supplied.

In 2005, in accordance with the Resolution no. 702 entitled Conservation and Usage Conditions for Urban Archaeological Protected Areas, it was ruled that archaeological artifacts should be excavated by

using scientific methods, planning should rapidly be carried out on all scales necessary based on the reliable and comprehensive archaeological inventory in order to rehabilitate and display them and no implementation should be carried out at parcel scale, after the approval of these plans by the government.

Due to the planning studies:

- The functions and usages in the area should be in hormony with each other,
- Land use should be minimized and the construction activities related with infrastructure to fulfill the actual requirements should not give harm to cultural settlement layers,
- New buildings should be in harmony with the existing urban environment as far as building material, construction technique and building heights are concerned,
- Scientific solutions should be developed for the preservation and sustainability of the archaeological values and/or superimposed multi layers of different building cultures and settlement patterns.

Conservation approach has to be predicated to improve the preservation of the historical urban fabric as a whole and the conservation approach has to be based on the constant change of the physical environment. The definition of conservation made by the Specialization Commission for the Fourth Five-Year Development Plan Concerning Environmental Problems as 'maintaining and securing an object or material which may be destroyed or collapsed and preventing it from being destructed or harmed' (Yazgan and Erdoğan, 1992). The definition of conservation made by the ICOMOS is evaluated as follows: all precautions to be taken in order to safeguard a historical city or region and harmoniously enable its promotion. These precautions include determining the areas to be conserved, conserving, restoring, recovering, maintaining and renovating them (Larkham, 1996). Community awareness should be established about what should be protected for what reasons and the concept and culture of conservation (Tülek and Barış, 2015).

In order to continue their developments and to fulfill the requirements of future needs, the qualities and past experiences of multi layered cities must be well understood. Urban archaeology including the solution methods for the problems in multilayered cities firstly began to be discussed in Europe. Urban archaeology has been practiced in Turkey at later periods. This phenomenon caused certain losses in archaeological sites in such urban environments. There are a great number of textures, structures and traces from different layers below and above the ground and even under water in

Anatolia (Figure 1.2). Side which is one of the ports of ancient Pamphylia on the Mediterranean Sea having one natural and two artificial harbours was established by Aeolian Greeks. Side is located on a peninsula dating back to 4th century B.C. The city became an important trade center during the 2nd century B.C. besides it's cultural and intellectual qualities and lived it's peak days during the Roman times. Although the borders of the city shrinks; the settlement has been an important bishop center during the Byzantine period. Side is an impressive archaeological site with it's multi layered settlement patterns superimposed in a special natural environment including Roman period monumental buildings such as theater, Roman baths, arcaoled streets, nympheum, Temple of Athena located by the sea near the harbour, a basilica building and numerous archaeological assets lying beneath the settlement area blended with the vernacular timber and stone houses built above the ruins which makes Side unique in which every part of the urban fabric carries the traces of ancient civilizations as places of memory. So, the settlement is an important source of tourism with it's natural & cultural values subject to deterioriation as a living urban area.

Figure 1.2 The Ancient City of Side (Anonymous, 2016)

Turkey has ratified most of the international conventions regarding the conservation of the cultural assets as common heritage of mankind and legally binding with respect to the principles of preservation protection (Keleş, 2003; Aydoğdu, 2011). However, the fundamental problems with related the urban and archaeological conservation areas in Turkey are as follows:

- Conservation legislations and regulations as well as their institutional organization are not determined within conservation awareness,
- There is no available inventory of the monuments, buildings and

sites that are subject to conservation in the urban archaeological areas,

- There are different degrees of protection and conservation areas in the definitions for urban archaeological areas,
- The number of archaeological studies and excavations conducted by the museums are insufficient,
- The interdisciplinary work culture is inadequate,
- Financial and administrative problems cause deterioration in cultural assets
- Archaeological areas are seen as obstacles restricting urban development rather than being cultural values.

Consequently, urban archaeological areas are considered as problematic areas far from reflecting their urban cultural accumulations, unable to respond to the contemporary requirements benefiting from urban opportunities (Belge, 2004; Aydoğdu, 2011).

In order for the multilayered urban areas which are subjects to urban archaeology that has to be protected in accordance with universal conservation philosophy and spirit, it is compulsory to regard the conservation of cultural assets and areas as a country policy, creating a new conservation management approach and determine the development policies based on special conservation items and approaches.

2. TOURİSM

By the World Tourism Organization (UNWTO) tourism is defined as "the activities of persons traveling and staying in places outside their usual environment for not more than one consecutive year for leisure, business and for other purposes." The economic, social and cultural effects of tourism in Turkey was realized after 1940's; and improved after 1960's. The regulations which came into agenda in accordance with the law no. 2634 entitled Law for the Encouragement of Tourism accelerated the tourism sector. Within that period, Turkey became one of the rare countries of which tourism requests rose above the world average.

The fact that cities' cultural heritages and settlement layers from different civilizations are protected and evaluated within the scope of tourism and only for economic factors are considered before exercising is what irreversibly damages the city and the cultural values in urban environments. In this context, it is necessary to protect historical and cultural continuity and current settlement layers in cities and thus enabling the issue of urban development.

Archaeological sites situated in urban tissues and multilayered archaeological and cultural cities are the most important resources as far as tourism is concerned.

İstanbul-Historical Peninsula, Antalya-Side, the whole urban fabric of Şanlıurfa, İzmir-Selçuk, Muğla-Milas are some of the few examples possessing this quality in Turkey (Figure 2.1). The intense tourism pressure in these urban areas cause problems in maintaining and the development of historical continuity in these areas possessing multilayered settlement textures and have complicated the conservation applications. On the other hand, the evolution of multi layered archaeological urban environments is an important phenomenon in strengthening the identity of communities as well as the images of the cities. In this regard, the conservation of the urban identity with all of these unique layers as a whole can be only supplied by conscious conservation approaches that are provided by understanding periodical settlement texture relations and integrating the datum and findings by means of well-identified and analyzed processes of urban development strategies.

Figure 2.1 Muğla-Milas (Anonymous, 2018)

The important phenomenon affecting the tourism potential in such areas can be summarized as well organized restoration works, environmental planning strategies and maintenance approaches as well as services; lack of infrastructure; pollution (environmental, visual, etc.); qualified accommodation facilities, lack of security; lighting problems and

the general availability of mass tourism and the lack of trained personnel and guides.

An exhaustive strategy and implementation planning regarding the archaeological sites must be developed the negative effects must be eliminated and necessary precautions should be taken since the negative factors damage the tourism activities resulting with deterioration and loss of identity in urban areas.

The perception of the inhabitants of the city concerning the economic, environmental, social and cultural aspect of the tourism is an important issue. In this regard, the awareness of the local people must be raised. If the tourism potential reaches to the desired level, share of the tourism in the development of the region will be increase and economic input will significantly enhance. So, tourism will become the main sector in such potential areas having a significant contribution either to the economy of the city or the country.

Development of tourism will also contribute in changing the perspective of people through tourism by enabling them to understand & be conscious to archaeological values & multi layered settlement patterns and to safeguard them and raising public awareness as well as positive effects on socio-cultural and economic conditions of the region. The direct and indirect influences of this development is that it will enable to highlight the natural attractions integrating with archaeological and cultural tourism and types of alternative tourism approaches for multi layered urban environments.

3. CONCLUSION AND SUGGESTIONS

Anatolia is one of the oldest settlements in the world inhabited consistently by various different civilizations beginning from prehistoric times to present time because of its geopolitical and geographical location as well as its rich environmental resources.

Within this context, there are numerous multi layered settlements/ cities belonging to different periods of the history of civilizations in almost all regions of Anatolia and all of these traces and remains contain data and information about the settlement patterns, cultures, construction techniques, traditions, social life, technology, construction materials, spatial organization of various life styles from past to present.

So, within this framework, Turkey has numerous multi layered settlements subject to urban archaeology in first degree conservation status which has to be conserved and sustained in cases of their universal and national heritage values. Besides, these unique physical environments exhibiting different settlement organizations and building types of their

periods should be preserved for the history of humanity and history of architecture, art and culture.

In one hand, archaeological excavations that were held in these urban areas are quite significant to bring out these heritage values to culture and tourism activities on the other hand these universal assets are transferred to future generations. In this context, it is important to collect all the available archaeological data and establish a national inventory system. A database processing and development unit must be established by the government to keep the inventory system up to date. In this respect, it is important to establish a legal basis that obliges the inventory system to form a basis for all development plans.

According to Saibert (2016), the methods of urban archaeology can be divided into two groups namely archaeological research and museumification of archaeological sites. In the first method archaeological research is carried out by the rules of excavation, recording of artifact's find-site and making of the necessary documentation by means of a systematized data. The second method is a part of the museum activities aiming to transform the historical, cultural or natural assets into museum display to conserve their values.

While preserving the archaeological sites & multi layered settlements in urban environments under the conditions of the natural and cultural landscape communities need to be sensitive in the long-term maintenance precautious and sustainable existence of the archaeological assets. Archaeological sites and settlement patterns of old/previous cultures and civilizations are of great importance to the contribution of knowledge in the history and the identity of the city, its space organization, architectural layout, building technology and life styles of different historical periods.

Cultural identity and the preservation of the past nonrenewable resources are deteriorating at an increasing rate.

There is no doubt that the recent pressures of economic benefits from tourism activities in conjunction with increasing communication and mobility have caused accelerated damage to many sites unprepared for development and visitation (Matero, 2008).

One of the major developments in the conservation of archaeological sites was the Nara Document on Authenticity (1994) challenging the supremacy of material and established that authenticity is never absolute but always relative. The document also emphasizes the sustainable use of archaeological sites and thus a wider adoption of maintenance in such areas (Williams, T. 2018).

Activities for utilizing the tourism potential most effectively to

introduce the potential of the urban archaeological areas to the world as economic development resources should rapidly be carried out. Tourism can easily be promoted and offer employment opportunities as an effective sector in archaeologically rich urban areas. So, the creation of sustainable settlements by means of such an approach also be supplied. The areas that are brought into tourism by the help of this understanding can also be supported by state institutions and organizations. Today, tourism sector has become more environmentally-conscious as a result of rising environmental awareness and efforts for the protection of the environment (Gülgün Aslan, B., Yazıcı, K. and Ankaya, F., 2017). The awareness of the public and private institutions and NGO's should be raised for the promotion of tourism by making tourism multifunctional and multidimensional ways of looking. Besides, locals should be trained to provide qualified workforce and conscious conservation applications.

National and international cooperations concerning the tourism sector should be strengthened and special plans and projects should be prepared with effective local and foreign promotion.

Local governments, representatives of private sector and the local communities should cooperate in order to improve tourism and should solve the infrastructural and environmental problems for the sustainability of archaeological heritage.

Precautions should be taken in order to prevent the incidents that can harm the urban identity and cultural values originating from tourism and disrupt the social order in the city centers where urban archaeology is concerned.

A comprehensive tourism planning approach and an archaeological tourism map should be developed/prepared in detail for the feasibility and sustainability of urban archaeological areas. Besides, less dense and cultural tourism approach must be preferred rather than mass tourism activities for the safety and effective conservation of urban archaeological sites. It is necessary to carry out studies to create cultural awareness on a national scale, to prevent any negative impact on urban archaeological values that may arise from tourism.

Archaeological layers which are the main sources of tourism should be well defined with all its layers in the settlement and the physical and social infrastructure should be improved accordingly. Accessibility to archaeological sites also needs to be improved.

Traditional accommodation facilities should be supplied on the outskirts of the city away from the urban archaeological sites & layers for the domestic and foreign tourists visiting the area within the scope of touristic activities.

Qualified personnel should be trained to support tourism activities in the urban archaeological areas.

The image problems that can give harm to tourism, should be evaluated and solutions that can contribute to the branding of the city should be offered.

The local community should be comprehensively educated regarding the touristic activities to be carried out in the urban archaeological areas.

To promote the urban archaeological areas, local arts and handcrafts should be supported for the visitors.

Tourism managers, non-governmental organizations, lecturers and academicians specialized in urban archaeological areas should be in contact to conduct both necessary studies and implement projects.

Each historical layer/archaeological settlement pattern should be analyzed in detail in multi layered cities that are subject to urban archeology and their relations should be determined and evaluated for the identity and historical conservation and sustainability of the urban environment. Different layers existing in the urban tissue should be presented as a whole although they are different in character.

Multi layered cities have unique energies and spirits originating from their different characteristics and life styles of different periods. So, this quality of the settlement patterns that were superimposed has to be evaluated as the main data while determining the conservation strategies. Legal administrative framework relating to the conservation of the layers in the underground and underwater should specifically be reinterpreted and new conservation practices should be established.

In urban archaeology, the main idea is the past settlement patterns & building types that have been developed for centuries. The settlements /urban environments that are subject to urban archaeology have a rich history of past living environments, structures and landscapes beneath the current built environment. These settlements have a rich bevy of past relics either underneath or above the earth.

Urban development has long been the major threat to archaeological sites and multi layered settlement patterns reached today in urban environments. So, archaeological sites in urban areas should be preserved not only by means of site specific restoration techniques and solutions but also through spatial design approaches controlling the urban development and protecting all the layers belonging to different civilizations.

Urban archaeology has become the actual phenomenon in current scientific researchers as it forms unique knowledge about early and

preliterate history of cities. The proof of it is a rapid growth of national identity sense (Saibert, 2016).

The archaeological remains that exist beneath modern cities were in fact connected to one another in living networks. All of these sites tell interesting stories in themselves; and it is sometimes difficult to connect them conceptually or physically to one another or to envisage the urban or rural landscapes in which they once existed (Caitlin, 2005).

In order to preserve urban archaeological sites to strengthen the urban identity; new planning tools and architectural design techniques should be explored. On the other hand, arrangements must do at city scaled and based on landscape protecting and highlighting the historic development of urban city centers.

In Turkey, many historic city centers have been continuously occupied since early ages accumulating archaeological layer underneath the cities. However, these precious archaeological resources have not been included in the planning process causing problems both in the preservation of the values and in the urban development.

Urban archaeology as an interdisciplinary field of study that has to evolve as a crucial design and planning analysis in urban archaeological conservation in evaluating the history of the settlements as well as urban identity and cultural heritage resource management.

Archaeological sites in Turkey span 12000 years of human habitation and unique as archaeological resources that has to be managed also as the heritages of either at national or universal scales providing evidence relating to the history of Anatolia and history of civilizations.

Cultural heritage sites such as multi layered settlements with archaeological values are major tourism attractions. So urban and tourism development without appropriate conservation and management approaches give harm to the archaeological values and the authenticity of the environment.

Urban archaeology is mainly subject to heritage tourism which is one of the most important components of sustainable tourism. So, the preservation of archaeological remains in-situ with it's overall layers should be a necessity. Such buried remains should be monitored in long term while exhibiting the others in it's existing authenticity. Sustainable conservation and management of archaeological sites should be supplied by means of four main components such as environmental, cultural, social and economical values/factors as well as an integrated conservation approach. The fragmented site tissue should be brought into integrity.

On the other hand, archaeological parks arising with the conservation of archaeological heritage in urban areas is an effective solution especially for the conservation and the presentation of multi layered settlements, associating with education, recreation and tourism activities in urban spaces.

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Chapter 2

THE EFFECT OF MEGA-EVENTS ON INSTITUTIONAL CULTURE

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1. Introduction

The interest of cities for hosting mega-events has been growing mainly due to increasing economic potential of the events. Mega-events include the organizations such as Olympics, World Cups, Expos (ECMT, 2002) which has the potential to attract visitors and require big infrastructural investments (Roche, 2002). Mega-events provide a stage for cities to claim their "global city" status (Short, 2004, p.24). Mega-events also require cooperation among several actors and force them to act immediately to make decisions. In this sense mega-events provide an exceptional stage to seek long-term planning approaches and to restructure the institutions to better serve the needs of the community in a more effective way.

Institutions are the guiding rules that identity individual behaviors and structure the expected outcomes. These rules are shaped and determined by history, actions of decision makers, norms, informal elements, and other related factors, which are called "institutional culture". This paper investigates mega-event planning practices in terms of how policies are applied for the short-term event and how planning institutions adjusted and modified their long-term plans within the light of their mega-event experience and also whether these modifications are long lasting.

Several factors transform institutions, such as legislatures, organizations, actors from different level of government, international actors, and business sector among others. With the existence of mega-events, this transformation process is interrupted. The literature states that mega-events bring improvements, speed up development or make it at a lower cost, and break local resistance in the host city as a result of the obligation to meet the deadlines. In addition to that, mega-events can be seen as an opportunity for significant step in the direction of changing the institutional system and the institutional culture. The time period that covers the event preparation process impacts the typical ways of planning in some aspects. This shift in the mindset for the event planning time period might lead to changes in institutions.

This paper argues that historically and institutionally dependent incidents shape the outcome of any major mega-event and policy makers should learn from their institutional past in order to be skeptical and realistic for their future decision. All these facts indicate that the way of planning for mega-events need to be changed. More open and engaged planning process with the involvement of every stakeholder in the community would increase the implementation of more accountable mega projects.

Mega-events play an important catalytic role and can be identified as a part of decision-making process that affects future decisions by introducing alternative perspectives. This affect is critical and important from a planning

point of view mainly because of the mandatory characteristics of mega-event planning decisions on host cities. This mandatory feature can dramatically change the planning process, decision-makers' views, and the institutional culture. Mega-events are big planning experiences and the analysis of these events from an institutional perspective is mostly abandoned. This paper intends to establish a connection between mega-event experience and institutional legacies of the events on host cities. Mega-events are mostly analyzed from a physical legacy perspective and this paper seeks to be an initial step for bringing the institutional legacy perspective into debate.

1984 Los Angeles games can be seen as a turning point for staging mega-events, mainly due to its economic success (Burbank et al. 2001). After the 1984 Olympics the interest of researchers on the impact of mega-events increased. However, most past academic research has focused on the physical capacity of the mega-event host city and the investments made for the events. Basically, the main focus was limited to physical legacies, the event-staging period, and how to manage this temporary demand for the events. The impact of this temporary situation on host cities' urban policy and institutions (institutional legacies) for the long-term has been mostly neglected. This paper focuses on these important, often overlooked issues by examining the impact of mega-events on institutions and their cultures.

2. Institutions and Institutional Culture

Several influences transform institutions; legislatures, organizations, actors from different level of government, international actors, and business sector among others. With the existence of mega-events, this transformation process is interrupted. The literature states that mega-events bring improvements, speed up development or make it at a lower cost, and break local resistance in the host city as a result of the obligation to meet the deadlines. In addition to that, mega-events can be seen as an opportunity for significant step in the direction of changing the institutional system and the institutional culture. The time period that covers the event preparation process impacts the typical ways of planning in some aspects. Harmony and collaboration among the actors and institutions throughout the process is necessary in order to meet the deadlines. This shift in the mindset for the event planning time period might lead to changes in institutions.

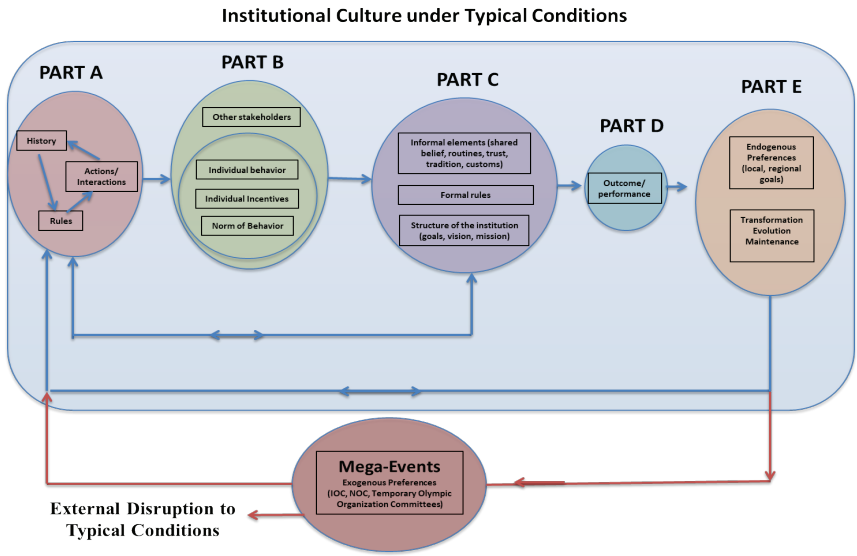
Ostrom (1990) defines institutions as "the sets of working rules that are used to determine who is eligible to make decisions in some arenas, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals dependent on their actions". Institutions shape the society and they are critical to understand historical change on any policy. As North states, "formal rules may change overnight as a result of political or judicial decisions, informal constraints embodied

in customs, traditions and codes of conduct are much more impervious to deliberative policies. These cultural constraints not only connect the past with the present and future, but provide us with a key to explaining the path of historical change" (North, 1990, p. 6).

As a political structure, institutions refer to attributes of a current system such as size, extent of overlap, degree of competition, and others. Institutions are the rules that guide individuals for a specific outcome. Riker (1982) defines institutions as "rules about behavior, especially about making decisions". Rules are not always necessarily written nor result from formal legal procedures. "Institutional rules are often self-consciously crafted by individuals to change the structure of repetitive situations that they themselves face in an attempt to improve the outcomes that they achieve" (Ostrom, 2004). This also implies that the culture of the institution affects the actions of individuals. Institutions are seen as the glue that keeps the self-interested individuals together. Individuals' behaviors and the incentives that decision-makers face affect the outcome. Individuals' behavior is generally embedded in institutional culture.

Institutional culture refers to the background constrains or rules of the game that guide individuals' behavior. It is the embeddedness in rules, customs, traditions, shared beliefs, norms, and behaviors that is built into the institutional environment. Institutions are the product of human interaction that is shaped by culture and social settings (Frederickson, 2001). Institutions are big part of what embeds people in social situations.

Diagram 1. Institutional Culture



Source: Created by author

As seen in Diagram 1 above, institutional culture includes the history, different stakeholders, formal and informal elements, the performance of the institution and competing preferences. Part A in Diagram 1 illustrates the rules of the game for institutions and how they evolve over time. It contains the rules, the action and interaction of each stakeholder and the history of institution that shapes the background of the institutional culture. Institutions, as systems of rules, structure social life that involves human action and interaction. All these actions and interactions are structured in terms of overt or implicit rules (Hodgson, 2006). Institutions impose form and consistency on human activities that enables ordered thoughts and expectations. These expectations and thoughts become clear over time.

Part B in Diagram 1 explains the effects of this institutional background on individuals' and other stakeholders' behavior. Based on the historical evolution of the institutions, the actions of stakeholders also change. This change is reflected on individuals' behaviors and incentives as well as on the general norms. These norms therefore affect and limit the attitude of other stakeholders. In practice, institutional norms can be considered as a means to shape and frame the stakeholders' actions and the interactions among them.

Part C illustrates a closer look to the rules. It shows how formal and informal rules and the structure of the institutions is the application of individuals' preferences. Rules include informal elements and formal rules. Formal rules identify who has the right to take what actions under what conditions. The social practices and rituals that are shaped under certain cultural norms/values are defined as informal elements. Formal rules describe the obligations and competencies, whereas informal elements define the appropriate behaviors under certain circumstances (Jong et al. 2002). Formal and informal institutions constitute the whole of the institutional structure, the practices shaped around this structure, and therefore the rules of the game. These rules have potential to be codified. Coding enables members, who share information implicitly and explicitly, to identify rules.

Part A, B, and C in Diagram 1 affects each other and is affected by each other in the same loop. This constant circle shapes the core part of the institutional culture over time and it influences the performance of the institutions (Part D in Diagram 1). The outcome/performance of the institution is the degree whether the institution is meeting its mission, goals, and objectives. The preferences of different stakeholders create another loop that stimulates another evolution on the "rules of the game" (Part E in Diagram 1). The involvement of stakeholders encourages better decision and strengthens each stakeholder's ownership of the institution, activities, and initiatives. Stakeholders understand how and in what ways

their actions affect others within and outside the institution, and appreciate how their involvement helps further the institution's mission.

Mega-events can be seen as a shock or outside disruption to the institution that might have effects on institutional culture in waves from Part A through Part E. Adding mega-events into the institutional culture framework means introducing other stakeholders that might initiate and implement changes. This new external stakeholder represents outside interest that is not necessary similar to the institution's interests and this external influence might have an effect on institutional culture.

3. Institutional Culture and Mega-Events

Since mega-events have an impact on cities beyond sports, it is important to examine the urban effects of the post-event period (Hiller, 2006). For example, the events might change the built environment, decrease traffic congestion, or attract more tourists to the city, but the event organizers may not have anticipated these consequences and these impacts might be related to many other factors (Hiller, 2000). The fact that the mega-events are not just about sports, but they give an opportunity to accomplish the plans on their policy agendas has also been realized by city leaders (Hiller, 2006).

Thanks to mega events, host cities have the opportunity to implement their future strategies in a more focused way. This focused environment can catalyze significant changes in urban infrastructure (Essex and Chalkley, 1999; Chalkley and Essex 2004). According to Essex and Chalkley (1998), the Olympic Games offer "the justification for related developments to be 'fast-tracked' through accelerated planning, design and construction." (p.201). Mega-events are important global planning activities that take years and also one of the largest global planning practices in the world. Mega-events also necessitate cooperation among the authorities in order not to miss the deadlines.

Hiller (2000) focuses on the role of mega-event as an urban phenomenon and provides a description of mega-events in urban perspective. The author develops a linkage model to show that the mega-event does not only occur at a particular point in time from which we can measure its effects, but it must be understood in its urban context longitudinally. This model avoids simplistic cause/effects and argues that the impact of the events may be complex. Either it is believed that Mega-event plays a significant role in restructuring urban space or it is a poor mechanism for urban economic growth, it has the potential to serve as a defining moment in the evolution of a city by creating new initiatives, new directions, and new structures.

Mega-events play an important catalytic role and can be identified

as a part of decision making process that affects future decisions by introducing alternative perspectives. This affect is critical and important from a planning point of view, because of the mandatory characteristics of mega-event planning decisions on host cities. This mandatory feature can dramatically change the planning process, decision-makers' views, and the institutional culture.

The political situation and institutional structure determines the policy approach that the host city prepares for the events. While each host city uses similar strategies to plan the event, these strategies are somehow influenced by the city's institutional culture and the political structure. In other words, the impact of mega-events on host cities depends on the host city's propensity to use these strategies in the long run. This propensity is also constrained by the planning traditions of the host city.

It is also important to determine whether the event planners' way of analyzing the event preparation process is short-term or long-term focused in order to evaluate the real impact of the events. A long-term focus entails a goal-oriented view and long-term vision of using the resources to show how a successful event can be blended with the long-term needs of a community, whereas a short-term focus primarily interested in short-term, visual success, rather than a systematic linking of means and ends.

4. Conclusion

First of all, this paper argues that mega-events interrupt the typical planning practice and leads to a change in urban planning process. The degree (significantly, moderately, or less) and the direction (positive or negative) of this change vary by the institutional culture. The typical way of planning and decision making process might be impacted by the external shock (mega-event), and this shock might change the institutions culture. Mega events that require a long planning period affect institutions and institutional culture as well. Decision makers and policy makers have to agree to continue the planning process due to the stringent requirements of the IOC, concerns about missing deadlines, and other financial and political reasons. Institutional culture can also be affected by this process.

Secondly, mega-events lead to a change in the types of projects proposed and built. Mega-events might change the perspective and lead to change in the amount of funding spent for different projects. For instance, mega-events require substantial transportation network to transport people and goods on time for a short period of time. This planning experience might affect the way of thinking about the importance of other modes of transportation. As a result, the priorities for project selection might change for the future.

Moreover, mega-events lead to involvement of more stakeholders with a louder voice in the planning process. Mega-event planning requires the involvement of several stakeholders into planning process and this involvement might continue after the event. The dialog and interaction among stakeholders might lead to better understanding of the need for extensive involvement of different actors in the planning process. As a result, mega-events might help solving the problem of cooperation and conflicts between interest groups.

Additionally, mega-events lead to a change in the vision, goals, and objectives of the planning institutions. For example, policy makers might recognize the importance of all transportation modes working together to provide needed mobility and accessibility in the region as a result of hosting a mega-event. In addition, the policies might prioritize to improve safety, promote tourism and a strong economic base. The regional transportation vision might include integrating public transportation and alternative modes through coordinated planning and regional cooperation. As a result of all the impacts listed above, the overall policy of institutions might change and it might help linking regional planning more closely to comprehensive metropolitan planning.

Lastly, the institutional culture of the host city's planning institutions affects the outcome of mega-event planning. Likewise, the mega-event planning strategies affect the culture of the institutions. The interaction with the host city and its institutions slightly changes the "standard" way of mega-event planning as well. In other words, it is not only the host city and its institutions that is affected, but also the event planners also have to adopt themselves to the local culture and policy dynamics.

Mega-events have been extensively investigated. The literature examines the impact and benefits of mega-events on promoting economic development, place marketing, creating a world city image, attracting tourists and international business etc. Most of the studies are focused on the bidding and planning stages along with the legacy of the mega-events and lessons learned from them. The academic literature displays a strong focus on the economic, environmental, and touristic aspects of mega-events, while the institutional aspects of the events have been mostly neglected. Mega-events might have institutional legacy even decades after the events are staged. This paper seeks to fill an important gap by focusing more attention on the institutional side of mega-events in order to gain a better understanding of the positive and negative impacts of the events. This paper intends to establish a connection between mega-event experience and institutional legacies of the events on host cities. Mega-events are mostly analyzed from a physical legacy perspective and this paper will be an initial step for bringing the institutional perspective into debate.

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Chapter 3

DETERMINATION OF ARTIFICIAL LIGHTING DESIGN CRITERIA IN THE EMERGENCY UNIT EXAMINATION ROOMS*

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1. INTRODUCTION

Emergency units are the main service areas among the departments that serve continuously in the field of health. These units stand out within the hospital buildings as the place where the first interaction with the patient takes place. In the emergency units that are expected to provide efficient and efficient health service without interruption, many different actions take place within the scope of the work carried out. Spatial organizations have been shaped according to the needs of this diversity of action. In the Communiqué on the Application Procedures and Principles of Emergency Services in Inpatient Health Facilities (2009), spatial organizations and medical equipment are divided into emergency units as I, II and III within the scope of criteria such as the number of patients, characteristics of emergency situations, and personnel qualifications. The places that are needed in each of these levels are identified and explained. The spaces in the emergency units are classified as entrance, administrative units, special units, and general emergency units. Green area, yellow area and red areas that are defined within the scope of general emergency units are the departments that have examination rooms. The green area is used in cases where it is not inconvenient for patients to wait for up to 1 hour, the yellow area is the place where the patient should be more closely monitored for short periods and immediate treatment is given when needed, and the red area is used in case of the patient's life is in danger (Communiqué on the Application Procedures and Principles of Emergency Services in Inpatient Health Facilities, 2009). The common feature of these units is the presence of examination rooms. According to the statements made in communiqué; the green area examination rooms are the places where the patients who pose a life-threatening condition due to their acute symptoms if they wait more than one hour, are examined, diagnosed and treated within maximum 10 minutes. Yellow area examination rooms are the places where patients are closely monitored for up to 2 hours and these places can be solved in the form of an arena. In general, examination rooms are places with stretchers and examination tables that will provide the appropriate position for each branch, and where materials such as curtains and screen are used between these examination tables to provide privacy between patients and equipped with sinks. The examination rooms must have a usage area of 16 square meters. These rooms can be planned as two rooms in connection with each other. However, in this case, the room should be arranged as a doctor working area of at least 8 square meters and an examination area of 8 square meters (Url-1, 2020). IAEM (2007) stated that at least 7 square meters of areas should be designed for each patient in the examination rooms.

In the examination rooms, the spatial organization of the space should be well designed so that the staff can serve the patient quickly and reliably and make the patient feel better. However, lighting design is also an important consideration in these places, where both the patient's interview and diagnosis are made and documented by the medical staff. A homogeneous luminance level should be provided during the examination and additional illumination should be used while performing medical procedures (IESNA, 2006). CIE (2002) proposed that the overall luminance levels should be 500 lux and the duty areas 1000 lux in cases where the examination and treatment areas are designed in the form of rooms. Turkey Health Buildings Minimum Design Standards Manual 2010 stated that the luminance level for these areas should be a 75-foot candle (approximately 807 Lux). This information is limited when it comes to lighting design in emergency unit examination rooms.

From this point of view, this study was started with the question of whether the lighting designs used in the emergency unit examination rooms are made by considering the action requirements and the visual comfort of the staff. The aim of the study was to determine the effect of lighting design used in emergency unit examination rooms on the work of healthcare personnel and thus to reach lighting design criteria in general. Within the scope of the lighting design of the emergency examination rooms, it was decided to conduct research by taking the opinions of the healthcare personnel into account. It was thought that it would be possible to determine the lighting design criteria in the emergency unit examination rooms by analyzing the lighting design components with the consideration of the function of the space and the action requirements of the personnel.

2. ARTIFICIAL LIGHTING DESIGN OF THE EMERGENCY UNIT EXAMINATION ROOMS

In general terms, illumination is the application of light to see objects and their surroundings (Sirel, 2013). The light applied to be seen is obtained from natural or artificial sources. The sources obtained in this context constitute the types of lighting according to their natural and artificial nature (Altuncu, 2008). Natural and artificial lighting should be applied effectively in hospital buildings and the emergency units within these structures. Because different visual needs for user groups are expected to be met in these spaces (Foster, 2005). The main function of lighting in the emergency units is to meet the task requirements in all areas (NHS, 2014). The tasks of lighting differ in terms of patients and staff. While the lighting design should create a feeling of satisfaction and a sense of trust for the patients during the treatment, it should provide

a well-designed visual environment for the employees to improve their morale, to feel fit and to perform their duties (Mehrotra et al., 2015).

In emergency units, lighting design must be done correctly in order not to cause any visual discomfort. NHS (2014) has identified the components for proper illumination in its report titled ‘’Lighting and Color for Hospital Design’’, which deals with lighting design in healthcare buildings. The lighting design components identified are task lighting, quality of light, energy efficiency, compatibility with architecture, maintenance factor and lighting cost.

Task lighting is the planning of the lighting design by considering the visual abilities of the user (NHS, 2014). Lighting should be bright and functional in the spaces in which examinations and diagnoses are done (Philips, 2016). The quality of the light is the design of the lighting by taking the reflective properties of the surface materials used in the space into account (NHS, 2014). Designing lighting with the consideration of other environmental features in the space minimizes energy consumption and maintenance (IESNA, 2006). Energy efficiency in lighting is measured by the relationship between the provided light and energy consumed. Light power in illumination is shown in the lumen, and the lumen is equal to the level of illumination per square meter. The selection of lighting devices to be used to ensure the required level of illumination in spaces should be made by considering lumen values (NHS, 2014). Lighting design that is compatible with architecture is possible by combining analytical and aesthetic rules and producing solutions (IES, 2011). The maintenance factor is important for problems that may arise when the general condition of the lighting installation is ignored. The contamination of the surfaces of the luminaires and the lack of maintenance on the interior surfaces negatively affect the provision of the required luminance level (NHS, 2014). There are four important factors to ensure maintenance in indoor lighting installation. These are lamp lumen maintenance, lamp survival time/lamp life, lighting luminaires maintenance, maintenance of the room surfaces. Lighting costs should be made by calculating the annual-monthly-daily lighting energy needs, by considering the impact of the system on the energy requirement while creating various ideas about lighting design in projects (Şener Yılmaz and Köknel Yener, 2013). Because inexpensive lighting designs, which are thought to be less costly at the beginning, may cause more costs by creating more problems in the long run (NHS, 2014). Lighting design components are described in six groups. The contents of these components are determined to obtain concrete data according to the descriptions. The content generated by these designations is included in Table 1.

Table1. Lighting design components and contents of components

Lighting Design Components	Contents Of Components
Task Lighting	Light Level of the Device
Quality of the Light	Surfaces of the Space
Energy Efficiency	Light Power of the Lighting Device
Compatibility with Architecture	Usage of Lighting Device in the Space
Maintenance Factor	State of the Lighting Device
Illumination Cost	Lighting System Used

Evaluating the lighting design components within the scope of their content will enable the determination of the necessary conditions for fulfilling the visual comfort conditions. Within the scope of visual comfort conditions, determining of the light level, determining of space surfaces, lighting device, system and method gain importance. The importance of the contents of the lighting design components in the examination rooms can be explained as follows:

Light Level of the Device: When enough light is provided in the working areas of the healthcare personnel, it increases the satisfaction level (Joseph et al. 2016). In addition, a study by Matern and Koneczyn (2007) stated that operating room staff were disturbed by inadequate luminance levels for surgical needs. In the emergency units, luminance levels must be provided in accordance with their own needs within each space.

Surfaces of the Space: The surfaces of the space turn into lighting devices in artificial lighting design. It is important to select the correct surface materials to ensure the varying levels of illumination resulting from different functions in the examination rooms.

Light Power of Lighting Devices, Usage in the Space, Status and Lighting System: Emergency units are the places where artificial lighting is constantly used and most of the energy is spent on lighting. For this reason, the lighting device and lighting control system used in artificial lighting becomes an important issue. In these units, the use of the appropriate lighting control system and lighting devices in the related spaces will provide energy saving as well as fulfilling the necessary visual conditions (Altuncu, 2008). The appropriate lighting system selection must be decided by the designer and the hospital management together. Because the decisions about lighting are also effective in issues such as maintenance, repair, and cost. The lighting devices need to be maintained, cleaned, energy-saving and in harmony with other systems in the building (Kazanasmaz, 2003). In this context, lighting control systems and methods that can be used in the emergency units are given in Table 2 based on the study carried out by Altuncu in 2008.

Table2. Lighting control systems and methods

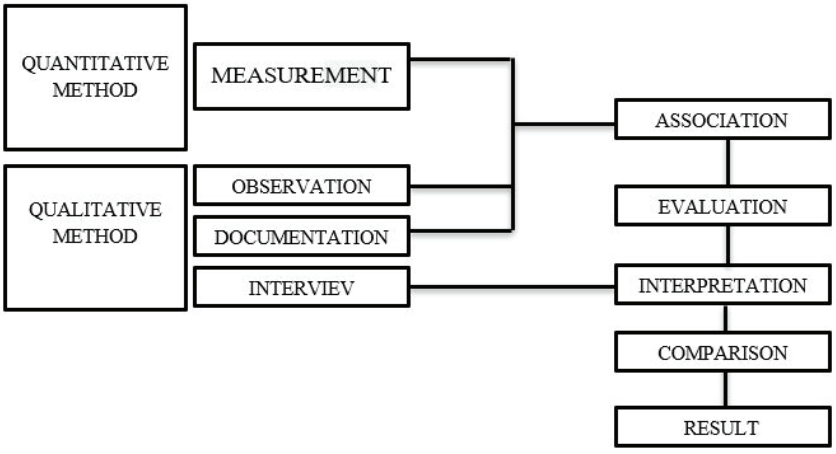
Lighting Control System	Methods Used Within the System
Manual Control Systems	ON-OFF, Dimmer
Automatic Control Systems	Photosensor Dimming, Photosensor Switching
Automation Control Systems	Time Control, Scene Control, Occupancy Control

It is important that the lighting systems and methods used in the emergency unit examination rooms meet the space requirements. For the examination rooms' artificial lighting design systems, it is necessary to select and apply the appropriate one of the control systems and methods in Table 2. Making the right choice plays a role both in energy saving, maintenance, and repair costs as well as in providing the correct lighting for the work of healthcare personnel.

3.METHODOLOGY

Various methods were used in the study. Firstly, the subjects of lighting, emergency room, examination rooms were investigated within the scope of the literature review. In addition, national and international regulations related to the subject were examined. The general summary of the qualitative and quantitative methods used in the study is given in Figure 1.

Figure 1. Researc Design



A method has been developed for the evaluation of the data obtained on lighting in the emergency unit examination room. The methods of obtaining concrete data were determined by explaining the titles reached within the scope of lighting design components.

Table3. Lighting design components evaluation method

Lighting Design Component	Content of the Component	Evaluation Method
Task Lighting	Light Level	Measurements of the Light Level
Quality of the Light	Surfaces of the Space	Evaluation of the Relation of Space-Lighting Device
Energy Efficiency	Light Power of the Lighting Device	Measurements of the Light Level
Compatibility with Architecture	Usage of Lighting Device in the Space	Evaluation of the Relation of Space-Lighting Device
Maintenance Factor	State of the Lighting Device	Evaluation of the Relation of Space-Lighting Device
Illumination Cost	Lighting System Used	Evaluation of the Lighting System

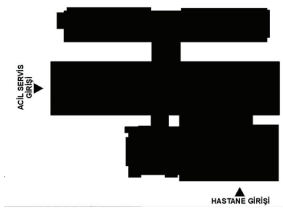
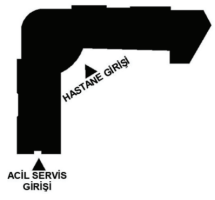
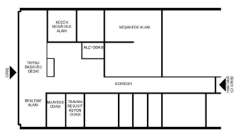
During the field study, the assessment methods specified in Table 3 were used to reach concrete data. Measurements of the lighting level, determination of surface materials, lighting devices, system and method used were determined. The data obtained from these findings were presented in tables. In addition, interviews were conducted with the healthcare personnel working in the emergency units within the research sample of the field study. During the interviews, the opinions of the healthcare personnel about the lighting design existing in the examination rooms were taken. The method of the study on reaching the standards regarding the artificial lighting design of the emergency unit examination rooms was determined as a result of the information obtained from the literature research, data obtained as a result of the measurements and observations in the field study and the opinions reached in the interviews with the healthcare personnel.

3.1. Field Study

The Ministry of Health determines pilot regions where the studies will be carried out and the results can be evaluated when starting new applications. The characteristics of the studies developed in the selection of pilot regions are taken into account. Many studies were carried out in the pilot region selection in Denizli. Family Medicine Pilot Practice (Regulation On Family Medicine Pilot Practice, 2005), O-EMRAM 6. Level Model Digital Hospital (Url-2,2019) and E-prescription (color Prescription System (Url-3, 2019) are some of the studies in which Denizli is the pilot region. The most important factor in selecting Denizli as the research universe within the scope of the study is that it is chosen as the pilot region for most of the applications in the field of health. Within the scope of the study, the sample was restricted to one district in order to examine the emergency unit examination rooms of the inpatient medical facilities in the whole research universe. During the selection phase of the district, it was determined that the number of inpatient health facilities was greater in Merkeziefendi district. In this way, the research universe defined as the city of Denizli and the sample was the district of Merkeziefendi.

The sample consists of six private and public hospitals' emergency units. During the foreground study, it was determined that some emergency units were converted from the health center and it was determined that the intended efficiency could not be achieved in some institutions. In some institutions, the permission requests applied for the study were rejected. For this reason, emergency unit examination rooms were examined within the scope of one public and two private hospitals In order to carry out the study, the names of the related inpatient health facilities are not revealed due to the business protocol signed within the scope of the scientific research permit obtained from Denizli Provincial Health Directorate. These hospitals are referred to as A, B and C hospitals. The introduction of the related inpatient health facilities is given in Table 4.

Table 4. Plan schemes of the hospitals examined within the scope of the study

Hospital A Plan Scheme	Hospital B Plan Scheme	Hospital C Plan Scheme
		
Type: Public Hospital Year of Built: 2005	Type: Private Hospital Year of Built: 2014	Type: Private Hospital Year of Built: 2013
Emergency Unit Plan Scheme	Emergency Unit Plan Scheme	Emergency Unit Plan Scheme
		

In the emergency departments of A, B and C hospitals, common places within the scope of medical units are trauma-resuscitation areas in the red area, the small intervention room, the observation room in the general area, the dressing-injection room. The common space in the three hospitals, located in the green and yellow areas, is the examination rooms. During the study, interviews conducted with emergency service personnel in charge of the medical unit; three nurses from hospital A; three nurses, two emergency medical technicians, two paramedics from hospital B; a doctor, an emergency service charge nurse, emergency medical technician, and three nurses from the hospital C participated. In total, the opinions of seventeen health personnel were collected.

4. RESULTS AND DISCUSSION

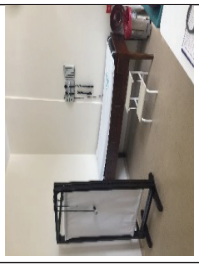
4.1. A, B, C Hospitals Emergency Unit Examination Rooms Findings and Evaluation

Within the scope of field study in the emergency room of A, B and C hospitals, firstly the surface materials and spatial dimensions were determined. The data obtained are presented in Table 5.

Table 5. Emergency unit examination room surface materials and spatial dimensions

Hospital A	Surface Materials		Spatial Dimensions	
	Floor:	Epoxy	Height (m):	2,7
	Ceiling:	Silicone-based matte paint (White)	Area (m^2):	7,5
	Walls:	Silicone-based matte paint (White)	Volume (m^3):	21,75

Hospital B	Surface Materials		Spatial Dimensions	
	Floor:	Epoxy	Height (m):	2,6
	Ceiling:	Silicone-based paint (White)	Area (m^2):	23
	Walls:	Silicone-based paint (Brown-White)	Volume (m^3):	59,8

Hospital C	Surface Materials		Spatial Dimensions	
	Floor:	Epoxy	Height (m):	3
	Ceiling:	Silicone-based paint (White)	Area (m^2):	13,12
	Walls:	Silicone-based paint (White)	Volume (m^3):	39,37

In all three examination rooms, epoxy as the floor surface material coating and silicon-based white paint as the ceiling surface material were used. Silicone-based white paint was also selected as the wall surface material in the emergency room examination rooms of A and C hospitals. Silicon-based brown paint was used up to eye level on the wall surface of the emergency unit examination room of B Hospital and silicon-based white paint was used on the remaining areas. Hospital A has a ventilation

system in the emergency unit examination room and the height of the space is 2.7 meters. Therefore, it is the room with the least area and volume values. A ventilation system was used in the emergency unit examination room of Hospital B and that is the reason why the height is 2.6 meters. Hospital C emergency unit examination room has no ventilation system, height is 3 meters. A single patient examination area is available.

In the examination rooms, luminance levels were measured in three time periods. Since the aim of the study is to reach a criteria about the design of artificial lighting, only the measurements performed during the time period in which artificial lighting is used are essential. However, in the observations made, it was determined that artificial lighting was used completely or partially during the day. Luminance level measurement results of A, B and C hospitals emergency unit examination rooms are presented in Table 6.

Table 6. Plan schemes of the hospitals examined within the scope of the study

Morning 08.00	Task Area 1	Task Area 2	General Lighting Level
Hospital A Examination Room	330	-	522
Hospital B Examination Room	130	200	400
Hospital C Examination Room	280	310	380
Midday 12.00	Task Area 1	Task Area 2	General Lighting Level
Hospital A Examination Room	330	-	522
Hospital B Examination Room	130	200	400
Hospital C Examination Room	262	300	360
Evening 20.00	Task Area 1	Task Area 2	General Lighting Level
Hospital A Examination Room	330	-	522
Hospital B Examination Room	130	200	400
Hospital C Examination Room	225	100	300

The data belonging to the task areas column were measured according to the doctor's table in each examination room. The data in the general lighting level column; was obtained by measuring 150 centimeters above ground, from the midpoint of each examination room. Since there was only one patient area in the emergency room of hospital A, the data in the Task Area 1 column was measured on the stretcher in the examination area. For the B hospital examination room, measurements made on the stretcher are given under the Task Area 1 column and the measurements made from the doctor's table are given under the Task Area 2 column. The data obtained for the doctor's desk in front of the computer work area was measured 30 centimeters above the front of the computer and over the desk.

In the measurements made, the overall luminance level is always higher in the emergency room of hospital A than in other examination

rooms. This measurement value is higher than the 500 lux value specified in the standards. In addition, A hospital examination room is higher in the measurements on the stretcher given in the task Area-1 column. However, it is below 1000 lux value that should be during the examination. In the Task Area 2 column, which is defined by the doctor's workplace, the values given for the B and C hospitals emergency room, are appropriate values for actions such as working in front of the computer and taking notes. In general terms, of the three emergency unit examination rooms addressed, only the overall level of lighting at hospital A gives the expected value, while none provides the expected value in the treatment area.

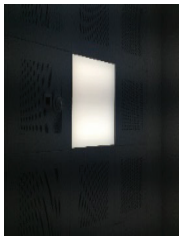
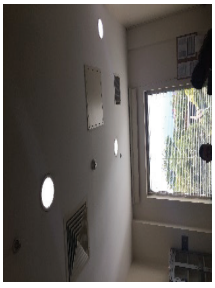
The data obtained from the measurements made in the emergency units of A and B hospitals shows a constant value. The reason for this is the constant use of artificial lighting in these examination rooms. To determine the frequency and importance of the use of artificial lighting in the examination rooms, the types of lighting used during the measurements were performed. The results are included in Table 7.

Table 7. Type of lighting used ın emergency unit examination rooms.

Type of Lighting Used During the Measurements			
Times:	08.00	12.00	20.00
Hospital A Examination Room	Artificial	Artificial	Artificial
Hospital B Examination Room	Artificial	Artificial	Artificial
Hospital C Examination Room	Natural-Artificial	Natural-Artificial	Artificial

Artificial lighting is constantly used in emergency unit examination rooms of A and B hospitals. Natural lighting is not available in these rooms in any way. Natural lighting is available only in the emergency unit examination room of Hospital C. However, this room is also continuously exposed to artificial lighting, including time zones that room benefits from natural lighting. They also make use of artificial lighting as a complementary system to natural lighting. In these examination rooms where artificial lighting is used effectively, the lighting device, lighting system, and method have been determined. The data obtained are shown in Table 8.

Table 8. Type of lighting device, lighting system, and methods used in examination rooms

Hospital	Lighting Device İmage	Lighting Device Properties	Lighting System And Methods
Hospital A Examination Room		Mounted LED Panel White Sterile Environment Luminaire	Manual Control System On-Off Method
Hospital B Examination Room		Mounted LED Panel White Sterile Ambient Luminaire Round LED Panel Surface Mounted White Sterile Environment Luminaire	On-Off Method Manual Control System
Hospital C Examination Room		Round Mounted LED Panel White Flat Mounted Spot Mounted Quad-LED Panel White Sterile Environment Luminaire	Manual Control System On-Off Method

LED panel lighting devices are used in all three emergency room examination rooms. Manual control system is preferred and on-off method is used in all units.

4.2. Findings and Evaluation of Interviews With Medical Personnel

Ten questions were asked to medical staff during the interview. The first of these questions is the title, the second is how much time they spent in the emergency unit during the day, the third is in which place they spent the most time, and the fourth is the type of lighting used in the places where they spent time. The interviews conducted with medical staff are 3 nurses from the Hospital A emergency unit, 3 nurses, 2 emergency medical technicians, 2 paramedics from the Hospital B emergency unit, 1 doctor, 3 nurses, 1 emergency unit nurse, and 1 emergency medical technician

from the Hospital C emergency unit. A total of 16 healthcare personnel participated in the interview. It has been observed that the personnel spend at least 8 hours a day in the emergency unit. This period can be up to 24 hours on the days when they are on duty. The places where healthcare personnel spend most of their time during the day have been determined as; the examination room being the first place, the observation room, and the intervention area. In particular, the doctor and other healthcare personnel who are in charge of helping the doctor spend their whole time in the examination room. The type of lighting that was used during their stay in the emergency unit was identified as artificial lighting. Without exception, all of them have said that they benefit from artificial lighting and that even if there is natural lighting, the use of artificial lighting continues.

During the day and night studies, the effects of the difference between artificial lighting-natural lighting on the work performance were asked. The general opinion here is that the difference in lighting type is not reflected in the performance. However, they have personally expressed problems with their continuous use of artificial lighting. The usage of artificial lighting for long periods of time caused tiredness, light migraine caused by white light, feeling too much brightness during non-busy time periods, and sleepiness problems for some personnel.

To the question of whether the artificial lighting design causes a spatial problem, the paramedic and the nurse stated that they feel tired when the light is too little or too much at night shift, and one nurse said that she has headaches some nights because the light is too much. Although a spatial difficulty was asked in the question, the personnel who complained often expressed the problems that the light caused them. Other staff stated that they did not experience any spatial difficulties. A question was asked to determine the additional illumination they used during their work. They stated that they should use an overhead light in cases requiring surgical intervention such as suturing, dressing, bronchial insertion. In the question asked to determine the effect of the intensity of the light used in artificial lighting on the personnel, they again mentioned the effects of light on themselves. The situation usually stated for this question is that over-perception of light in non-busy time periods has a negative effect. The participant who was in charge of the emergency unit made general statements on this subject. He noted that having more or less light affects personnel negatively if they have a condition such as migraines and eye problems. He added that this negative situation was reflected in the work of the staff who had such problems.

In the interview, personnel also were asked about their satisfaction with artificial lighting designs. In general, they said they were satisfied with the design of artificial lighting. However, in the last question when asked

about whether they have an idea that they wanted to be applied to artificial lighting design, they answered it, although they were satisfied with it. The idea they wanted to be applied to artificial lighting was common. Nine participants said they wanted the light to be adjustable.

5. CONCLUSION

Measurements and personnel interviews in three emergency unit examination rooms within the scope of the field study ensured the standards in the design of artificial lighting. The results reached within the scope of material and size are as follows:

- First of all, emergency unit examination rooms were evaluated within the scope of size and material since the size of the space to be illuminated is important and the materials used in the space act as reflectors for lighting. The results reached after the analysis are given in Table 9.

Table 9. Materials and size - emergency unit examination rooms

Material		Size	
Floor	Epoxy	Height	2,7 - 3 meters
Walls	White Matte Paint (Silicone-based)	Area	7 meter square (For one patient)
Ceiling	White Matte Paint (Silicone-based)	Volume	18,9 - 21 cubic meter

In order to provide maximum visual comfort by taking the properties of light such as reflection and refraction into account, silicone-based white matt paint is used on the ceiling and wall surfaces of the analyzed emergency unit. On the floor surface, epoxy was used with both hygiene and visual comfort in mind. For this reason, it is concluded that in the examination rooms silicone-based white matte paint application on the ceiling and walls and epoxy usage on the flooring as the surface materials may be used. However, the results obtained in the selection of surface materials should be considered as suggestions. Since these materials can be changed by the designer considering the appropriate visual conditions. The conclusions reached regarding the dimensions are also in the form of suggestions. The important point to be considered about the dimensions is the observance of at least seven square meters for each patient area in the examination room. Apart from this, the specified volume range can be changed after the conditions are met by the designer.

- The results obtained within the scope of light levels are described as follows:

One of the standards to be considered to ensure favorable conditions is to provide brightness levels. CIE (2002) suggested that the brightness level for inspection areas should be 1000 lux. For these areas, SLL (2009) and CIBSE (2002) stated that the brightness level should be between 250 lux and 1000 lux. Türkiye Sağlık Yapıları Asgari Tasarım Standartları

2010 Yılı Kılavuzu, (2010) 75-meter candlelight level (approximately 807 lux) has been installed for this area. A comparison of the general Light level of the examination room in the standards with the general light levels of the examination areas of the examined hospitals is given in Table 10.

Table10. Emergency unit examination rooms luminance levels

Examination Rooms		A Hospital			B Hospital			C Hospital		
appropriate		08.00	12.00	20.00	08.00	12.00	20.00	08.00	12.00	20.00
not appropriate		522	522	522	400	400	400	380	360	300
CIE	1000	>	>	>	>	>	>	>	>	>
SLL-CIBSE	250-1000	<	<	<	<	<	<	<	<	<
Turkish Health Buildings Minimum Design Standards Handbook 2	807	>	>	>	>	>	>	>	>	>

Examination rooms were compared to four different standards. However, there is no linguistic unity between the standards. Therefore, while the brightness levels of workspaces meet some standards, they do not meet some standards. Therefore, a comparison was made between the units covered in the study. In making this comparison, receiving satisfaction notification about brightness level from users during interviews is an important reason.The luminance levels determined for the emergency unit examination rooms as a result of the literature review, field study and personnel interviews are given in Table 11.

Table11. Emergency unit examination rooms luminance levels

08.00	**12.00**	**20.00**
300-400 Lüx	300-400 Lüx	300-400 Lüx
Task Area 1	**Task Area 1**	**Task Area 1**
<800 Lüx	<800 Lüx	<800 Lüx
Task Area 2	**Task Area 2**	**Task Area 2**
100 Lüx	100 Lüx	100 Lüx

Task Area 1:It is defined as the area on the stretchers or beds where patients are examined and treated.
Task Area 2:It is defined as the area above the doctor's desk.

The luminance level determined for the examination room is determined between 300-400 lux. The range specified for patient examination and treatment areas in Task Area 1 is 800 lux and above. In order to achieve this level of luminance, it is necessary to keep an overhead light in the treatment area as additional lighting. The adequate luminance level determined for the doctor's desk in Task Area 2 can be provided with

the general lighting design or an additional lighting design can be used.

Type of Lighting Used: One of the results obtained from interviews with healthcare personnel is that when the luminance levels kept in constant value, this results in personnel feeling better and thus prevents the loss of workforce. For this reason, during the determining of lighting standards for the examination rooms, it is concluded that the same luminance levels must be provided in different time zones. In order to keep the same level of luminance constant in different time periods, it is appropriate to use artificial lighting continuously in the emergency unit examination rooms. Nevertheless, natural and artificial lighting can be used together in time periods when natural lighting is available and enough to provide appropriate luminance levels and does not cause any visual defects.

Type of Lighting Devices, Systems and Methods Used: Sterile environment luminaires can be preferred from the led panel luminaires that will be used in the emergency unit examination rooms. However, for each patient, there must be one overhead light in the treatment area. The manual system among the lighting control systems is qualified to meet emergency service needs. However, the preferred method within the manual system should be dimming as in line with interviews with personnel.

Some conclusions have been reached in the design of artificial lighting in the emergency examination rooms. These results are; material-size, light level, lighting type, lighting element and lighting control system-method. The conclusions reached on material-size and lighting type support the artificial lighting design and are included in the scope of the proposal. The conclusions reached in terms of light level, armature selection, lighting system-method are aimed at establishing the standards that should be used in the emergency room.This study, which is derived from the doctoral thesis entitled' Emergency Unit Lighting Design Guide", is thought to support research on related topics. It is a continuation of the studies carried out on the lighting of the places that are important in health buildings such as the examination room.

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Chapter 4

ECONOMIC VALUE OF URBAN GREEN AREAS AND RECREATION*

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INTRODUCTION

Cities are described as our natural, cultural and physical living space. At the same time, they are places where people are together with their instincts for collective life in the changing and developing time. In other words, it is a settlement that has a density above a certain population ratio, has an advanced environmental infrastructure, is supported by technological developments, contains social differences and welcomes them with tolerance, and has a permanent feature (Wirth, 1938). Activities performed by people for common use consist of social and compulsory basic needs, depending on their preference. These public and open green spaces in the city increase the quality of life of the city in developed countries (Gehl, 2001; Gül and Küçük, 2001).

Urban open green spaces are places to meet the different needs of people (Gül and Küçük, 2001). Open green spaces provide an environment that encourages people to nature. Besides, it also aims to create a place in terms of economic value. Following the amendment in the Regulation on Principles Regarding the Changes in the Development of Zoning Plans published in 1999, the amount of green area per person, which was 7 m^2, was changed to 10 m^2 (Aksoy, 2001). However, considering the distribution of urban open green areas today, unfortunately, it is at the desired level (Yurdakul, 2021). Public open spaces can be a symbol that can enable a variety of functions. These types of spaces support the fulfillment of various needs such as increasing people's quality of life, sense of commitment, social culture, emotional and physical health, and socialization of people. For this, they are the most important parts of the city (Alpak, 2018).

Despite the determined standards and practices, cities cannot function as a basic function (More et al., 1982). With the effect of urbanization, the pressures in the city have reduced the functions of the existing green areas. And cities have been exposed to construction over time. (Özdemir, 2013). As a result of the Zoning Law No. 3194, urban open green areas are defined as active and other (passive) green areas, divided into two groups. Active green spaces; They are designed areas in the city where individuals interact directly. The passive green areas; It is defined as areas where individuals interact directly or indirectly but do not have active green areas (Koç, 2019).

Especially in recent years, with the problems brought by rapid urbanization and built environments, people need open green spaces in the city's immediate surroundings. As a result of increasing demand for natural resources and misuse of resources, people cannot use urban areas. People aim to spend their rest and leisure time effectively. Recreation concept; It started to increase as a result of the increase in population and changing

user needs. For this reason, the importance and value of urban open green areas in the vicinity of the city has increased.

Recreational areas, along with industrialization, damage the nature-city usage relationship. Alternatives are developed in line with rational planning and management studies in order to provide open green areas used for recreation. Urban open green spaces provide an environment that encourages people to nature. besides, it actually aims to create space in terms of economic value (Kemp et al., 2003).

In line with all these reasons, the effects of urban open green spaces on individuals should be well analyzed. It should be designed in a holistic manner with its environment in line with the demands and needs. It should allow it to meet the needs of social individuals of all kinds, without interrupting the flow of energy, species and food that continues in nature. In this way, the continuity of the natural landscape in the urban landscape will be ensured (Ahern, 1991).

In the last 30 years, methods have been developed to determine the economic monetary value of especially socio-cultural areas and open green areas with recreational functions (Ortaçeşme et al., 1997; Eraslan, 2008). Although forests and protected areas have a measurable economic return, urban open green spaces do not have such a method. It is very difficult to put forward a return of parks in this sense. The spaces that individuals choose for themselves are actually areas that increase the value of the space economically (Yurdakul, 2021).

ECONOMIC BENEFIT OF URBAN GREEN SPACES

The concept of open space is suitable for recreational activities for individuals that do not have any architectural structure and element (Gül and Küçük, 2001).

Open green areas have many positive aspects such as improving the bad living conditions brought along by rapid urbanization, and their positive physical and psychological effects on individuals (Emür, 2007). There are definitions and groupings made on open and green areas. Although the definitions differ according to their meaning and functions, they are generally accepted as areas that include areas such as squares, roads and medians, city and neighborhood parks, botanical and zoo gardens, and sports areas (Özyavuz and Karakaya, 2016).

Open green areas allow usage depending on their qualities, ensure sustainability of natural spaces within the urban space and increase the quality of life. With correct planning, it not only adds a spatial integrity to the city, but also ensures continuity in time (Kurtaslan and Yazgan, 2005). These areas do not only provide social, physical and psychological benefits

to individuals. At the same time, it provides the protection of the natural element diversity of the area that is used and add value to the surrounding buildings (Öztürk and Yazgan, 2004).

There are many studies showing that urban open green spaces affect prices especially in terms of residential property value. Luttik (2000) stated that environmental impacts due to natural resources, especially the existence of forests and lakes, increased the environmental housing prices by 8-10% (Maca, 2002). It has been observed that the material value of houses closes to open green areas in a neighborhood in the city in Colorado is 32% higher than other houses (Sherer, 2003). For example, built houses around Hyde Park, Greenwich Park and Central Park are of greater value. This situation reveals that the housing value around the open green areas is high (Yurdakul, 2021).

The benefits provided by recreation are the personal benefits that individuals obtain directly. The situation that benefits society and that different social groups obtain is called social benefits (Cordel et al., 1983; Toksoy and Bayramoglu, 2020). While considering the benefit of recreation, the physical, biological, social and administrative characteristics of the area should be taken into account. Because when any of these features change, the recreational action offered to individuals also changes. The level of willingness to pay to take advantage of this situation also varies (Dwyer, 1983).

THE IMPORTANCE OF THE CONCEPT OF RECREATION IN URBAN OPEN GREEN AREAS

People have needed urban open green spaces for their social activities for many years.

There have been changes in the preferences of people who aim to spend their leisure time more effectively. As a result, the diversity of activities depending on the needs has increased even more. The recreational importance of urban open green spaces has gained considerable value in recent years. However, the value of these areas is not at the expected level today. Cities have begun to lose their value as a result of the decrease in the amount of urban open green areas due to urbanization and population increase. For this purpose, studies on the estimation and determination of the economic value of urban open green spaces are at the forefront.

It contributes to socialization, provides social healing, unity and solidarity.

In terms of psychology; The success of the individual and the appreciation accordingly provide self-confidence. The fact that people organize activities together helps them to get away from the thought of

being alone (Tütüncü, 2008). The actions that people take of their own accord and outside the daily time frame are called recreation (Beatty et al., 1994). Open green areas allow individuals to socialize by constantly coming together and interacting during the day. Recreational activities performed as a result of possibilities offer physical, social and psychological benefits on individuals (Sevil et al, 2012). (Figure 1) Since it contributes to socialization and provides social healing, unity and solidarity.

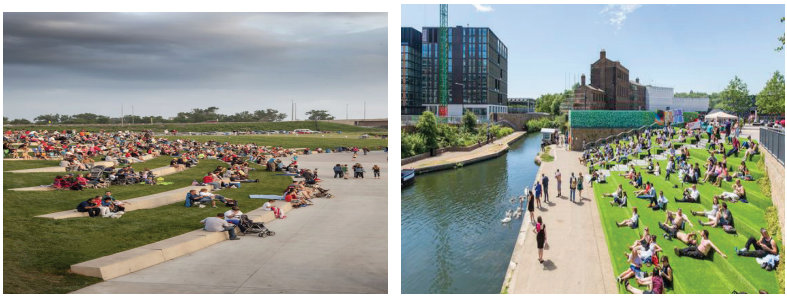

Figure 1. Recreation in open green areas (URL, 1; URL, 2).

In terms of psychology; Achieving success and appreciation of the individual in activities allows for self-confidence. Recreation causes individuals to be free, to feel free, to discover themselves, to define themselves and to express their personality. The individual becomes more integrated with the activities in urban areas and their environment and produces better analysis of their self, environment and nature (Yurdakul, 2021). It enables people to relax, discharge, renew and revitalize through cultural and artistic activities. The fact that it hosts various activities ensures that individuals can easily access green areas whenever they wish. It increases social development by reducing the crime rate in the city (Önder and Polat, 2012).

THE CONCEPT OF VALUE AND ECONOMIC VALUE OF URBAN PUBLIC SPACES

The most important basic material in social quality is economic growth (Özçağ and Hotunoğlu, 2015). Economy is the most important element that enables a person to continue his existence in the environment in which he or she forms the society. Another important factor is that reentrant elements have an economic function and value (Altunkasa, 2009).

Environments with living and non-living elements are always important and needed spaces for individuals. These spaces can meet the specific needs of individuals. Therefore, it is accepted as a good or service (Ulucak and Erdem, 2012). Accepting urban open green areas as free goods and making use of them without paying a cost causes severe destruction of these areas over time. Urban open green areas, which have been concreted

over time and decreased considerably, are productive places in the city economy. For this reason, it is deemed necessary to have a determined price value (Alkan and Uslu, 2016). The economic value of urban open green spaces has been the subject of many studies. methods for how to measure these areas economically have been developed and processed.

DIRECT AND INDIRECT MEASUREMENT METHODS

Direct and indirect methods are two main types of methods used in the evaluation of goods without market value. Indirect methods are examined under three main headings (Travel-Cost Method, Hedonic Price Method, Household Production Function Approach). Direct methods are examined under two main headings (Conditional Valuation Method and Experimental Approach).

CONTINGENT VALUATION METHOD

Contingent Valuation Method (CVM) is a kind of survey method used in determining the economic value of public goods and / or common resources (Yılmaz & Koç, 2018). Contingent Valuation Method is the only method used to measure the value of ecosystems only because of their existence, which is called "passive use value" (Carson, 2000). This method first emerged in 1964 when Davis used it in his studies. Davis developed this method as calculating the activities of forest resources and the value of goods and / or services provided where there is no market. Over time, Contingent Valuation Method has defined the benefits that an area within the city has brought to the city and its environment.

The method was developed to determine these values (Alkay and Ocakçı, 2003). It is about asking people Willingness to Pay-WTP-PAY or Willingness to Accept-WTA-KAE (Holvad, 2006). Willingness to pay is one of the indicators of economic value. Contingent Valuation Method is also called "passive use value". It is the only method used to measure the value ecosystems have only because of their existence (Carson, 2000).

HEDONIC PRICING METHOD

People do not only consider the property and structural features of the real estate when purchasing a residence. In addition, they take into account location characteristics such as proximity to environmental activities, exposure from environmental activities, the noise level of the residents and the quality level of the air (Hanley et al, 2007; Shogren, 2013). Hedonic price method is an analysis method that indirectly measures the willingness of people to pay for changing environmental quality (increase or decrease in air pollution) (Kula, 1994).

Hedonic pricing method (HPM) is a method first created by A. Court

(1939) to determine the price of cars (Kaya, 2012). The method includes features associated with urban open green spaces. For example, criteria such as distance, amount of trees and number of old trees, size and distance of green areas (Kaya and Özyürek, 2015).

Parks in urban areas have such effects. for example, housing prices around Central Park and Hyde Park are higher than in other urban areas. (Figure 2).

Figure 2. Urban parks of economic value; Central Park, Hyde Park (URL, 3; URL, 4).

Evaluates the effects of changes on prices of environmental products or conditions with various characteristics. It aims to quantify the factors by which these environmental conditions change the price (Gündoğmuş and Kalfa, 2016). The method is basically carried out in four stages. These stages are; Identifying problems, creating information / data, determining the function, and calculating the economic value (Kaya and Özyürek, 2015). Problems seen in hedonic pricing method can be shown as follows; limited and high cost of data collection operations, existence of variables that may be neglected, selection of the determined model and its inadequacy (Alkay and Ocakçı, 2003).

TRAVEL COST METHOD

Expenditures made on goods considered as complementary to environmental goods can be used in the valuation of environmental goods. For example, travel is a complement to recreational activity to be carried out in an area. Because it is necessary to travel to that area for this activity to take place. Thus, the value of an environmental resource can be estimated by spending on travel (Bann, 1998). Travel Cost Method (TCM) is widely used to determine the use value of natural areas that are mostly used for recreational activities (Tisdell, 1991). It's essentially a survey technique. In the method, users are asked to indicate their demographic and behavioral

characteristics, and the time and costs they bear for the visit.

From this data, the cost of the visit can be calculated and correlated with the frequency of the visit. In this way, a demand curve can be formed. This demand curve is used to determine the recreational value of the area. In more detailed studies, separate demand functions can be developed for different features of the field (Bateman, 1993).

Travel-cost method (TCM) can be used for four different purposes. The first of these is to measure the benefits of recreation areas in economic terms. The second is that a new recreation area has economic efficiency against its cost. The third is to determine the level of benefit created by a change in the qualities of recreation areas. Accordingly, the measurement of the economic value is the comparison of the economic values of the areas with recreational services belonging to different environmental quality qualities (Freeman, 1993).

According to Rosenthal (1984), Travel-cost method can be used for five different purposes (Kaya, 2002);

- Determining the economic value of existing areas based on recreational activities,
- Creation of a new recreation area. Determining the economic value of recreation opportunities that make up the differentiation of existing recreation areas,
- Making separation decisions between forest resources studies,
- Pre-consideration of the travel attitudes of visitors using the recreation area,
- Determining the relationship between the use of recreation area and area usage fees.

Ortaçeşme et al. (1997) conducted studies to determine the economic value of the benefits of recreational activities. It has been deemed appropriate that the travel cost method can be used based on the decisions to be taken on this issue. Kaya (2002) stated that the most important condition for the applicability of the method is that the users who come to the designated natural area should be deemed appropriate both the distance from this area and the areas that offer sufficient variety of recreational activities on and around the area to be visited. Alkay and Ocakçı (2003) stated that urban open green areas are a type of method based on assumptions such as conditional valuation method. They argued that using the hedonic price and or travel cost method created by obtaining data from the observation results would bring a more rational solution. Yılmaz and Koç (2018) stated in their studies that the economic contribution of the region can be

increased by making reorganizations in line with the information provided by the users.

The selection components that make the urban open green spaces maximum benefit level of people constitute the balance point for the individual. To be able to use these utility-based methods, they must be based on environmental characteristics that affect the variables to be measured. Utility-based measurement methods are closely linked to the concepts of economic efficiency and efficient use of resources with minimum cost (Alkay and Ocakçı, 2003).

Hedonic pricing method and Contingent Valuation Method allow the economic values of recreational areas to be determined in terms of use and non-use economic values, while Travel Cost Method allows to be determined only on the axis of use value. Hedonic pricing method and Contingent Valuation Method examine both positive and negative qualitative- quantitative changes in the economic values of recreation areas. Travel Cost Method allows it to be measured only on the axis of positive changes.

CONCLUSION

Urban open green areas are areas that ensure the continuity of natural spaces in the city and directly affect the standards of life quality and welfare. They are places that contribute to the social and spiritual development of individuals for recreation. The success of open green areas in the city is possible with the correct definition of the natural and topographic structure of the city. Urban open green spaces provide benefits to the city and individuals in terms of physical space and social environment. Today, the economic benefits of these areas are inevitable in terms of the benefits they provide. However, despite the benefits they provide, urban open green areas are not defined in terms of sustainability laws and regulations.

The benefits of urban open green spaces are evaluated in terms of visual and aesthetic values. Active use benefits such as recreation have a higher economic return. In addition, benefits, which are also described as direct and indirect use benefits, reflect economic value. There are measurement methods to determine the value of these benefits.

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Chapter 5

THE DESIGN THEORIES AND PRINCIPLES OF HEALING GARDENS

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1. INTRODUCTION

Nowadays, it is an important requirement for people to benefit from nature and open green spaces, which are a part of nature. Preventing distraction, reducing negative emotions, stress and anxiety, improving cognitive function are among the benefits that nature offers to humans (Ulrich, 1981; Kaplan et al., 1998). Open green spaces, which are the physical structure of the city, are an important resource for both urban and human health. Urban open green spaces create a healthier, balanced, relaxing and regenerative environment due to its abundant sun and fresh air (Smardon, 1990). Turf and other landscape plants in urban open green spaces contribute to reductions in noise levels by absorbing or deflecting sounds. They also reduce glare and light reflection. Therefore, well-maintained turf and other plant materials create an inviting view for people (Demiroğlu Topçu and Özkan, 2016).

Urban open green spaces provide to maintain and strengthen people's well-being, while healing gardens aim to improve health in the sick situation. These areas are created in order to keep patients away from psychological depression and excessive fatigue, and to improve their health (Stigsdotter, 2005).

The term healing means eliminating a person's disability that prevents them from doing business, improving their health, improving their mental state, or accepting new conditions and improving themselves, and it defines a beneficial process, often called the state of feeling completely well (Akın, 2006; TLA, 2021).

Healing gardens are gardens that establish a passive or active connection with nature, create positive effects on recovery by getting rid of diseases, support the treatment of patients, and are designed to make people feel psychologically and physiologically healthy (Minter, 1995; Larson and Kreitzer, 2004; Sachs, 2016). Healing gardens aim to reduce the negative effects of stress, which can cause new diseases in healthy individuals and worsen the health status of individuals with any disease (Minter, 1995).

Healing gardens;

• Encouraging to stay away from stressful environments so that the body is in a more balanced state,

• Helping a patient find their own inner healing resources,

• Providing psychological and physiological regeneration,

• Providing an environment where patients can be treated with physical movements,

• Motivating staff and patients and providing the necessary rest,

• It has many positive features such as providing a comfortable environment for patient-visitor interaction (Elings, 2006; Sakıcı and Var, 2014).

The garden environment contributes to the healing process in 3 different ways. The first is the awareness and management of the physical symptoms of the disease and the relief of these symptoms. Secondly, individuals who are physically and emotionally worn out in the medical environment relax and get away from their stress. The third is the increase in the sense of well-being and activity of individuals with chronic diseases (Marcus and Barnes, 1995).

A large garden or a small garden that can be seen from a window can also have a healing effect (Sachs, 2016). In order for a garden to have a healing effect, it must have natural landscape elements such as plants and/or water features (Marcus and Barnes, 1999). Natural landscape elements make a positive contribution to biological, physical and psychological health problems by appealing to the five sense organs of people (sight, taste, hearing, touch, smell). It should be able to activate the senses, enhance the immune response, and promote the relief of physical and emotional illnesses (Stark, 2004).

Healing gardens that help individuals to be healthy also include various activities. Therapeutic, educational and developmental activities are very beneficial for individuals of all ages and conditions (Vapaa, 2002; Uslu and Shakouri, 2012). The activities of healing gardens can be passive such as watching, sitting, resting, and active such as walking and exercising (Marcus and Barnes, 1999).

There are two types of healing gardens. The first is the healing gardens in the hospital setting. The second is private healing gardens. More people from different user groups such as staff, patients and visitors use the healing gardens in the hospital environment and these users are constantly changing. Private healing gardens, on the other hand, are the gardens where the user has his own area and can be the most effective for improvement (Vapaa, 2002). However, healing gardens are usually designed in the gardens of care institutions such as nursing homes, rehabilitation centers and hospitals that aim to reduce stress and improve health status (Elings, 2006). Hospitals that deal with disorders such as Alzheimer's, schizophrenia, and learning disabilities, or hospitals that have different target groups with subclassifications as disabled, elderly and children should be designed differently (Kavanagh, 1995; Elings, 2006). Studies have shown that gardens designed in accordance with the wishes and needs of the patients have a positive effect on the recovery rate (Elings, 2006).

2. GENERAL HISTORY OF HEALING GARDENS

Since the past, the role and function of gardens in various cultures has varied. At the beginning of the Middle Ages, monastery courtyards were the first hospitals to provide healing with medicinal plants (Warner, 1995). At the end of the Middle Ages, it became a healing garden where drugs were produced and psychological and physical ailments were treated (Marcus and Barnes, 1999).

For over a millennium, gardens and herbs have been used in Asian and western cultures to ward off disease. Japanese gardens are the first healing gardens in eastern culture. In the 1800s, gardens were used in European and American hospitals to reduce stress and provide peace of mind (Ulrich, 2002). While hospitals were built in the 19th century, they were designed by leaving open areas where patients could get sunlight and walkways (Serez, 2011).

In the 1950s, After the World War II, the demand for rehabilitation increased and the form of medical rehabilitation came to the fore. In those days, natural elements were used as therapy purposes in rehabilitation centers (Söderström, 2000). In the 1960s, the idea of using hospital gardens for therapeutic purposes was born by defining the design of a healing garden covering different age and patient groups, especially children, patients and the elderly (Ulrich, 2002; Uslu and Shakouri, 2012). In the 1980s, herbal therapy became widespread in medical science and the use of the garden for treatment was seen at this time (Ulrich, 1984). Factors such as the increasing interest in alternative and integrative treatment, hospitals are functional and patient-centered, the effect of environmental factors on the patient's health status, and their psychological support have increased the importance of healing gardens (Uslu and Shakouri, 2012). By providing patient-centered care with healing gardens, basic needs such as clean air and sunlight are met and purposeful designs are realized by using natural-close to nature landscape elements.

The positive effects of the natural and landscaped environment on human health are known. Therefore, today's healing gardens are very effective in the treatment of stress-related diseases caused by the harsh living conditions and environmental problems that people live in (Whitehouse et al., 2001).

3. TARGET GROUPS OF HEALING GARDENS

3.1. Healing gardens for mentally ill patients

Mental disorders that cause changes in thought and behavioral structure cause inadequacies in individuals' cognitive functions, physical health, social relations, living and working conditions (Kılıç et al., 2020). Recovery in individuals with mental disorders is supported by

the improvement of their social and environmental conditions as well as medically. At this point, spending time in the healing gardens increases the positive stimuli around them.

When designing spaces for patients with mental disorders, there is a need for open spaces where they can stay alone or socialize in a crowded environment (Figure 1-2). Spaces that will not confuse them with physical density and that will not create a feeling of being lost are required. There are many different types of mental disorders and the needs of each disorder are different. However, there should be areas where they can do active, passive and mixed activities for each individual. For example, areas which they can feel safe and have privacy for overly skeptical patients; natural spaces to help distract and create a sense of belonging for patients with delusions; Interesting areas should be created for patients with a loss of motivation where they can improve their skills (Tyson, 1998; Sakıcı and Var, 2014).

Figure 1-2. Healing gardens for mentally ill patients (Anonymous, 2021a-b)

In the selection of plants and spatial objects to be used, choices that are not too big and that will not obscure the view of the caregivers should be made. Calming and pastel colors should be used in the garden, and colors that will increase negative emotions such as irritability should not be preferred (Tyson, 1998; Sakıcı and Var, 2014).

3.2. Healing gardens for children

Spending time in nature has many positive effects on the development and psychology of children. Contact with nature helps children recognize emotions, develop their personalities and perceptions. The child's self-confidence and esteem increase (Kellert and Derr, 1998).

Many studies on the gardens in children's hospitals for the last 20 years has revealed that such gardens must have specially designed items to attract children and have a healing effect (Moore, 1999; Marcus and Sachs, 2013). As the child gets younger, active and exploratory games attract his attention (Whitehouse et al., 2001). Children want greener environments where they can communicate socially with each other and spend more time in these environments (Whitehouse et al., 2001; Pasha, 2013).

In the healing gardens designed for children, first of all, safety should be ensured and an environment where children will be comfortable should be created. Since children's interests and attention can be easily distracted, different functions should be kept together and various activities should be provided (Figure 3-4). Gardens, which they will discover nature and spend time with plants and animals, are very important in the recovery of children. In order for children to benefit from the healing effect of sunlight, sunny and semi-shaded spaces should be created and these spaces should be supported with plant elements.

Figure 3-4. Healing gardens for children (Anonymous, 2021c-d)

The active or passive participation of children with mental or physical disabilities in games affects their psychology positively. It ensures that the children receiving treatment are more sharing, calmer and more effective in their communication with the healthcare professionals (Said, 2003).

3.3. Healing gardens for elderly

Psychological and physiological needs of older people differ with age. Thinking that they are approaching the end of life and increasing health problems reduce their joy of living. For this reason, they need areas where they can be with the community, socialize and participate in life in the healing gardens. Gardens are one of the features that are expected to provide them with confidence, peace and tranquility. While designing, spaces that will not tire them and allow them to continue their lives more easily should be designed (Billings, 2004). Some older people like quiet, calm environments, while others like more active environments. This balance should be well maintained (Brawley, 2005).

Warm colors should be preferred to make it easier for older people to see and perceive. When choosing plant species; with its texture, form and smell, effective choices should be made that will stimulate their senses and memories (Figure 5-6). Selecting endemic plants and creating areas where they can grow these plants have positive effects on the health of the elderly. In addition, the use of durable, long-lived plant species creates a symbolic sense of longevity (Marcus and Sachs, 2013; Çetinkale Demirkan, 2019).

Figure 5-6. Healing gardens for elderly (Anonymous, 2021e-f)

Older people do not want to move much because of their reduced mobility. For this, it is important that the walking paths are designed in an interesting and encouraging way. Walking paths should be easily perceptible and have the necessary directions. It should be wide enough for wheelchair or walking stick users. Walkways should be made of non-slip, flat material and supported by handrails. Furniture elements should be ergonomic (Marcus and Sachs, 2013; Çetinkale Demirkan, 2019).

4. THE DESIGN THEORIES OF HEALING GARDENS

Healing gardens should be designed considering the physical, social needs and psychological conditions of the patients. Well-designed gardens; it has many different functions such as reducing stress and mental fatigue, making patients and health personnel feel better emotionally. In order to perform these functions correctly, researchers and designers working on the subject have developed different theories. These theories, which provide different healing effects; it will be presented with the approaches of Stress Reduction (Roger S. Ulrich), Reducing Mental Fatigue (Rachel Kaplan and Stephen Kaplan) and Emotional Healing (Clare Cooper Marcus and Marni Barnes).

4.1. Stress reduction

For a garden to be described as curative, it must have a positive impact on most of its users. These positive effects are considered as 'health outcomes' that measure the patient's condition or process. Stress negatively affects people psychologically, physiologically and behaviorally and significantly changes health outcomes. Psychological effects include emotions such as anger, fear, sadness, and anxiety. While changes such as heart rate, increased blood pressure and increased muscle tension are counted as negative physiological effects; withdrawal, avoidance, pacification, alcohol and tobacco use are among the negative behavioral effects (Ulrich, 1991a).

There is a close relationship between stress and the physical environment in which people live. A simple nature scene causes stressful

thoughts to change direction by increasing positive emotions and reducing negative emotions. Healing gardens are an important factor in stress relief, and there are four design resources that enable healing: Control, social support, physical movement and exercise, spontaneity, and positive distractions. (Ulrich, 1984).

Control

A person's ability to cope with stress is directly related to his ability to control his immediate environment. The sense of control is the individual's decision on what to do in a situation, and stress can be reduced by encouraging the individual's feelings of controlling his situation and his environment. Being able to control the environment; it is supported by options such as wayfinding, providing privacy, controlled personal access, different choices and diversity of space (Ulrich, 1999).

Gardens provide a temporary escape from stressful thoughts and this has a healing effect (Marcus and Barnes, 1995). The thought and action of escaping makes the person think that it is their own decision. Passive escape can be achieved by looking out the window or active escape while walking. Gardens that can be easily wandered and provide privacy or socialization when desired reduce stress and aid recovery.

Social support

Social support is defined as the perception of physical or financial assistance or emotional support from others. Social support significantly reduces the negative effects of stress. It provides protection of the person by buffering the stress responses when difficulties are experienced (Ulrich, 1999).

The spaces created in the healing gardens in hospitals allow patients to come together and chat, thus promoting social support. Social interaction of patients with each other, healthcare personnel and their families helps to reduce their stress levels. According to the results of medical research, the positive outcomes of heart patients and the increased life expectancy of cancer patients who receive higher social support prove the effects of social support on recovery (Spiegel et al., 1989).

Movement and exercise

Movement and exercise are important in terms of their psychological effects as well as physical health. The psychological effect of moving is manifested in reducing stress and raising morale. It is also important in reducing depression. In the healing gardens; access to the whole garden, easy wayfinding, circular or reaching paths, and a view that can be watched are among the design principles to be considered (Ulrich, 1999). Designing

places that arouse curiosity provides psychological healing by encouraging patients to physical activity (Severtsen, 2006). In addition, the design of playgrounds for children helps children's physical development.

Naturalness and positive distractions

Positive distractions lower blood pressure and stress hormones. In hospital settings, positive distractions include music, art, nature, and animals. All of these distractions stimulate the senses. Music, our sense of sound; animals, our senses of touch, sight, sound and smell; art stimulates our sense of sight and touch. But nature stimulates all our senses. Nature, as a natural distraction management, reduces stress by encouraging the regeneration of individuals (Ulrich, 1991b; Marcus and Barnes, 1999). The quality of the window views, which contributes positively to the healing process of the patients, especially their ability to see the nature, is one of the elements that should be considered in hospital design and settlement decisions. In addition, the presence of balconies in the patient rooms, the placement of pictures with nature views on the wall in the interior, the presence of plants suitable for the interior space provide positive health outcomes for patients (Ulrich, 1984).

The healing effect of nature is explained by four theories. The first theory explains learned behavior, as people learn to relax on vacation and in rural areas. The second theory argues that people's finding of nature comforting is conditioned by society, that is, cultural. The third theory is that healing is brought about by the stimulation of low-level complexity in nature. The last theory is that humans respond positively to physical variables such as slow flowing water and non-threatening wildlife with evolutionary change (Ulrich, 1993).

The use of plant elements in different colors, forms and textures in healing gardens helps to activate the senses and to derive different meanings from plants. For example, woody species represent strength and continuity, perennials represent resistance and regeneration, and annual ones represent the cycle of life (Marcus, 2007). The use of the water element, which is not very active, helps to explain that life continues.

4.2. Reducing Mental Fatigue

Kaplan and Kaplan (1989) emphasize that nature reduces the fatigue of the mind and helps to focus attention again. As a healing environment, nature plays a very powerful role with both mental and physical health benefits.

There are two factors, nature's design and management, that help people understand their environment. The first factor is explained as the environment transmitting information and the second factor is that

people need to understand and explore their own world. There are four knowledge dynamics to aid understanding and discovery: Coherence, confusion, legibility and mystery. Consistency, repetitions and unifying textures help to understand the environment and indicate the level of control and comfort one feels. Confusion keeps visual interest alive with more sensory stimulation. It increases comprehension by providing visual cues for legibility, movement and circulation. Mystery, on the other hand, creates a desire to explore and learn. Kaplan divides the criteria of healing environments into four for achieving a restorative experience and relieving mental fatigue. These are being away, extent, fascination and compatibility (Kaplan and Kaplan, 1989; Kaplan et al., 1998).

Being away

Being away has been defined as being involved in a different cognitive context than usual. Kaplan and Kaplan think that difference and separation are important in experience as well as physical distance (Kaplan and Kaplan, 1989). While physical distancing (active) is achieved by moving from the place you are to a different place, thinking and dreaming of other places by focusing out the window also provides mental distancing (passive) (Driver and Knopf, 1976; Kaplan and Kaplan, 1989; Ulrich, 1999). This mental distancing provides relief from the mental fatigue of daily life.

Extent

Extent is about a larger context. There is also an imagined world beyond the physical space in which one lives. The dimension encourages exploration and is similar to the withdrawal criterion in the effect of getting rid of mental fatigue (Kaplan et al., 1998). The environment created with natural elements; İt is different, intriguing and stimulating. In this respect, the environment allows the person to live in the world he perceives.

Fascination

Fascination keeps people busy and diverts their attention in a different direction. Elements such as plants, animals and water in nature attract the attention of individuals and help them relax. The leaves falling from the branches, the movement of light on the water surface, the life cycles noticed with the changes of the seasons, sunrise and sunset, wind gusts and the movement of the clouds are examples of things that fascinate people and change their moods (Kaplan and Kaplan, 1989).

Compatibility

Compatibility describes the special relationship and similarities between the tendencies of individuals and the natural environment. The roles of people in life are associated with the natural environment. These

roles can be exemplified as hunters (fishermen), observers of animals (bird watchers), survivors (firefighters) (Kaplan and Kaplan, 1989). Natural areas or areas created with natural elements allow individuals to experience these different roles.

4.3. Emotional Healing

According to Marcus and Barnes (1999), recovery is a process that improves well-being. Gardens provide benefits to individuals with their healing and restorative effects. The first of these benefits is a certain level of improvement in physical symptoms. Another benefit is helping to reduce stress for individuals who have had difficult experiences. And the last one increases the sense of hope that helps the social and physical development of the individual. The healing process can be achieved with one or a combination of these benefits.

Marcus and Barnes (1999) examined the emotional impact of healing gardens. They reported that people should be motivated to spend more time outdoors. For this reason, they determined the design criteria that the gardens should have as socialization, privacy, strolling, vigorous exercise, shade or sun, choice of sitting or exploring and the aesthetic of nature.

Socialization

Healing gardens should encourage people to socialize and spend time together. With socialization, people provide relief in their physical symptoms, forget their own illnesses during that time, and can raise their morale by not feeling alone (Marcus and Barnes, 1999). Socializing areas consist of benches that can sit in groups and focal points such as water elements or sculptures (Marcus and Barnes, 1999; Bowers, 2003).

Privacy

Special spaces to be designed in the garden allow the patient to introspect, think for himself and meditate. While private thoughts help to reduce stress, privacy spaces provide to get away from the stressful hospital environment. Reflection pools, ponds, wooded areas and sitting areas can be found in these areas that provide privacy in the gardens (Marcus and Barnes, 1999).

Strolling

The walking paths in the healing garden offer the opportunity to walk and stroll at a leisurely pace, creating a sense of discovery. Strolling provides stress reduction and a sense of well-being. Curvy roads and the focal point at the destination increase people’s desire to explore their surroundings. In addition, circular roads provide a sense of achievement while providing exploration (Marcus and Barnes, 1999).

Vigorous exercise

Vigorous exercises such as jogging or brisk walking encourage people to spend time in the garden. Such exercises reduce stress by making the person feel actively participating in their own health and provide an improvement in the general sense of well-being. For this, jogging paths are designed for jogging and brisk walking in the gardens (Marcus and Barnes, 1999; Bowers, 2003).

Shade or sun

Gardens should allow to spend time in both sun and shade, and the choice should be left to the preferences of the people. Being in a sun or shade environment provides relief from physical symptoms, even for a few minutes. While the trees in the garden will provide natural shade, the seating units located around a water element will also receive sufficient sun (Marcus and Barnes, 1999; Bowers, 2003).

Choice of sitting or exploring

The active or passive participation of the garden increases the opportunity for recovery. While exploring provides active participation, sitting and watching provide passive participation. Both these types of participation will provide relief from physical symptoms, reduce stress and increase well-being. Cyclic paths, focal points, destinations and changing landscapes encourage exploration. Seating options with different qualities for sitting and watching provide more efficient use of the garden (Marcus and Barnes, 1999).

Aesthetic of nature

Aesthetic of nature encourages people to go out in the garden. Nature; it activates all of our senses, including sight, hearing, taste, touch and smell, and strengthens our perceptions. For this reason, using natural elements in the garden offers the aesthetics of nature to people (Marcus and Barnes, 1999).

5. THE DESIGN PRINCIPLES OF HEALING GARDENS

5.1. Planting design criteria

The most important point to be considered in the planting design of healing gardens is that the plants appeal to all the senses of the users (Haas and McCartney, 1996). In order to stimulate these senses, attention should be paid to seasonal characteristics of plants such as early flowering, late coloration, and long-term flowering. Apart from these features, the smell of plants, having edible fruits, seeds, color changes, providing shade, the sound of leaves in the wind, creating a visual buffer, and the arrival of some animals such as birds are among the features noted (Marcus, 2001).

The realization of seasonal changes through plants connects garden users to life. Watching the blooming trees and bushes after winter gives a relaxing effect. Trees that provide shade and lower the temperature in summer create biological comfort. The leaves, which turn orange and yellow in autumn, enliven their users with their warm colors and give life energy. In winter, evergreen plants show that life continues compared to deciduous plants (Tyson, 1998).

Other important issues to consider in plant design are; it is the selection of local plant species that do not require much water, are durable, can adapt to different climatic conditions. Local plants are attractive to the animal species of that region. This helps to raise the morale of the users with animal sounds. In addition, equipment such as bathrooms, mangers and houses to be placed on trees and in suitable places allow more animals to come to the garden (Yücel, 2013). Some plants have medicinal value. The curative effects of these plants should be considered.

Color, texture, form characteristics of plants can be created with plant species that provide contrast or harmony in compositions (Figure 7-8). This situation attracts the attention of users, takes their focus away from themselves and makes them feel better (Marcus and Barnes, 1999).

Figure 7-8. Planting design in the healing garden (Anonymous, 2021g-h)

In addition to the intensive planting used in healing gardens, the use of large grass areas adds a different dimension to the area for patients. This provides visual relief and increases the legibility of the area (Kaplan et al., 1998). Wide grass areas serve as a square and provide opportunities for many different activities such as celebrations, group activities, collective events.

Hazardous plants such as thorny and poisonous plants should not be used in healing gardens used by children, the elderly and individuals with certain mental disorders. Also, low shrubs that obscure the rear view should not be planted densely (Shackell et al., 2012).

Raised plant beds should be preferred so that wheelchair users can use the garden more effectively. Especially for those who will use the garden for a long time, the opportunity to plant flowers, vegetables/fruits and deal with the soil should be provided. Users who see the growth and

development stages of the plants they grow think that their efforts are rewarded and they feel useful (McDowell, 1997).

5.2. Structural design criteria

In healing gardens, as in planting design, it is important for patients to feel comfortable and peaceful, to get rid of negative energy and to use the garden effectively in structural design.

Entrances

Entrances should welcome patients and other users when they arrive and make it easy for them to find their destination. The use of colorful and interesting plants or artwork at the main entrance will create a sense of space on the users and encourage them to enter (Shackell et al., 2012). Access to the main entrance should be planned in the easiest way. Input width should appeal to every user (Yücel, 2013).

Roads

The roads that create the circulation in the gardens, on the one hand, ensure that the patients dominate the garden, on the other hand, they support the spiritual recovery of the patients. (Marcus and Barnes, 1995; Kaplan et al., 1998; Sachs, 1999). In hospital gardens, pedestrian paths should be able to be used effectively by all users (disabled, elderly, sick, health personnel). For this reason, roads should not consist of right-angled corners and road slopes should not be too high. If the slope is too high, there should be a guardrail. The surfaces of the roads should not be uneven and slippery (Marcus and Barnes, 1995).

Children's gardens

Having separate areas where children can move freely reduces the tension and stress they feel due to their treatment (Nord et al., 2009). Having different types of playgrounds gives children freedom of choice and encourages them to act. In addition, creative playgrounds are beneficial for their cognitive development (Verderber et al., 2006). Children using wheelchairs should also be considered while designing children's playgrounds, and appropriate designs should be made where all children can spend time together (Leibrock, 2011).

Artworks

Artwork is an important element of the healing environment that reduces stress. Artwork, such as sculptures and paintings, should convey positive messages to its viewer. Complex and abstract works are not suitable for healing gardens. It can be seen as frightening or threatening to a person who is anxious. Works that reflect nature can be more suitable for every user (Marcus and Barnes, 1999).

Water

Hearing the sound of water flowing from a fountain, watching the fish in the pond or the sunlight reflecting on the water affects patients positively (Verderber et al., 2006). The sound of water creates a more peaceful environment as it will also block the noise coming from outside the garden. These sounds attract the attention of people of all ages and create a sensory focus (Yücel, 2013).

Furniture elements

Seating areas should have an attractive view, allow private or collective seating, and be ergonomic. The fact that some of the seating elements are movable will enable the user to choose according to his own wishes. Seating elements to be placed around the building are necessary for health personnel and users with limited walking ability (Marcus and Barnes, 1995; Main et all, 2010). Information signs; must be visible, audible and tactile, text and symbols must be legible and understandable. Signposts should be positioned in such a way that they do not obstruct the walking paths. Lighting elements should be in suitable numbers and provide sufficient light to ensure safety and security. Parking areas, entrance and pedestrian paths, isolated dark areas should be illuminated (Marcus and Barnes, 1995).

5. CONCLUSION

Healing gardens are physical spaces that help patients recover or maintain their well-being. In addition to the medical recovery of the patients, the reduction of stress levels and the positive contribution to their psychological state are among the most important benefits of healing gardens. They create healthier environments and people by influencing many different users such as patients, families of patients and healthcare workers. In addition, they also make hospitals safer and more efficient.

In order for the healing gardens to show the positive features, they should be designed specifically for each patient group and by paying attention to the design criteria. These gardens, which are beneficial to the physical, mental and social health of the patients, should encourage social communication, contain natural landscape elements, allow single or multiple use, and include many active or passive activities. In order for people to experience all these physical and psychological positive effects, design and application research needs to be developed and continued.

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