RESEARCH & REVIEWS IN ARCHITECTURE, PLANNING AND DESIGN

DECEMBER, 2021

EDITOR

ASSOC. PROF. DR. SERTAÇ GÜNGÖR

gece kitaplığı

İmtiyaz Sahibi / Publisher • Yaşar Hız

Genel Yayın Yönetmeni / Editor in Chief • Eda Altunel

Editör Editor • Assoc. Prof. Dr. Sertaç GÜNGÖR

Kapak & İç Tasarım / Cover & Interior Design • Gece Kitaplığı

Birinci Basım / First Edition • © Aralık 2021

ISBN • 978-625-8075-16-8

© copyright
Bu kitabın yayın hakkı Gece Kitaplığı'na aittir.
Kaynak gösterilmeden alıntı yapılamaz, izin
almadan hiçbir yolla çoğaltılamaz.

The right to publish this book belongs to Gece Kitaplığı.
Citation can not be shown without the source, reproduced in any way
without permission.

Gece Kitaplığı / Gece Publishing
Türkiye Adres / Turkey Address: Kızılay Mah. Fevzi Çakmak 1.
Sokak Ümit Apt. No: 22/A Çankaya / Ankara / TR
Telefon / Phone: +90 312 384 80 40
web: www.gecekitapligi.com
e-mail: gecekitapligi@gmail.com

Baskı & Cilt / Printing & Volume
Sertifika / Certificate No: 47083

Research & Reviews in Architecture, Planning and Design

December, 2021

Editors

Assoc. Prof. Dr. Sertaç GÜNGÖR

CONTENTS

Chapter 1

URBAN ARCHAEOLOGY AND TOURISM

Elmas ERDOĞAN[1]
Selin TEMİZEL[2]

1 Prof. Dr. Elmas ERDOĞAN, Ankara University, Faculty of Agriculture, Department of Landscape Architecture, Ankara, Turkey, eerdogan@ankara.edu.tr, ORCID ID: 0000-0002-4193-629X
2 Arş. Gör. Selin TEMİZEL, Yozgat Bozok University, Faculty of Agriculture, Department of Landscape Architecture, Yozgat, Turkey, selin.temizel@yobu.edu.tr, ORCID ID: 0000-0002-8945-8856

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.

BIBLIOGRAPHY/ REFERENCES:

AHUNBAY, Z., (1999). Tarihi Çevre Koruma ve Restorasyon, İstanbul: Yem Yayın.

ANONYMOUS, (2015). https://www.atlasdergisi.com/dergide-bu-ay/istanbul-tarihi-yarimadaya-tarihi-karar.html (Date of Access: 02.09.2020).

ANONYMOUS, (2016). http://arkeofili.com/kacak-yapi-sahipleri-icin-side-antik-kentinin-derecesi-dusurulebilir/, (Date of Access: 05.09.2020).

ANONYMOUS, (2018). https://www.pinterest.nz/pin/674625219152408535/, (Date of Access: 08.09.2020).

AYDENİZ, E. N., (2009). "Kentsel Arkeoloji Kavramının Dünyadaki Gelişimi ve Türkiye'deki Yansımaları" Journol of Yaşar University, 2501-2524.

AYDOĞDU, Y. (2011). Kentsel Arkeolojik Koruma Alanlarının Yönetimi İstanbul Yenikapı Örneği. Yüksek Lisans Tezi. Yıldız Teknik Üniversitesi, Şehir Bölge Planlama Bölümü.

BELGE, B. (2004). Çok Katmanlı Tarihi Kent Merkezlerinin Yönetimi: Kentsel Arkeoloji ve Planlama, TMMOB Şehir Plancıları Odası, Planlama Dergisi, (4): 48-56.

BELGE, B., (2005). Urban Archaeologıcal Issues And Resources In İzmir Historic City Centre: An Exploratory Case Study, Ankara: Orta Doğu Teknik Üniversitesi, Yüksek Lisans Tezi, Ankara.

BELGE, B. (2017). http://jfa.arch.metu.edu.tr/archive/0258-5316/articles/metujfa2017211.pdf (Date of Access: 10.09.2020).

BELGE, B. ve AYDINOĞLU, Ü., (2017). Bir Planlama Altlığı Olarak; Roma Dönemi Tarsus Kenti Mekânsal Yapısına İlişkin Değerlendirme, Megaron, pp. 460-474.

BIDLLE, M., (1982). 'Vers une Archéologie Urbaine au Service de la Société', Archéologie Urbaine: Actes du Colloque International de Tours, Tours, Nov. 17-20 1980, Tours: Association Pour les Fouilles Archéologiques Nationales, s.47-53, France.

BİLGİN, A. G., (1996). Urban Archaeology As the Basis for the Studies on the Future of the Town; Case Study: Bergama, (yayınlanmamış y. lisans tezi), ODTÜ Mimarlık Fakültesi, Ankara.

CAITLIN, A., (2005). Archaeology and Urban Planning: Using the Past in Design for the Future. 1sth. ICOMOS General Assembly and International Symposium: 'Monuments and Sites in Their Setting-Conserving Cultural Heritage in Changing Townscapes and Landscapes, 17-21. October 2005.,Xian, China., ICOMOS Open Archive.

CLEERE, H., (1984). Towards a European Policy for the Historic Heritage, A Future for Our Past (23), 2-5.

GİRİŞKEN, M. U., (2010.) Türkiye'de Kültürel Mirasın Korunmasında Yaşanan Sorunlar ve Jeodezik Yaklaşımlar, İstanbul: İstanbul Teknik Üniversitesi, Yüksek Lisans Tezi.

GÖNÜLER, A. P., (2011). Kentsel Yenileme Alanlarında Kentsel Arkeoloji Kavramının Tarihi Yarımada Özelinde İncelenmesi. Kadir Has Üniversitesi Fen Bilimleri Enstitüsü Kültür Varlıklarını Koruma Yüksek Lisans Programı, Yüksek Lisans Tezi, İstanbul.

GÜLGÜN ASLAN, B., YAZICI, K. ve ANKAYA, F., (2017). Ecotourism in Turkey from Past to Present and the Scientific Awareness. Karabük Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, (3): 1-10. Erişim adresi: http://johut.karabuk.edu.tr/Makaleler/1129314327_1.%20Bahriye%20G%c3%bclg%c3%bcn%20(Prof).pdf

ICOMOS, (1975). Dünya Kültürel ve Doğal Mirasın Korunması Sözleşmesi, http://teftis.kulturturizm.gov.tr/TR-14269/dunya-kulturel-ve-dogal-mirasin-korunmasi-sozlesmesi.html.

KAMACI, E., (2014). 2863 Sayılı KTVKK'nın Uluslararası Yasal Düzenlemeler Bağlamında Değerlendirilmesi, METU JFA, pp. 1-23.

KELEŞ, R., (2003). ''Kültür mirası insanlığın ortak malıdır'', Mimarist Üç Aylık Mimarlık Kültürü Dergisi, 10: 96-100.

LARKHAM, P.J. (1996). Conservation and the city. London and New York: Routledge.

MADRAN, E. ve ÖZGÖNÜL, N. (Ed) (1999). International Documents Regarding the Preservation of Cultural and Natural Heritage, Ankara: METU Faculty Architecture Press.

MATERO, E., (2008). Heritage Conservation and Archaeology: An Introduction. Site Preservation, Archaeological Institute of America.

OECD, THE EUROPEAN COMMISSION, UNITED NATIONS AND WORLD TOURISM ORGANIZATION

(2001). "Tourism Satellite Account: Recommended Methodological Framework", OECD Publishing, Paris.

SAIBERT, V.O., (2016). Urban Archaeology: Problems, Methods, Results. Journal of Siberian University. Humanities and Social Sciences (2016 9) 971-977.

SAKAR, S., (2019). Kentsel Arkeolojik Alanların Algılanabilirliğinde Çevresel Etkenler: Roma ve Tarsus Örnekleri. Mersin Üniversitesi Fen Bilimleri Enstitüsü Şehir ve Bölge Planlama Anabilim Dalı, Yüksek Lisans Tezi, Mersin.

SARFATİJ, H. ve MELLİ, P., (1999). Archaeology and the Town, Report on the Situation of Urban Archaeology in Europe (13-29), Council of Europe Publishin.

TUNA, N., (2000). Kentsel Arkeoloji Üzerine,» İDOL, Arkeoloji ve Arkeologlar Derneği Dergisi, pp. 7- 13.

TÜLEK, B. ve BARIŞ, M. E. (2015). Kent içi ve Yakın Çevresindeki Su Kıyısı Rekreasyon Alanlarının Ekolojik Kriterler Açısından Değerlendirilmesi: Mavi Göl Örneği. Uludağ Üniversitesi Ziraat Fakültesi Dergisi, 28 (2), 13-26.

WILLIAMS, T., (2018). The Conservation and Management of Archaeological Sites. A Twenty-Year Perspective. Conservation Perspectives, Archaeological Conservation, The Getty Conservation Institute.

YAZGAN, M.E. ve ERDOĞAN, E. (1992). Tarihi Çevrelerde Peyzaj Planlama. A.Ü.Z.F. Peyzaj Mimarlığı Bölümü,Peyzaj Mimarisi Derneği Yayınları: 2, 24, 46, 47 s., Ankara.

YILDIRIM, T., (2010). Kentsel ve Arkeolojik Sit Alanında Adana/Tepebağ Höyüğü ve Planlama Sürecinde Kentsel Arkeoloji, Kentsel Dönüşüm, Rehabilitasyon ile Arkeopark Kavramı. Çukurova Üniversitesi, Fen Bilimleri Enstitüsü, Arkeometri Anabilim Dalı, Yüksek Lisans Tezi, Adana.

Chapter 2

THE EFFECT OF MEGA-EVENTS ON INSTITUTIONAL CULTURE

Tuna BATUHAN[1]

1 Associate Professor Atatürk University, Faculty of Architecture and Design, Department of City and Regional Planning, https://orcid.org/0000-0001-7662-340

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.

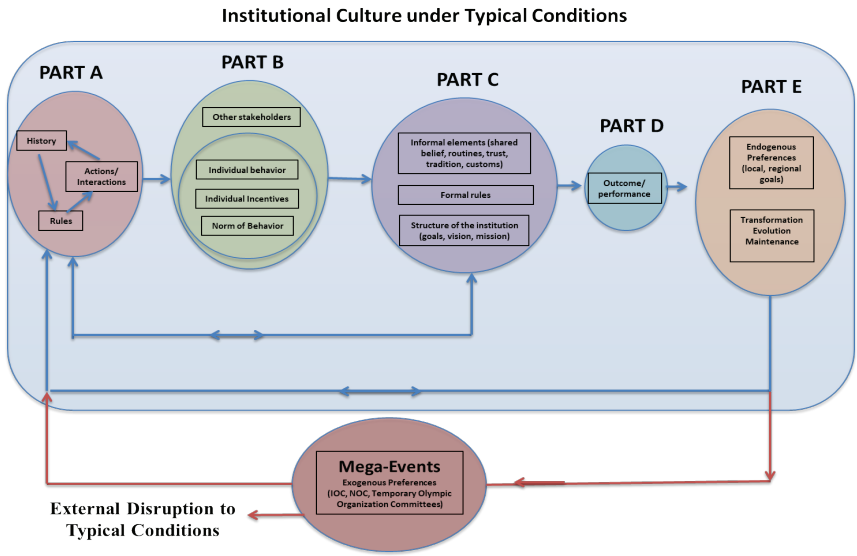
Ostrom (1990) defines institutions as "the sets of working rules that are used to determine who is eligible to make decisions in some arenas, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, 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.

REFERENCES

Ashkanasy, N. M., Lyndelle E. B. and Falkus, S. 2000. Questionnaire Measures of Organizational Culture. Chapter 8 in Handbook of Organizational Culture and Climate edited by N. Ashkanasy, C. P. M. Wilderom, and M. F. Peterson. Thousand Oaks, CA: Sage Publications, Inc.131-145.

Burbank, M., Andranovich, G., Heying, C., 2001. Olympic dreams: the impact of megaevents on local politics, Lynne Rienner Publishers, Boulder, Colorado.

Dittmar, Hank. 1995. A Broader Context for Transportation Planning. Journal of American Planning Association (61) 1, 7-13.

ECMT (European Conference of Ministers of Transport), 2002. Transport and exceptional public events. Report of the 122nd Round Table on Transport Economics.

Frederickson, George. 2001. From Jurisdiction to Institutions. The Contemporary Study of Organizations.

Hiller, H., 2006. "Post-event outcomes and the post-modern Turn: the Olympics and urban transformations," European Sport Management Quarterly 6(4), pp.317-332.

Hodgson, Geoffrey. 2006. What are Institutions? Journal of Economic Issues. (15) 1, 125.

International Olympic Committee (IOC), 2009. Factsheet-Host City Election: Facts and Figures-Update July.

Lynn, Lawrence E. Jr. 1996. Public Management on Art, Science and Profession. Chatham, NJ: Chatham House.

March, James and Olsen, Johan. 1989. Rediscovering Institutions: The Organizational Basis of Politics. The Free Press.

North, Douglas. 1990. Institutions, Institutional Change, and Economic Performance. Cambridge University Press.

Ostrom, Elinor. 1990. Governing the Commons. The Evolution of Institutions for Collective Action (Political Economy of Institutions and Decisions). Cambridge University Press.

Ostrom, Elinor. 2004. Understanding Institutional Diversity. Princeton University Press.

Powell, Walter and DiMaggio, Paul. 1991. The New Institutionalism in Organizational Analysis. University of Chicago Press.

Puentes, Robert and Bailey, Linda. 2003. Improving Metropolitan Decision Making in Transportation: Greater Funding and Devolution for Greater Accountability. The Brookings Institution Series on Transportation Reform.

Rikel, W.H. 1982. Implications from the Disequilibrium of Majority Rule for the Study of Institutions. In P.C. Ordeshook and K.A. Sheples (Eds), Political Equilibrium, 3-24. Boston.

Roche, M., 2002. “The Olympics and global citizenship,” Citizenship Studies, 6(2), pp.165-181.

Short, J., 2004. Global metropolitan: globalizing cities in a capitalist world, Routledge.

Weingroff, Richard. 2001. Creating a Landmark: The Intermodal Surface Transportation Act of 1991. Public Roads (65) 3.

Chapter 3

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

Firdevs KULAK TORUN[1]
Damla ALTUNCU[2]

1 Assistant Prof Dr., Atatürk University, Architecture Faculty, İnterior Design Department, ORCİD ID: 0000-0003-0133-4216.
2 Associate Prof Dr., Mimar Sinan Fine Art University, Architecture Faculty, İnterior Design Department, ORCİD ID: 0000-0001-5276-2275.

*This study belongs to Firdevs Kulak Torun's doctoral thesis entitled ''Emergency department lighting design guide'' conducted by Damla Altuncu.

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

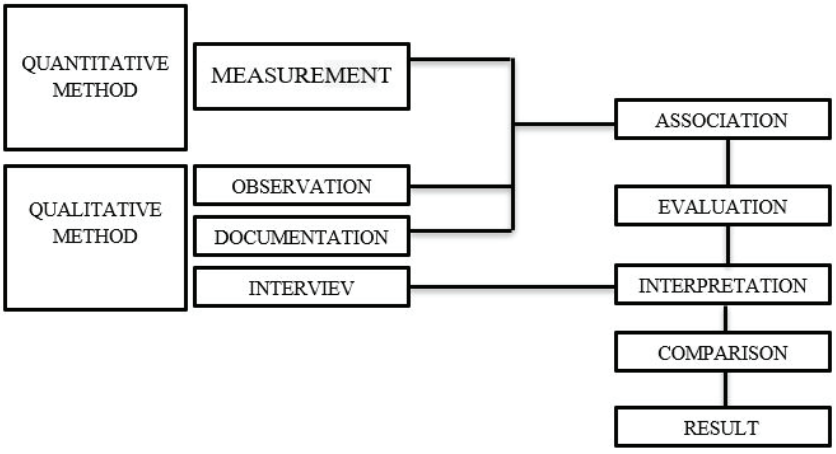
Lighting Control System	Methods Used Within the System
Manual Control Systems	ON-OFF, Dimmer
Automatic Control Systems	Photosensor Dimming, Photosensor Switching
Automation Control Systems	Time Control, Scene Control, Occupancy Control

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

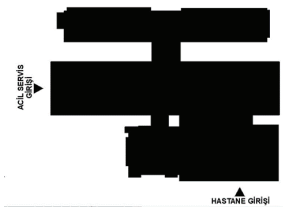
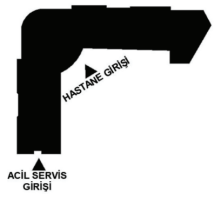
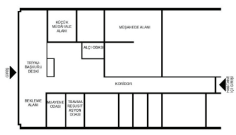
During the field study, the assessment methods specified in Table 3 were used to reach concrete data. Measurements of the lighting level, determination of surface materials, lighting devices, system and method used were determined. The data obtained from these findings were presented in tables. In addition, 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

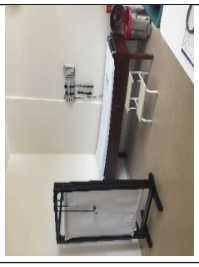
4.1. A, B, C Hospitals Emergency Unit Examination Rooms Findings and Evaluation

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.

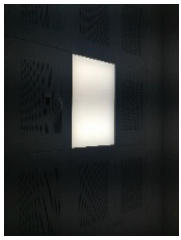
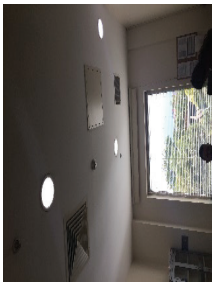
The data obtained from the measurements made in the emergency units of A and B hospitals shows a constant value. The reason for this is the constant use of artificial lighting in these examination rooms. To determine the frequency and importance of the use of artificial lighting in the examination rooms, 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.

6. REFERANCES

Aile Hekimliği Pilot Uygulaması Hakkında Yönetmelik. (2005). T.C. Resmi Gazete, 25867, 06.07.2005.

Altuncu, D. (2008). Aydınlatma Kontrol Sistemlerinin Hastane Örneğinde Kullanımı ve Yatan Hasta Kat Koridorları İçin Bir Aydınlatma Sistemi Önerisi (Sanatta Yeterlilik Tezi) Mimar Sinan Güzel Sanatlar Üniversitesi, Fen Bilimleri Enstitüsü, İstanbul.

CIBSE. (2002). Chartered Institution of Building Services Engineers, Code for interior lighting CIBSE: London.

CİE. (2002) .Lighting of indoor work places, İnternational Standarts, ISO 8995:2002(E) CIE S 008/E-2001, Switzerland.

Foster, R. (2005). Efficient Hospital Lighting, Busıness Brıefıng: Hospıtal Engıneerıng & Facılıtıes Management.

İAEM. (2007). Standarts for Emergency Department Design and Specification for Ireland 2007, Irısh Assocation for Emergency Medicine.

IES. (2011). The Lighting Handbook, Reference and Application,.David L. DiLaura Kevin W. Houser Richard G. Mistrick Gary R. Steffy, Illımunation Energy Society.

IESNA. (2006). Lighting for Hospital and Health Care Facilities. Illuminating Engineering Society of North America.

Joseph, A., Davis, R., Wilkerson, A. (2016). Evidence-Based Design for Healthcare Lighting:Where's the Evidence?, Doe Healthcare Webinar Series, Clemson University.

Kazanasmaz, T. (2003, Ekim) aydınlatma sistemlerinin çalışabilirlik durumu üzerine bir çalışma, İbn-i Sina Hastanesi. II. Ulusal Aydınlatma Sempozyumu. Diyarbakır.

Matern, U. ve Koneczyn, S. (2007). Safety, Hazards and Ergonomics in the Operating Room, Surgical Endoscopy, 11, 1965–1969.

Merhotra, S., Basukala, S., Devarakonda, S. (2015). Effective Lighting Design Standarts Impacting Patient Care: ASystem Approach, Journal of Biosciences and Medicines, 3, 54-61.

Semercioğlu, C. (2015, Haziran). Sıradanlığın rayihası. Sabit Fikir, 52, 38-39.

NHS. (2014). Lighting and Colour for Hospital Design, A Report on an NHS Estates Funded Research Project, London.

Philips. (2016). Designing People-Centric Hospital Using Philips Lighting Solutions, Viewed: http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/Global/Syste m/ODLI20161223001H ealthcare-Application-Guide.pdf

.

Sirel, Ş. (2012). Aydınlatma Sözlüğü, YEM Yayınları:İstanbul.

SLL. (2009). The SLL Lighting Handbook, The Society of Light and Lighting is part of the Chartered Institution of Building Services Engineers, ISBN 978-1-906846-02-2.

Şener Yılmaz, F. ve Köknel, Y. (2013). Aydınlatma tasarımında görsel konfor, enerji performansı ve çevresel etki değerlendirilmesi. VII. Ulusal Aydınlatma Sempozyumu, İzmir.

Türkiye Sağlık Yapıları Asgari Tasarım Standartları 2010 Yılı Kılavuzu. (2010). Sağlık Bakanlığı. Yayın Numarası:800, ISBN:978-975-590-327-9.

URL-1 (2020). https://www.medimagazin.com.tr/guncel/medibilgi/tr-muayene-hane-standartlari-11-91-379 00.html. last access date: 24.02.2020

URL-2. (2019). https://www.denizlihaber.com/saglik/saglik-genel/agiz-ve-dis-sagligi-hastanesine-dijital-hastane-odulu/. last access date: 01.11.2019.

URL-3. (2019). https://www.denizlieczaciodasi.org.tr/haber-5277. last access date: 01.11.2019.

Yataklı Sağlık Tesislerinde Acil Servis Hizmetlerinin Uygulama Usul ve Esasları Hakkında Tebliğ. (2009). Sağlık Bakanlığı, 25 Mayıs 2015.Viewed: https://www.mevzuat.gov.tr/mevzuat?Mevzua tNo=13494&MevzuatTur=9&MevzuatTertip=5.

Yataklı Sağlık Tesislerinde Acil Servis Hizmetlerinin Uygulama Usul ve Esasları Hakkında Tebliği Hakkında Değişiklik Yapılmasında Dair Tebliğ. (2018). Viewed: https://www.resmigazete.gov.tr/eskiler/ 2018/02/20180220-4.htm

Chapter 4

ECONOMIC VALUE OF URBAN GREEN AREAS AND RECREATION*

Elif BAYRAMOĞLU[1]
Nazlı Mine YURDAKUL[2]
Mahmut Muhammet BAYRAMOĞLU[3]

1 This article is based on the Master Thesis in Institute of Science, KTU by Nazlı Mine YURDAKUL

2 Phd. Karadeniz Technical University, Department of Forestry Faculty, Department of Landscape Architecture, ORCID ID: 0000 0003 0395 6991.
3 Phd. Karadeniz Technical University, Department of Forestry Faculty, Department of Landscape Architecture, ORCID ID: 0000 0003 0395 6991.
1 Assoc. Prof. Karadeniz Technical University, Forestry Faculty, Department of Landscape Architecture, Trabzon, Turkey, ORCID ID: 0000-0002-6757-7766.

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.

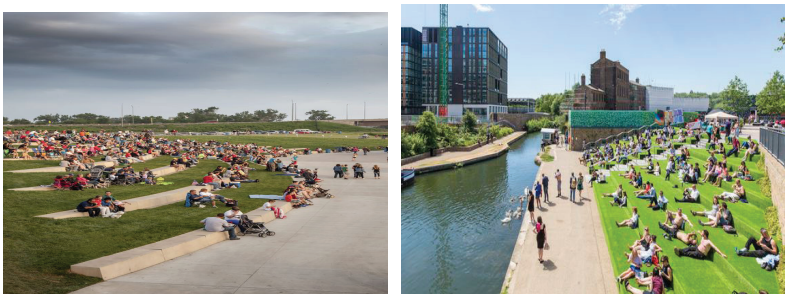


Figure 1. Recreation in open green areas (URL, 1; URL, 2).

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.

REFERENCES

Ahern, J. (1991). Planning for an Extensive Open Space system: Linking Landscape Structure and Function, Landscape and Urban Planning, 21: 131-145.

Aksoy, Y. (2001). İstanbul Kenti Yeşil Alan Durumunun İrdelenmesi. İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Doktora Tezi. 233s. İstanbul.

Alkan, Y., Uslu, C. (2016). Aktif Yeşil Alanların Konut Fiyatları Üzerine Etkisinin Araştırılması: Mersin İli Yenişehir İlçesi Örneği. İnönü Üniversitesi Sanat ve Tasarım Dergisi, 6(13):1-10

Alkay, E., Ocakçı, M. (2003). "Kentsel Yeşil Alanların Ekonomik Değerlerinin Ölçülmesinde Kullanılabilecek Yöntemlerin İrdelenmesi", İTÜ Dergisi / Mimarlık, Planlama, Tasarım, 2(1):60-68, İstanbul

Alpak, E. M., Düzenli, T., Yılmaz, S. (2018). Kamusal Açık Mekânların Kalitesi ve Sosyal Etkileşim Üzerindeki Etkileri/Quality of Public Open Space and Effects on Social Interaction. Journal of History Culture and Art Research, 7(2), 624-638.

Altunkasa, M. F. (2009). Çevre ve Ekonomi. Researchgate. Sayfa 57-58.

Bann, C. (1998). The Economic Valuation of Tropical Forest Land Use Options: A Manual for Researchers. Economy and Environment Program for Southeast Asia Report Series.

Bateman, İ. (1993). Evaluation of the Environment: A Survey of Revealed Preference Techniques. CSERGE Working Paper, Norwich.

Beatty, S. E., Jeon, J., Albaum, G., Murphy, B. (1994). A Cross-National Study of Leisure Activities, Journal of Cross-Cultural Physchology, 25:409-422.

Carson, R. (2000). "Contingent Valuation: A User's Guide". Environmental Science and Technology, 34 (8): 1413–1418.

Carson, R. T., Hanemann, W. M. (2005). Handbook of Environmental Economics: Valuing Environmental Changes. Amsterdam: Elsevier B.V.

Cordell, H. K., Handee, J. C., Stevens, J. H. (1983). Renewable Recreation Resources in the United States: The Resource Situation and Critical Policy Issues, in Recreation Planning and Management Eds. Lieber, S. R., Fesenmaies, D. R., Venture Publising, Pennsylvania.

Dwyer, J. F. (1983). Recreation Benefits for Benefit-Cost Analysis, in Recreation Planning and Management, p. 26-36, Eds, Lieber, S. R., Fesenmaier, D. R., Venture Publising, Pennsylvania.

Emür, S. H. (2007). Kentsel Yaşam Kalitesi Bileşenleri Arasında Açık ve Yeşil Alanların Önemi-Kayseri/Kocasinan İlçesi Park Alanları Analizi. Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 1(22):367-396.

Eraslan, Ş., (2008) "Yeşil Alanların Kentsel Alan Değerine Etkisinin Estetik, Ekonomik ve Sosyolojik Açıdan Analizi: Isparta Çayboyu Mevkii Örneği", Yüksek Lisans Tezi., Peyzaj Mimarlığı Anabilim Dalı, Vol:93., Sayfa 5, Isparta.

Freeman, A. M. (1993). The Measurement of Environmental and Resource Values: Theory and Methods. Routledge.

Gül, A., Küçük, V. (2001). Kentsel Açik-Yeşil Alanlar Ve Isparta Kenti Örneğinde İrdelenmesi. Türkiye Ormancılık Dergisi, 2(1): 27-48.

Hanley, N., Shogren, J. F., White, B. (2007). Enviromental Economics in Theory and Practise (2nd ed.). UK: Palgrave Macmillan

Gündoğmuş, M. E., Kalfa, V. R. (2016). Piyasa Değeri Olmayan Varlıkların Ekonomik Değerinin Belirlenmesi. Journal of Life Economics, 3(4):177-200.

Holvad, T. (2006). Contingent Valuation Methods: Possibilities and Problems, Transport Research and Consultancy, London.

Kaya, G. (2002). Pazarı Olmayan Ürünler Çerçevesinde Orman Kaynaklarının Değerinin Belirlenmesi, İstanbul Üniversitesi Fen Bilimleri Enstitüsü, Doktora Tezi, 308s.

Kaya, A. (2012). Türkiye'de Konut Fiyatlarını Etkileyen Faktörlerin Hedonik Fiyat Modeli İle Belirlenmesi, Uzmanlık Yeterlilik Tezi, Türkiye Cumhuriyet Merkez Bankası İstatistik Genel Müdürlüğü, Ankara.

Kaya, G., Özyürek, E. (2015), Kent Ormanı Anlayışıyla ODTÜ Ormanı Manzarası için Ekonomik Değerin Tahmin Edilmesi. Ormancılık Araştırma Dergisi 1(2-A):15-28

Kemp, I., Leidelmeijer, K.. Marsman, G., Hollander, A. (2003). Urban Environmental Quality and Human Well-Being Towards A Conceptual Framework and Demarcation of Concepts; A Literature Study, Landscape and Urban Planning 65, 2003, S.5-18.

Kula, E. (1994). Economics of Natural Resources, The Environment and Policies (2nd ed.). UK: Chapman & Hall Press

Kurtaslan, B. Ö., Yazgan, M. E. (2005). Kayseri Kent Bütününün Açık ve Yeşil Alanlarının Sistem Yaklaşımı ile Değerlendirilmesi. Selçuk Üniversitesi Mühendislik, Bilim ve Teknoloji Dergisi, 20(1):69-80.

Maca, S.E., (2002). Apractical Approach to Assessing Structure, Function, And Value of Street Populations İn Small Communities. Davis, Ca: University of California. M. S. Thesis, 218.

More, T, A., Stevens, T. H., Allen, P. G. (1982). The Economics of Urban Parks, Park & Recreation, 17:31-33

Ortaçeşme, V., Özkan, B., Karagüzel, O. (1997). Doğal Çevrenin Ekonomik Değerinin Saptanmasında Kullanılan Yöntemler. Akdeniz Üniversitesi Ziraat Fakültesi Dergisi, 10(1):249-260.

Önder, S., Polat, A. T. (2012). Kentsel Açık-Yeşil Alanların Kent Yaşamındaki Yeri Ve Önemi. Kentsel Peyzaj Alanlarının Oluşumu ve Bakım Esasları Semineri, 19, 73-96.

Özçağ, M., Hotunluoğlu, H. (2015). Kalkınma Anlayışında Yeni Bir Boyut: Yeşil Ekonomi. Celal Bayar University Journal of Social Sciences/ Celal Bayar Üniversitesi Sosyal Bilimler Dergisi, 13(2).

Özdemir, B. (2013). Konya İlinde Bulunan Bazı Kent Parklarının Kullanıcı Tercihleri Açısından Değerlendirilmesi (Doctoral Dissertation, Selçuk Üniversitesi Fen Bilimleri Enstitüsü), Konya.

Öztürk, B. Y., Yazgan, M. E. (2004). Kentsel Açık Ve Yeşil Alan Sistemi Oluşturulması: Kayseri Kent Bütünü Örneği (Doctoral Dissertation, Ankara Üniversitesi Fen Bilimleri Enstitüsü Peyzaj Mimarlığı Anabilim Dalı). Ankara

Ulucak, R., Erdem, E. (2012). Çevre-İktisat İlişkisi Ve Türkiye'de Çevre Politikalarının Etkinliği. Akademik Araştırmalar Ve Çalışmalar Dergisi (Akad), 4(6):78-98.

URL-1, https://tr.pinterest.com/pin/147985537744539746/ (Retrieved from)

URL-2, https://tr.pinterest.com/pin/536421005599041260/ (Retrieved from)

URL-3, https://tr.pinterest.com/pin/669769775830699484/ (Retrieved from)

URL-4, https://tr.pinterest.com/pin/161777811589368050/ (Retrieved from)

Özyavuz, M., Karakaya Aytin, B. (2016). Açık Ve Yeşil Alanların Kentsel Yaşam Kalitesine Etkisi: Tekirdağ-Süleymanpaşa Örneği. 4. Uluslararası Kentsel Ve Çevresel Sorunlar Ve Politikalar Kongresi'nde Sunulmuş Bildiri. İstanbul.

Sevil, T., Şimşek, K. Y., Katırcı, H., Çelik, O., Çeliksoy, M. A., Kocaekşi, S. (2012). Boş Zaman ve Rekreasyon Yönetimi. Baskı. Eskişehir: Anadolu Üniversitesi Yayını. No:2497 21.

Sherer, P.M. (2006). The Benefits of Parks: Why America Needs More City Parks And Open Space, The Trustfor Public Land, (White Paper).

Shogren, J.F. (Editor) (2013). Encyclopedia of Energy, Natural Resource and Environmental Economics, (Vol. 1), Elsevier Science.

Tisdell, C.A. (1991). Economics of Environmental Conservation. Elsevier Science Publisher, Amsterdam, Holland, 359.

Toksoy, D., Bayramoğlu, M. M. (2020). Tarımsal Ormancılık (AGROFORESTRY). Trabzon: Serander Basım Yayınevi, pp.200

Tütüncü, Ö. (2008). Rekreasyon Yönetimine Yönelik Üniversite Düzeyinde Bir Müfredat Geliştirme Önerisi. Anatolia Turizm Araştırmaları Dergisi, 19(12), 93-103.

Yılmaz, S., Bulut Z., Yeşil P. (2006). Kent Ormanlarının Kentsel Mekana Sağladığı Faydalar Atatürk Üniversitesi, Ziraat Fakültesi Dergisi. 37 (1): 131-136.

Yılmaz, F., Koç, A. A. (2018). Beydağları Sahil Milli Parkı Ekonomik Değerinin Seyahat Maliyeti ve Koşullu Değerleme Yöntemleri İle Belirlenmesi. Akdeniz Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 18(38), 1-22.

Yurdakul, N. M. (2021). Kentsel Açik Yeşil Alanlarin Ekonomik Değerinin Seyahat Maliyet Yöntemi ile Belirlenmesi: 100. Yıl Parkı Örneği. Karadeniz Teknik Üniversitesi Fen Bilimleri Enstitüsü, Peyzaj Mimarlığı Anabilimdalı, Yüksek Lisans Tezi.

Wirth, L. (1938). Urbanism as A Way of Life. American Journal of Sociology, 44(1):1-24.

Chapter 5

THE DESIGN THEORIES AND PRINCIPLES OF HEALING GARDENS

Esra ÇETİNKAYA ÖZKAN[1]
Müge ÜNAL ÇİLEK[2]

1 Dr. , esra.cetinkaya.ozkan@gmail.com, Fırat University, Faculty of Architecture, Department of Landscape Architecture, Elazig/Turkey.

Orcid ID: 0000-0001-8797-194x
2 Dr. , mugeunal@firat.edu.tr, Fırat University, Faculty of Architecture, Department of Landscape Architecture, Elazig/Turkey.

Orcid ID: 0000-0002-1147-9729

Corresponding author: esra.cetinkaya.ozkan@gmail.com

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.

6. REFERENCES

Akın, Z.Ş. (2006). Healing Garden for Children. Ankara University Graduate School of Natural and Applied Science, Master Thesis, Ankara.

Anonymous (2021a). https://dg2design.com/healing-gardens-for-mental-health-behavioral-health/ (Accessed: 15.12.2021)

Anonymous (2021b). http://www.garlandalliance.com/therapeutic-healing-gardens (Accessed: 15.12.2021)

Anonymous (2021c). https://myk-d.com/projects/boston-childrens-rooftop-healing-garden/ (Accessed: 15.12.2021)

Anonymous (2021d). https://myk-d.com/projects/boston-childrens-rooftop-healing-garden/ (Accessed: 15.12.2021)

Anonymous (2021e). https://www.pacifichorticulture.org/articles/therapeutic-gardens/ (Accessed: 15.12.2021)

Anonymous (2021f). http://torontourbangrowers.org/therapeutic-gardening (Accessed: 15.12.2021)

Anonymous (2021g). https://www.v2com-newswire.com/en/newsroom/categories/landscape-architecture/press-kits/2757-01/ahbe-landscape-architects-unveils-healing-gardens-for-cedars-sinai-medical-center (Accessed: 15.12.2021)

Anonymous (2021h). https://www.houzz.com/photos/rooftop-healing-garden-a-long-term-heritage-project-eclectic-landscape-dc-metro-phvw-vp~54912765 (Accessed: 15.12.2021)

Billings, K. (2004). Elderly of Yakima. https://www.washington.edu/search/?q=-yakima+elderly, (Accessed: 15.12.2021)

Bowers, D.A. (2003). Incorporating Restorative Experiential Qualities and Key Landscape Attributes to Enhance The Restorative Experience in Healing Gardens Within Health Care Settings, Master Thesis, Washington State University, 108p.

Brawley, E. (2005). Raising the Bar in Designing Senior Environments. The 12th Annual Affordable Housing Conference Spokane Convention Center 334 West Spokane Falls BlvdSpokane, Washington.

Çetinkale Demirkan, G. (2019). Evaluation of Healing Gardens and Design Criteria. Turkish Journal of Agriculture-Food Science and Technology, 7(1), 148-151.

Demiroğlu Topçu, G., Özkan, Ş.S., (2016). Turf Ecology. International Ecology 2016 Adnan Aldemir Symposium, 16-19 May 2016, The Abstract Book, Pp:63, Kars/Turkey.

Elings, M. (2006). People-plant Interaction: The Physiological, Psychological and Sociological Effects of Plants on People, Farming for Health, Eds.: Hassink, J., Majken, V.D., Springer, Netherlands, 43-55.

Haas, K.L., McCartney, R. (1996). The Therapeutic Quality of Plants. Journal of Therapeutic Horticulture, 8, 61-67.

Kaplan, R., Kaplan, S. (1989). The Experience of Nature: A Psychological Perspective. Cambridge University Press, New York, 360p.

Kaplan, R., Kaplan, S., Ryan, R. (1998). "Restorative Environments" in With People in Mind: Design and Management of Everyday Nature, Washington, (pp. 67-77). Island Press.

Kavanagh, J.S. (1995). Therapeutic Landscapes: Gardens for Horticultural Therapy Coming of Age. Hort Technology, 5(2), 104-107.

Kellert, S., Derr, V. (1998). National Study of Outdoor Wilderness Experience. Washington, DC: Island Press.

Kılıç, A. K., Yılmaz, S., Aktaş, A.M. (2020). Comparison of the quality of life and perceived social support of individuals with mental health disorders living in a nursing home and with family. Journal of Psychiatric Nursing, 11(2), 115-123.

Larson, J., Kreitzer, M.J. (2004). Healing by Design: Healing Gardens and Therapeutic Landscapes. Implications, 2(10), 1-4.

Leibrock, C.A., Harris, D.D. (2011). Design Details for Health: Making the Most of Design's Healing Potential (Vol. 9). John Wiley & Sons.

Main, B., Hannah, G.G. (2010). Site Furnishings: A Complete Guide to the Planning, Selection and Use of Landscape Furniture and Amenities, John Wiley & Sons, USA.

Marcus, C.C. (2001). Gardens and Health, Design and Health-The Therapeutic Benefits of Design, Ed.: Dilani, A., 61-71.

Marcus, C.C. (2007). Healing gardens in hospitals. Interdisciplinary Design and Research e-journal, 1(1), 1-27.

Marcus, C.C., Barnes, M. (1995). Gardens in Healthcare Facilities: Uses, Therapeutic Benefits and Design Recommendations. Martinez, The Center for Health Design, California.

Marcus, C.C., Barnes, M. (1999). Healing Garden: Therapeutic Benefits and Desing Recommendations, John Wiley & Sons, New York, 624p.

Marcus, C.C., Sachs, N.A. (2013). Therapeutic Landscapes: An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces. John Wiley & Sons.

McDowell, M.J. (1997). The Role and Application of Horticultural Therapy With Institutionalized Older People, Master Thesis, McGill University, Montreal, 113p.

Minter, S. (1995). The Healing Garden: A Natural Haven for Emotional and Physical Well-Being. London, Headline Book Publishing PLC.

Moore, R.C. (1999). Healing gardens for children. Healing gardens: Therapeutic benefits and design recommendations.

Nord, R. Del. (2009). The Culture for the Future of Healthcare Architecture. Proceedings of the 28th International Public Health Seminar.

Pasha, S., Shepley, M.M. (2013). Research Note: Physical Activity in Pediatric Healing Gardens. Landscape and urban planning, 118, 53-58.

Sachs, N.A. (1999). Psychiatric Hospitals. In Healing Gardens: Therapeutic Benefits and Design Recommendations, p. 235-322, Eds. Marcus, C. C. and Barnes, M., John Willey & Sons, NY.

Said, I. (2003). Garden as an Environmental Intervention in Healing Process of Hospitalized Children. Kustem 2nd Annual Seminar on Sustainability Science and Management, Environment.

Sakıcı, Ç., Var, M. (2014). The Organization of Psychiatric Hospital Gardens (Open Space Therapy Units) and The Criterions. Kastamonu University Journal of Forestry Faculty, 14 (1): 101-112.

Serez, A. (2011). Healing Gardens Through History. Istanbul Technical University, Institute of Science and Technology, Master Thesis, Istanbul.

Severtsen, B. (2006). Healing Gardens. Designing Seattle's Green Network for the Next Century. https://depts.washington.edu/open2100/Resources/2_OpenSpaceTypes/Open_Space_Types/healing_gardens.pdf (Accessed: 15.12.2021)

Shackell, A., Walter, R. (2012). Practice Guide Green spaces design for health and well being, Forestry Commission: Edinburgh.

Smardon, R.C. (1990). Perception and Aesthetics of The Urban Environment: Review of The Role of Vegetation, Landscape and Urban Planning, 15(1-2), 85-106.

Söderström, M. (2000). The Possibility Garden, A Garden For All People, The Swedish Institute for Handicapped and The Swedish Broadcasting AB.

Spiegel, D., Bloom, J.R., Kraemer, H.C., Gottheil, E. (1989). Effect of Psychosocial Treatment on Survival of Patients with Metastatic Breast Cancer, Lancet, 14, 2, 888-891.

Stark, A. (2004). Creating Outstanding Environments with Geomancy and Feng Shui: Guidelines for Healing Gardens. http://www.alexstark.com (Accessed: 15.12.2021).

Stigsdotter, U.A. (2005). Landscape Architecture and Health, Evidence- Based Health- Promoting Design and Planning, PhD Thesis, Faculty of Landscape Planning, Swedish University of Agricultural Sciences.

TLA (Turkish Language Association). (2021). The Dictionaries of Turkish Language Association. https://sozluk.gov.tr (Accessed: 15.12.2021)

Tyson, M.M. (1998). The Healing Landscape: Therapeutic Outdoor Environments, McGraw-Hill, New York, 224p.

Ulrich, R.S. (1981). Natural Versus Urban Scenes: Some Psychophysiological Effects. Environment and Behavior, 13 (5), 523-553.

Ulrich, R.S. (1984). View Through a Window May Influence Recovery from Surgery. Science, 224, 420-421.

Ulrich, R.S. (1991a). Stress Recovery During Exposure to Natural and Urban Environments, Journal of Environmental Psychology, 11, 210-230.

Ulrich, R.S. (1991b). Effects of Health Facility Interior Design on Wellness: Theory and Scientific Research, Journal of Health Care Design, 3, 97-109.

Ulrich, R.S. (1993). Biophilia, Biophobia, and Natural Landscapes, The Biophilia Hypothesis, Eds.: Kellert, S.A., Wilson, E.O., 73-137.

Ulrich, R.S. (1999). Effects of Gardens on Health Outcomes, Healing Gardens: Therapeutic Benefit and Design Recommendation, Eds.: Marcus, C.C., Barnes, M., 27-86.

Ulrich, R.S. (2002). Health Benefits of Gardens in Hospitals. Plants for People Symposium paper. International Exhibition Floriade. http://www.planterra.com/research/SymposiumUlrich.pdf (Accessed: 15.12.2021)

Uslu, A., Shakouri, N. (2012). The Horticultural Therapy for the People with Mentally and Physically Disabilities. Kastamonu University Journal of Forestry Faculty, 12 (1), 134- 143.

Vapaa, A.G. (2002). Healing Gardens: Creating Places for Restoration, Meditation and Sanctuary: What are defining characteristics that make a healing garden? A thesis for Master's of Landscape Architecture. College of Architecture and Urban Studies. Virginia Polytechnic Institute and State University, p. 4-8.

Verderber, S., Refuerzo, B.J. (2006). Innovations in Hospice Architecture, Taylor & Francis.

Whitehouse, S., Varni, J.W., Seid, M., Cooper-Marcus, C., Ensberg, M.J., Jacobs, J.J., Mehlenbeck, R.S. (2001). Evaluating a children's hospital garden environment: Utilization and consumer satisfaction. Journal of Environmental Psychology, 21, 301-314.

Yücel, G.F. (2013). Hospital Outdoor Landscape Design. Advances in Landscape Architecture, p. 381-398.

Chapter 6

THE EFFECTS OF MANAGEMENT CHANGE ON THE URBANIZATION PROCESS IN SUB-SAHARAN AFRICA: A CASE STUDY OF KANO (NIGERIA)

İlhan Oğuz AKDEMİR [1]
Ömer Faruk İNCİLİ [2]
Usman Mohammed TAA[3]

1 Assoc. Prof.Dr. İlhan Oğuz AKDEMİR, Firat University, Faculty of Humanities and Social Sciences, Department of Geography, Urban Geography Programme, Elazığ. ioakdemir@firat.edu.tr, orcid:0000-0002-3767-3984
2 Assist Prof.Dr. Ömer Faruk İNCİLİ, University of Kilis 7 Aralık, Muallim Rıfat Faculty of Education, Department of Educational Sciences, Turkish and Social Sciences Programme, Kilis, ofarukincili@kilis.edu.tr, 0000-0002-0698-8801
3 M.Sc, Usman Mohammed TAA, Yobe State University, Department of Geography, Damaturu/ Nigeria, usmantaa@ysu.edu.ng

The evolution of architecture dated back since during the stone age, the first need of human being after food was shelter, which is the third most important need for the human race, this leads to the evolution of many types of dwellings used by a human as shelter. The early humans used caves, tree sheds, barks and many other things for their shelter, all those places were used by humans to protect their self from the harsh weather condition as well as predators that may hunt them. In view of this we can see that the need of a human shelter was paramount for a human being long before civilization. During the ancient time, weather is one of the major factor that trigger the need of a shelter for human race, this leads to the advent of many types of shelters in different parts of the world which generally defends on the climatic condition of such area. With the advancement of civilization and technology, people tend to design their dwellings in to more fashionable ways which makes the dwellings to be not only protection against the harsh weather conditions and predators, but also as a way to show ingenuity and cultural heritage. Despite all human factors such as culture, tradition, and religion, the significant of natural factor such as climate is still one of the most vital driving force for the architectural design of every dwelling.

Africa as a continent at large, is one of the continent in a world that generally perceive to be of single climatic condition therefore the architecture of the whole continent should be the same in terms of climatic point of view. But the continent has a very stricken variation when it comes to climatic condition even in a single country such different can be seen clearly, more especially in a country such as Nigeria which lies between 3 °to 14 °north parallel, and stretch from the coast of Atlantic ocean to the fringes of Sahara desert, the different in climatic condition can be strong enough to affect the architecture of the country to be of different kind from the southern part of the country which is tropical rain forest with high humidity to the northern part of the country which is generally savannah and every day endangered by the dessert encroachment from the Sahara desert by moving towards south. Culture, religion and site is also one of the most significant factor that leads to the difference in the architecture of the country, as the country divided between the predominately Muslim in the north, and high percentage of Christian population in the southern part of the country, it is paramount to see difference in the types of architecture and dwellings used in the two parts of the country and also in some of the large cities such as Lagos, Abuja, port Harcourt and Kano which is our case study site.

Kano as a city situated in the northern part of Nigeria within the savannah region and bordered to the north the Sahel region which is the transitional belt between Sahara and savannah is one of the most important

traditional Muslim city setting long before the advent of colonization in Africa, the city as one of many African city has its own architecture and type of characteristic dwelling that is familiar to the city. Although when we talk of architecture in Kano metropolis at large it is relevant to classify the historical occurrence that shapes the city architecture over a long period of time, thus historical occurrence are the major factors that shapes the major types of architecture in the metropolis. During the pre-colonial era, the architecture of Kano city is generally influenced by three factors, one the climatic factor of the area which is generally characterized by low rain fall, extreme heat temperature throughout the half of the year, and strong wind and haze during the harmatan season cold. Secondly the culture religion and influence of trade between the city and other North African countries such as Niger, Mali, Libya, morocco and Algeria. The city of Kano, which is one of the most important trans Saharan trade center in the south of the Sahara, attract many merchants from different part of the continent which makes the city to be center of commerce, knowledge as well as sharing political and cultural ideas between different ethnicities.

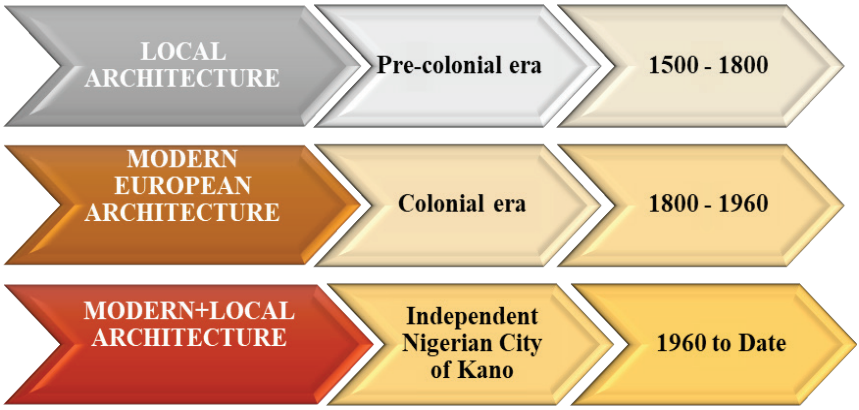


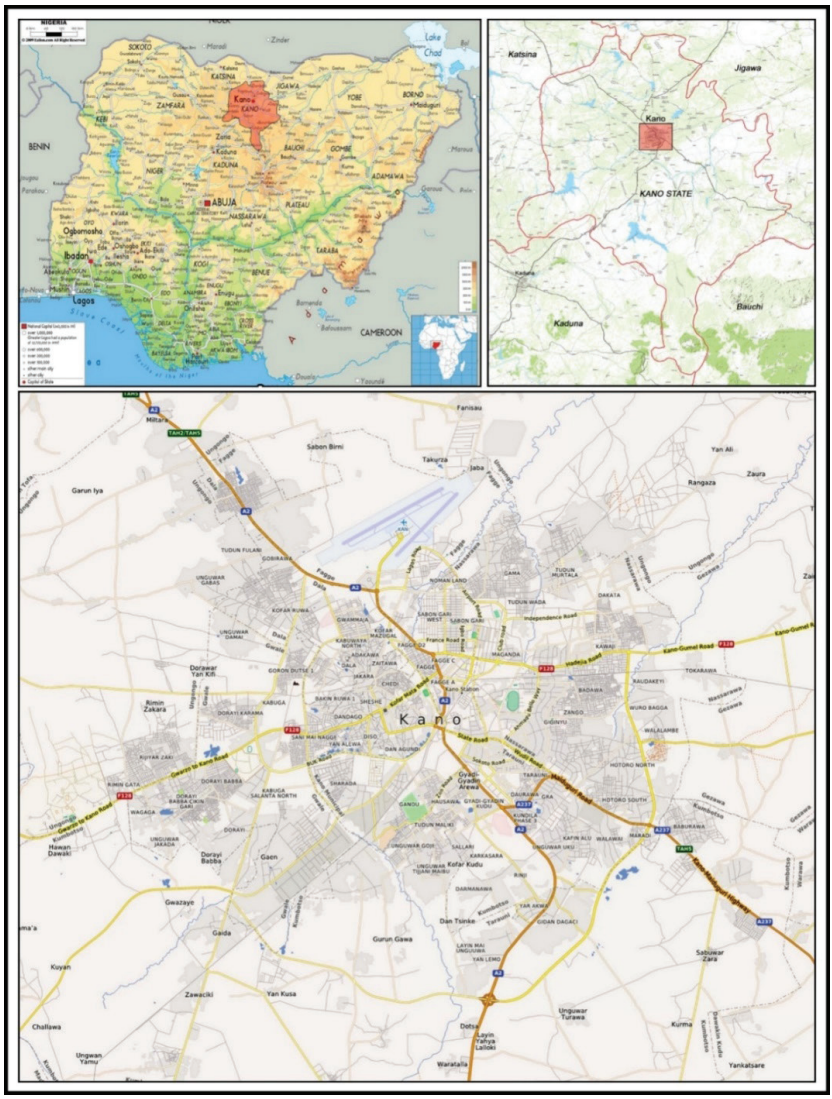
Figure 1: Evolution OfArchitecture In Kano Metropolis

The urban architecture of Kano can be seen as dated back to the era of Hausa traditional rule before the conquest of the city by Fulani jihadist, during the pre-Dan Fodio era, Kano city architecture was generally local Hausa house made up of mud bricks three leave and many other available materials within the area, the local Hausa builders generally measure their building in relation to human body parts of heights, such as hand length or human height, the buildings material are mud mixed with savannah grasses and animal dunks with water in other to gain viscosity as it is used as a cement. The traditional Hausa housing was the only architecture used in the city until 17th century during the reign of Fulani clan of Harbe when the city connection with the North Africa was at its peak, this leads to the adoption of their architecture to the city and continue to flourish over time. (Barau 2008).

The Kano metropolitan area served as the capital city of Kano state, with the old walled Kano city situated at the center of the Kano metropolitan area. The city lies in the North-West geopolitical zone of Nigeria, situated in the north of Jos Plateau, located in the Sudan savannah region which is south of the Sahel region (map 1). The city lies aroundRiver Kano and Challawa flowing from the southwest converged to form River Hadejia which flows to the east and finally emptied into the Lake Chad in the extreme north-eastern part of Nigeria. The city situated on 488m above sea level, the estimated area coverage of Kano metropolis has increased from 122.7 square kilometers in 1961 to 154.6 square kilometers in the 1981, an increase of about 25 percent, based on the average expansion rate of 2 square kilometers per annum, the city was the second largest city in Nigeria after Lagos and largest city in northern region of the country. Kano is one of the cities that has both economic and administrative potential in sub-Saharan Africa long before the colonization, that makes the city an exceptional in the country whereby must of the cities gained their influence and potential during and after the colonization of the country, the city stand the test of time since from its formation as a small agrarian town later on turn to be one of the must strategic town of Sokoto caliphate after it was conquered during the jihad of Usman Dan Fodio, later by British colonizers as economic hub of the north and become state capital after independence and continue with its role as commercial administrative and industrial center of the northern Nigeria.

Based on (2006) population census the Kano metropolitan area has 3.626,204 million inhabitants. Although the population figures in Nigeria are always been controversial, however, there was an allegation that 2006 population figures do not include the number of migrants that come into the city and based on UNDP there is 10 percent migration influx into the Kano city per annum. Based on the united nation urbanization prospective reports 60 percent of urban population in developing countries where due to the natural change while the remaining 40 percent was due to the rural-urban migration, in due of that the exemption of migrant population in the city during the 2006 census has significantly undermined the potential population of the city as well as the general image of how large the city was.Therefore, considering the nature of continuing physical growth of the metropolitan area the exact population may exceed that.

Map 1: Location Map of Kano



The country experienced a rapid urban growth in the fifty years of its independence. For example, during the 1980s the country has only 25 urban centers in which the figure increased tremendously by 125 percent during 1953.During the period of ten years 1953-1963, the number of the urban centers increased from 56 to 185 also the urban population experienced a huge increase of 240 percent from 1890-1953 and later 300 percent during1953-1993. Based on the projections there is expectation that by 2025, 65 percent of Nigerian population will be living in urban areas, and this will lead to rapid growth and changes in socio-economic status of the countries urban centers (Ayedun et al., 2011: 99-104).

Kano is one of the most viable cities in Nigeria as well as in sub-Saharan Africa since before colonization, the city serve as the economic and administration center during the colonization which makes the city growth and attracts migrants from different parts of the country and world at large, the economic status as well as administrative function of the city long before during and after colonization leads to the rapid expansion of the urban center and makes the city one of the largest city of the country second to Lagos, the viability of the city function makes the city to be one of the most heterogeneous urban center in the country whereby Africans, Arabs, Europeans and Nigerians from different part can be found living in many neighborhoods of the city and specialize in variety of business, the aims of the research work was listed below.

- To identify the effect of population in the urban growth and it diversity
- Identifying the spatial growth of the city over time
- To identify the urban physiology of the city
- To identify the urban land use
- To identify the urban functions of the city
- To clarify the influence of geographical factors in the urban growth

INFRASTRUCTURE OF THE URBANIZATION PROCESS: PHYSICAL ENVIRONMENT

The relief of the Region can be categorized into four types: South and south eastern highlands, the middle and western high plain, the central lowland and the Chad plain. The highlands occupy more than 50% of the surface area of the Kano Region and lie on the elevation ranging between 450 m to 650 m. The high plains consist of areas of low relief, usually less than 20 m and areas of grouped hills where the hill may rise higher than 100 m above the plains. The plains are developed on rocks of the Basement Complex." (Mustapha, et al., 2014, pp. 2-10) this old geological formation that is relatively flat and fertile nature of the areas makes the area favorable for the first settlers of the city, as during that time soil fertility and water source are among the major factors that attracts people to settle in a particular area.

The topography of a northern Nigeria and Kano area in general was characterized by a vast savannah plains with river valleys and isolated hills in some areas, Kano which is situated in northern Nigerian Hausa highland was situated on 400m above sea level an area which is relatively open plain north of Jos plateau and to the north east bordered with chad basin boundary start around Kano up to the north eastern part of the country, the

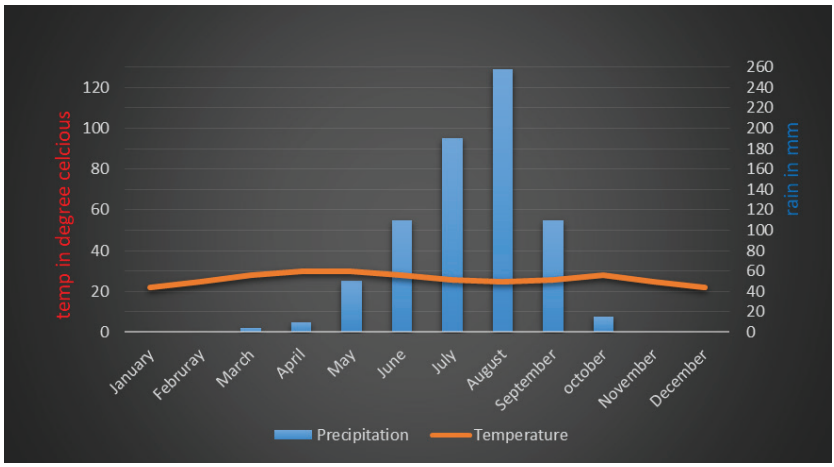
area consist of some rivers flows from south towards Kano and emptied in to the lake chad, the river floods plains resides during the dry season and provides a fertile farming ground for the people around,

The area where Kano city was established was around Dala hills in the north western part of the city, the area was relatively high compare to other parts of the city which comprise of undulating plains, the city situated in an area of 400m to 1000m above sea level the area loses height from south towards north in to it boundary with chad basins, two major river valleys pass around the west and eastern part of the city, to the west lies river Chalawa valley which pass through north western part of the city and it characterized with a large flood plain during the rainy season, in the east also lies the river Hadejia flood plain that passed through the eastern part of Kano and emptied in to lake chad, also river Jakara pass through the city from south towards north and forms a wide river plain in the northern part of the city which has vital potential for urban agriculture, most of the river beds around Kano was filled with sand. Looking at the topography of the area was generally flat with only isolated hills within the area, for the city development, flat areas with low or no slopes are always most favorable areas for the formation and growth of the city, this also give Kano city an added advantage for spatial growth without any topographical barriers.

Kano has a tropical wet and dry climate, (Aw) climate based on Koppen's classification, even though there is an evidence of climate change that occurred in the past. The climate of Kano as a whole is a tropical climate. Generally, the area experienced a high temperature throughout a year. The seasonal change of temperature around a year start from February in which the gradual increase in temperature reach its peak to 43 º C in April.

The area experienced three main season which are cool and dry season that last from November throughout February. During the period the mean monthly temperature range is 21 and 23 º C with daily different range of 12-14 º C (figure 2). The harmattan winds prevail during the period. The period followed by hot and dry season which pass from March through may with a mean temperature of 30 º C and diurnal range of 20 º C throughout the period. The wet season which is characterized by warm temp with a monthly mean temp of 26 º Cs and diurnal range of 10 º C follows, where by during September temp rise to 13 º C. (Mustapha, et al., 2014).

Figure 2: Annual Rain Fall and Temperature of Kano



Kano metropolitan area received a mean annual rainfall of about 800mm.There is a great variation in amount of rainfall received in the area for every year, whereby there is no single consecutive years that received same amount of annual rain due to the variation which cause by many factors arise. The average rainfall varies in the region due to the longitudinal difference and continental factors where by southern part of the city received high rain fall compare to the north which is close to the Sahara region. The metropolis temperature varies from that of the surrounding rural areas by 9ºdifference (Mustapha, et al., 2014). The rainfall in the area reach it peaks around July through august and it is characterized by strong winds thunders and torrential showers that leads to the flooding in the flood plains of the rivers and tributaries that traverse around the city.

THE HISTORICAL PROCESS OF URBANIZATION: THE HUMAN ENVIRONMENT

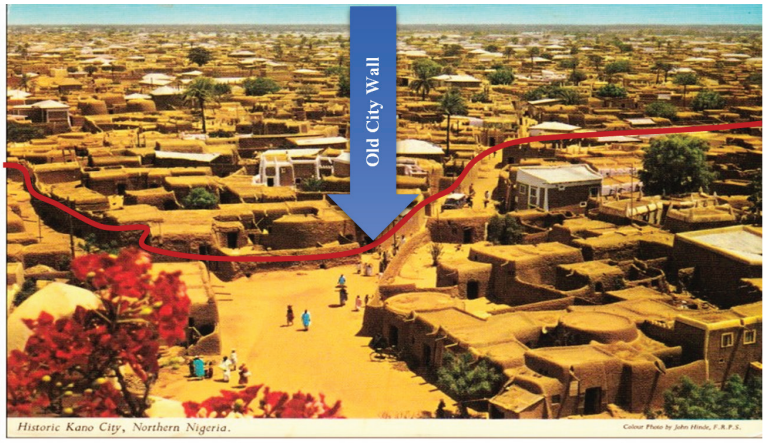
The city was located in an area that has a long historical record of the great empire in the northern Nigeria, Kano lies in a major trade route from sub-Sahara to the North African region that links to the Mediterranean, this give a Kano a significant advantage of growth and commercial potential since before the colonization of Africa. with the conquering of the city in 1805 by Usman Dan Fodio makes Kano one of his strategic city of his caliphate, after the conquest of the city by Dan Fodio the city attracts population of people around the area due to the rise in significance of the city by becoming administrative and military Centre of the Sokoto caliphate.

The early settlers of the city where farmers and hunters due to the advantage of natural potential that is within the area, agricultural activities as well as animal rearing become one of the major economic activities

in the city in which later years locals developed small skills like dyeing weaving and other small crafts, there are many rivers that traverse through the city which are also a significant in the earlier founding of the city in the area and the rivers gives life to the locals in terms of the dry season irrigation farming. Due to the rapid industrial and commercial activities as well as administrative functions of the city, Kanobecome a center of population attraction in northern Nigeria which leads to the rapid expansion of thecity. The city lies in a major transportation routes both in early years of it establishment and the later years, this gives the city a potential for a growth whereby from Kano there is major roads links the city to neighboring Niger Republic and a highway that link the city up the chad republic Cameroon to the central African republic this leads to the development of commercial industrial activities in the city whereby a lot of traders from neighboring countries of Niger, chad, Cameroon and Central Africa Republic influx in to the city for buying a basic commodities and textile products at large.

Kano as one of the oldest characteristic African city, it comprise of a three major city features which are African, European and new modern city architecture comprise of African and European city model that emerge in the country after the independence in a process of reawakening and reviving African architecture. The old city of Kano is an area covered the ancient city of Kano which is surrounded within a wall (Picture 1) during 12th to 14thcentury, the old city is an area in Kano metropolis where by some local African Islamic artifacts can be seen as an evidence of influence of Islamic religion in the city. The city was surrounded by a high wall with a numerous entrance which served the interest of the city during the period of wars as a protective shield, the dwellings inside the surrounded city where mostly made up of mud bricks and doom roofing's. The setting of the city was design whereby the city center comprises of a central mosque, emir's palace, market square, as well as large courtyard in front of the emir's palace which has a function of the city square for festivals and other gatherings. The general artifacts of the old city were based on the characteristics African architecture in which most of the building materials where sourced from natural environment around the city this makes the city to be largely relied on nature in sourcing building materials.

Picture 1: Aerial View of Kano within Old City Wall 1950



Outside the old city of Kano is an area that was developed to a new modern city due to the influence of colonization and rapid migration in to the city from many part of the country, this leads to the rising of new metropolis by agglomerating old wall city and form a nowadays Kano city. Due to the different factors that influence the growth of the city, there is a contrasting different between the old walled city and the new expanded areas outside the ancient city wall. The Kano city outside the ancient wall was a city with some new modern artifacts that was based on the European urban architectural designs build by the colonial government of the country.

Also the design of the city was created by the Europeans where by a new urban used plan was reintroduced in the city which reflects the European pattern. The buildings such as administrative, military schools as well as residential building where design and build using European architectural designs and modern building materials that where mostly imported in to the country. After the independence of the country in 1960 there is a reawakening in restoration of traditional architecture of the city which leads to the formation of new designs which are mixed of European and traditional African architecture in the city. There is a contrasting difference in the city architecture between the ancient African architecture which is within the old walled city and the modern European architecture that is largely outside the walled city and the new emerging mixed architecture of Euro- African style in the city.

DEMOGRAPHIC PROCESS IN KANO

Kano is one of the most populated cities in the country since pre-colonial era in the country, the city attract population due to the strategic nature of it site and situation in which attract people from all over the country and beyond its boundary. Convenient climatic condition, fertile lands, and water are major natural factors that attracts population to the

area. Commercial activities, farming, education and security where some of the major human factors that attracts migration in to the city. Although Kano is one of the major administrative centers of Sokoto caliphate of Usman Dan Fodio information about the accurate population of the city was sketchy, the early records on the population of the city was generally based on the estimates of early European reconnaissance of the city.

Early European explores like Hugh Clapperton, Barth, FredrickLugard has written information about the population of the city prior to the colonization when they first came to the city for reconnaissance and spy. Based on their records Clapperton who come to the city in 1820s as a spy has estimated the population of the city to be 30,000 to 40,000. However, in 1851 when Barth visit the city he estimated that Kano has a population of 60,000 inhabitants in which he states that half of the population where of slaves (table 1). During the Frederick laggard's military mobilization to conquer Kano city in 1903, he estimated the population density of the city was 21 people per square kilometers.

Kano is a city that always being a center of population attraction since the early years of its establishment, many political and administrative factors affect the population growth of the city, the conquering of the city by usman Dan Fodio in 1805 to the conquering of the city in 1907 by British colonization and the independent of the country in 1960 to the making of the city capital of Kanostate, are all some of the factors that affect the population structure of the city. The listed political and administrative factors were major occurrence that change the populationstructure growth and density in the city. As the urbanization process continue to gain speed in the metropolis after the independence of the country, population features of the city also continue to change over time due to factors such as migration, integration of rural areas within the fringes of the city to the city population, change of life style of the people, and also formation of new population groups based on different social and economic background which is largely influence by the migration of both skills and un skills laborers and highly skills civil servants.

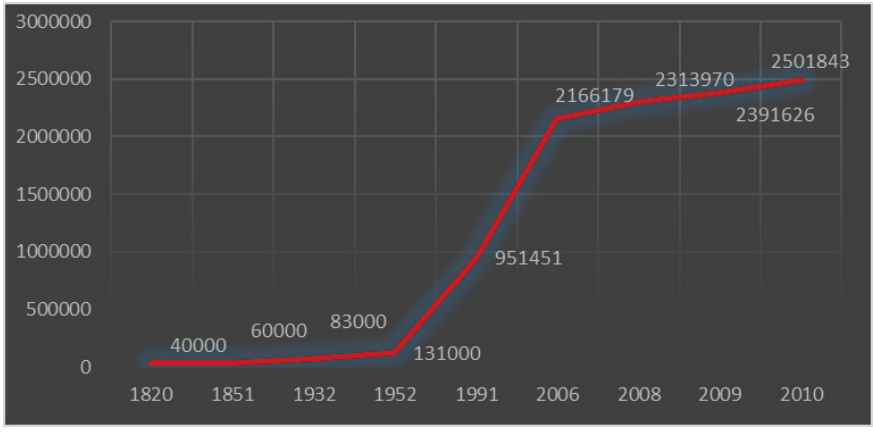
Table 1: Population Trends of Kano City (1820 - 2010)

Year	Name Of The Observer	Population
1820s	Hugh Clapperton	30,000-40.000
1851	Henry Barth	60,000
1903	Fredrick Lugard	30,000 (Kano Market Alone)
1932	Colonial Government	83,000
1952	Colonial Government	131,000
2010	National Population Commission	2.501843

Source : Barth 1857; Barau 2015

Kano population experience most of the changes after the coming of colonial regime and the independence of the country in 1960s, this administrative change leads to the population growth in the city. Years after the independence of the country, many population censuses were carried out to get the facts about the population of Nigeria, the exercise was mired by many irregularities and controversies that leads to the cancellation of the results in many places by courts. Based on the available population data of the state, the population structure of Kano has change tremendously due to many social changes that occur in the city over time. The city become one of the biggest commercial and administrative center of the colonial government, this attracts youth population in to the city in searching of a job, also many educated youths and technicians migrated to the city during the colonization and after the colonization to work in industrial and social service sector that was developed in the city, which leads to the gathering of educatedyoung ages men in the city. The city become one of the industrial cities in the country whereby the life style of the residence begins to change from agricultural economy based life style in which many children were born by a single family to more industrial family life style in which the members of the house whole decreased to a small family structure. Lack of reliable data records concerning the population of the city during the post colonial era of the city, makes it difficult toclarify the exact population of the city,but presence of many structures such as city wall markets city squares as well as the the size of the emirs palace give insight of how great the city was since before the colonisation where by in some research works stated that kano is the second largest city in Africa after cairo in egypt at that time.

Figure 3: Population Line Graph Of Kano Metropolis (1820-2010)



After the colonization of the country and the successful census carried out in the country the population data published by national population commission of the country stated that Kano state was third largest state in

the country in terms of population after Lagos and Ibadan whereby itranks as the highest populated state in the northern part of the country, according to the data released after 1991 census, Kano state at large has a total population of 5,810,470. Whereby out of the total population 2,958,736. Consist of male while 2,851,734 consist of total female population in the state. After that period, the population of the state keep on increasing more especially that of the Kano state capital which is our research area due to the rapid migration to the state capital from various parts of the country. The Kano state capital which is Kano metropolis consist of three local council areas, based on 1991 census result was the third most populated urban center in Nigeria after Lagos and Ibadan, the metropolitan Kano has a total population of 951,451 people (figure 3) based on 1991 census whereby at the time the metropolitan area only comprises of three local councils of Nasarawa, Kano municipal, and Dala local area council.

ECONOMIC PROCESS IN KANO

By the virtue of its location site and situation Kano city has a long history of commerce and industry in sub-Saharan Africa for many decades, the history of commercial activities in Kano can be traced long before the colonial era whereby the city was known by its great merchants and as a center of trans Saharan trade in which many caravans of camel comes in to the city in troops with goods from Mediterranean coast and exchange their goods with local goods that are produced around Kano. Agriculture plays a vital role in every society, Kano was also not an exception in terms of farming and animal husbandry long before the colonization of the city. Agricultural activities around the city may be said as among the major reason that attracts colonizers in to the city whereby in later years transform the city to industrial hub of the region.

History of Industrial production in Kano city start long before the capturing of the city by Usman Dan Fodio in 1805, there is evidence of small scale industry production in the city whereby locals are melting iron and producing small house materials such as knife sword and pots, there is even evidence that the Kano city was initially founded by blacksmiths that first settled around Dala hills melting iron ores use in producing weapons for hunting. Small scale industry in the city was developed after the conquering of Kano by Usman Dan Fodio, most of the produce in the city that become popular in those years was of hand work crafts such as leather work and dyeing, production of small metal tools such as harrow for making ridges knifes swords and pots, textile production was also another important small scale industry in the city due to the cotton farming in the area. During 1980s industrial establishment reach its peak in which 23.8% of the industries was built and 29.9% in 1990s making the Kano metropolis has a total number of 293 industries (Liman, 2015: 55-65). During the

last years of colonial government and early years of independence in the country Kano metropolis become one of the most important hub for industry in Nigeria which is second largest industrial city after Lagos with it varieties of industry such as textile leather and footwear, enamelware, cosmetics, pharmaceuticals and many other agro based food industries i.e. beverages vegetable oils and animals feed.

The city experience both spatial and population growth during that period due to the massive migrant that it receives from other states and abroad, the design of Chalawa, Sharada and Bompai industrial layout in the city outskirt which later on agglomerate in to the city can be seen as a striking evidence on how the industrial activities influence the spatial growth of the city. The site and situation of the city which is also favorable for industrial establishment also play a better role in attracting both foreign and local investors in to the city, the availability of road networks and construction of Kano Lagos railway line plays a vital role in the development of the sector whereby people around the countries in the region can easily come to Kano to buy goods instead of going to Lagos which is far away from countries like Niger, chad, Cameroon and central Africa.

Industrial sector in Kano metropolis experience a decline during 1990s and 2000s, the major factor that cause the decline of the industry in the region was the political instabilities and the oil boom of 1970s, immediately after the independence the country experience a one year civil war and many coups and counter coups, also with the exploration of oil in the Niger delta region of the country the later government of the country become more reliant on oil sector than developing the industries of the country, which make people abandoned Agriculture which is the main factor that is driven the industry as major source of raw materials. Some of the companies in Kano metropolis stood these period such as food processing industries and beverage and confectionary companies continue with production, but the textiles industries where major industries that strongly affected whereby most of the textile companies in the city where closed.

Lack of electricity during 1990s also affect industrial sector significantly in the city and the country at large, during that period more than 50% of industries in the city where closed due to the unstable power supply to run the companies. The industries in southern region of the country such as in Lagos and Ibadan where able to cope with the situation by generating their electricity using thermal stations that are generating electricity using gas, Lagos and Ibadan due to their location close to the Niger delta region which is the area that the natural gas is been explore in the country help their companies to find an alternative solution for the electricity shortage, but for the Kano that is in the hinterland doesn't have that advantage that

leads to the closure of companies that may not run on diesel generators and those that runs their companies with generators also experience a decline in their profits.

During this period of industrial recession most of the industrial workers in the city lost their jobs, the city cope with the declination of industry with it strong commerce and agricultural sector. With the decline in price of petrol in the country, there is a strong intervention in the country to revive the industries in the city after many years of negligence, but such effort where still not progressing due to the decay of infrastructure in the sector for many years, also a foreign market that developed during the gap that where created makes a significant ground in the city whereby most of the products that are produced in the city are now been imported from countries like china,which makes the reviving industries product harder to compete with imported product.

Picture 2: Satelite Image Of Bompai Industrial Layout

Source: Kano, Google Earth 2020

Bompai industrial layout situated in the North Eastern part of the Kano metropolis, the Bompai industrial layout (picture 2) is one of the earliest industrial layout established in the metropolis to boost the industrial sector of the city, the layout was situated in the north eastern part of the city away from the CBD, which later integrate in to the part of the city due to the urban expansion towards its area, the layout was established around the rail way line to ease the transportation of finished product in to the various part of the country, with the expansion of the urban areas towards the layout and also the development of the industrial sector in the city during 1970s, the need for more land to build industries emerge, this leads to the establishment of other industrial layouts such as Sharada to carter the need of the industrial sector of the city.

URBANIZATION IN KANO

The term urbanization is the symbol of development and transformation of a settlement based on population-settlementrelation. Change in demographic structure influence the change in city's physiology, Population increased and change in the socio economic structure of the population, evident of change in dynamic of population volume, structure and distribution, and physical growth of an urban space as an indicator of urbanization. (Akdemir, 2013: 1- 2)

Urbanization process in Nigeria is taking place for very long time in an alarming scale due to the rapid population growth in the country and rural urban migration, the urbanization in the country start in some regions long before colonization which generally perceive as the major factor that triggered the process in the country. The country has many settlements that are believed to be in status of urban area based on that time, cities like Kano, Zaria, Sokoto are all believed that they reach the status of a city as of definition of city in that time. Cities like Kano, Timbuktu, Kumasi, and Benin in southern Nigeria where all evident of urbanization in sub Saharan Africa long before colonization. Some of those cities where destroyed and looted by Europeans and most of the artifacts in the city are taking out of the country to most of the European museums, this leads to the perception that urbanization in African to be started with the coming of colonization. The coming of colonization was only triggered the rebirth of new urbanization in Africa which is based on European values and standards that is totally different from destroyed African urbanization process in the pre-colonial era. The urbanization process in Africa can be classified based on three periods that shapes the future of the continent which are listed below,

- Pre-colonial urbanization: during the great kingdoms in Africa such as Ashanti in Ghana, Kanem Bornu (comprise of Nigeria, Niger, Chad and Cameroon) Songhai, Wolof and Mali.
- Colonial urbanization: rising of new urban areas such as Lagos in Nigeria and new capital cities and port cities.
- Post-colonial urbanization: this period was after the independence of African countries and rise of new urbanization trends that are strictly of western culture and values due to the influence of long term colonization in the continent, but later such trends is changing with the reawakening of African culture and values.

1-URBANIZATION IN KANO IN THE PRE-COLONIAL PERIOD

Kano become a city after the city wall was built during 11th to 12th century, the city has many entrance gate (city gates) which are used for

different purposes, Kano city during 16th century with about 7500 houses become third largest city in African, in 1820 the city was estimated to have a population of 30,00-40,000 inhabitants, later in 1851 was estimated to harbor 60,000 populations. During 18th century Kano city become one of the biggest cosmopolitan city in sub Saharan Africa and become the most southernmost end point of Tran's Saharan trade during 19th century (Barau A. 2011: 1-4, map 2).

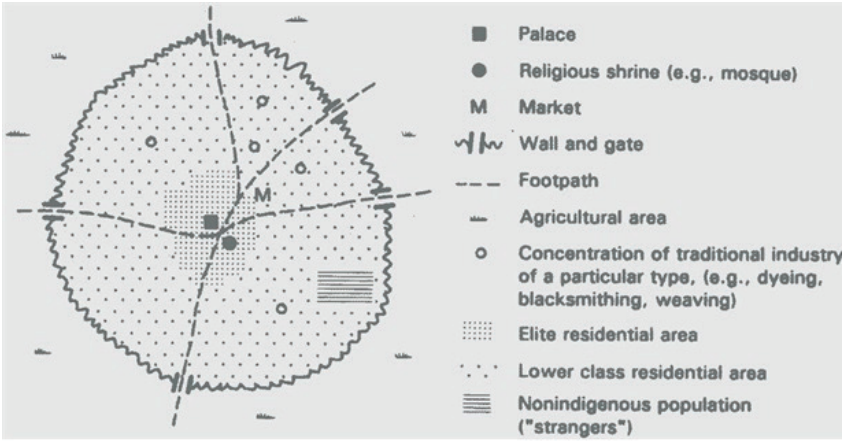
During the pre-colonial era, Kano city growth was influenced by both natural and human factors, the city which situated within the Sudan savannah region of the country, the region is one of the most fertile and climatically favorable area for grain production this attract people from far north of Sahel savannah region in to the city for buying food stuff such as millet guinea corn maize and wheat, this plays a significant role in growing the markets of the city and attracts new settlers that are looking for a job to the city. The rivers that traverse around the city also plays a significant role in developing the city economy during the pre-colonial era, whereby people engage in agricultural activities throughout the year by doing irrigation farming in the riverine area of the city after harvesting rain season farm produce, apart from agricultural produce which is the basic economic activities in the era,

Kano also has a long history of hand crafts works such as weaving, leather work, local fabric painting, and blacksmithing. This help in growing the city economy and attracts buyers from different towns around the area to the city to buy local agricultural tools such as hoe, rake and ridge ploughs. This makes the city one of the most viable settlement in the region with a functional market for transactions that attracts merchants from many west African countries and Saharan Africa, also this open the doors of merchants in Kano to many countries that help in the spreading of Hausa language of Kano to many countries and also introduction of many cultures and languages in Kano city, the introduction of many foreign merchants to the city and the exposure of merchants from Kano to other countries introduce new cultures, building designs and material to the city which are still significant in the temporary architectural designs of the city.

Within the old city plan as in many African city settings, there is provision of city center in the plan which comprise of emir's palace, central mosque, town square, and market. The city center is an area which carries the function of central business area in the city, whereby is the area which comprise of emir's house and local council court, mosque, markets and other special needs functions areas (figure 4). The residential areas grow around the emir's palace and market which make people gain an easy access to the city center. The city wall that surround the ancient Kano city was built to protect the city during sieges during war, as Kano city

was established in an open plain with relatively low height, the need for surrounding the city with wall was eminent as of that time. The city wall was built to the height of 30-50 feet and 40 feet thick with a mud bricks, the city has a total number of 15 gates that are used for different functions, each gate of the city has it guardian, the title of guardian of the city gate was given to the lineage of warriors and knights of the city and such title was passed through the generations of the family.

Figure 4: Schematic Map of Typical Pre-Colonial African City



Source: Africa South of the Sahara, 3rd Edition, By Robert Stock 2013 by The Guilford Press.

Most of the traditional African cities prior to the colonization where design in such a way that they will serve many social economic and political function of the contemporary African city. In the sub Saharan African region, most of the cities are established in an open plains making it difficult for defense, that why almost all the cities of ancient empires of that era were surrounded by a long wall with many gates. Kano, Ngazargamu in modern Yobe and Timbuktu in Mali are all example of pre-colonial cities in the continent surrounded by the city wall.

As shown in the sketch above almost all precolonial cities in the sub-Saharan Africa where design as shown above, the city center comprise of emirs palace, elite residential area, markets, religions centers mosque and shrines, the outer cycle inhabits the lower class residents which comprise of farmers, craftsmen's, royal guards and others, also within the area that inhabits the residents of lower class residence, there are many small scale production centers such as black smiths shops, dyeing pits, traditional cotton weaving centers and leather workshops. Far away from the city center close to the city wall comprise of residence of strangers that settled in the city which some are of different tribes, religion and culture, the residence of the area where segregated from the main city residence

due to fear of introducing new culture and religion to the local inhabitants of the city. Outside the city wall is the farmlands of the city inhabitants used for agricultural purposes such as farming and grazing areas for their livestock's.

URBANIZATION PROCESS IN KANO AND ADMINISTRATIVE INFLUENCE

Administrative centers have always been an important areas of urbanization due to the influence of administrative decisions and functions that are carried out in those centers, for a city like Kano administrative influence has always been an important factor that speed the urbanization process. The influence of administrative factor in the urbanization process of Kano can be taking in three phases i.e. Kano as strategic capital of Sokoto caliphate, Kano city as strategic center for colonial government and Kano as state capital of Kano state with forty-four local government areas. Those administrative changes that occur over the time are the major administrative factors that influence the urbanization of the city, during those periods, Kano transform and expand from contemporary Muslim African city setting to colonial European city and later to independent African city setting interwove with European city setting.

As in every urban center administrative influence has always affects the urbanization process in the cities either by speeding the rate of the process or slowing the process, in sometimes almost stop the process at all, Kano city is one of such cities without exceptionaldue to the many scenarios that occur in the city since from its initial establishment up to this time. After the establishment of the city during 10^{th} century, the city experience both rapid spatial and population growth due to the fact that the city was established in a very strategic transportation network Centre, the city continue to grow due to commercial and agricultural potential that it has during that era, the city almost reach the status of city state itself, after the conquering of the city by Usman Dan Fodio in 1805 which leads to the new reign of Sokoto caliphate in the city, the city become one of the most important strategic administrative town in the Sokoto caliphate.

During that time Kano was used as one of the stronghold of the caliphate used in advancing a campaign to conquer more lands in the south of Sokoto caliphate, the city experience a tremendous change during that time whereby many soldiers and slaves from different ethno religion background were settled in the city, this leads to the expansion of the city and form more heterogeneous society within the city with a division of economic activities. With the conquest of Kano by Usman Dan Fodio and making the city one of the most important administrative town of the caliphate, the city become more secured and economically viable and

attracts many people of different tribe that are under the caliphate, also the local Hausa people of the city integrated with the Fulani tribes that conquer the city due to inter-tribal marriages between the two tribes which leads to the formation of mixed tribe referred to as Hausa-Fulani. Educational centers, markets and many other social service where developed in the city during that time which makes a significant influence in both population and spatial growth of the city. Although during the Sokoto caliphate the city urban area was generally within the old city, the city at the time also experience a relative development whereby within the old city wall, many neighborhoods are enlarging due to increase in population and also the influence of the Kurmi market which is situated at the center of the old city attracts an urban growth within its environs,

2- URBANIZATION PROCESS IN KANO AS COLONIAL AFRICAN CITY

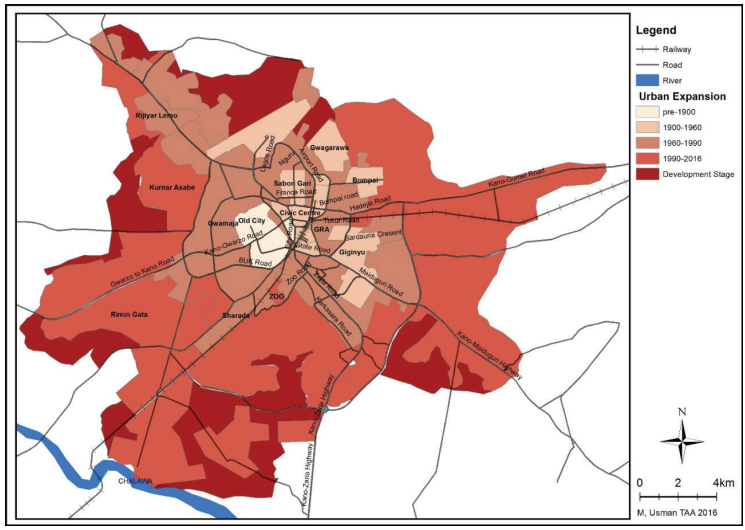
Urbanization process in Kano city enter a new phase after the conquering of the city in 1903, the city gates were broken by the royal British forces after they enter the city theyenforced a new ruling system. The initial system of government which is mainly enforced by traditional rulers made up of emir and members of the emir's court was not totally abolished but it was degraded to the certain functions and such decision where made by the British to use the local emirs as a tool for colonial indirect rule. This helps the colonizers to have an easy ruling over the city without resistance from the masses. During the colonial regime in the country, there are certain developmental projects that were carried out in 1900-1960 which change the urban landscape of the Kano metropolis, they are among the first structures build outside the city wall which triggered the urban expansion outside the city wall, thus projects shapes the urban features of the city from the characteristics African city setting to look like more European city setting. Among the early established projects are listed below.

- Construction of airport in the city
- Establishment of new central business district in the city
- Establishment of Sabon Gari neighborhood for non-Muslim migrants
- Establishment of Gwagwarawa neighborhood for world war II veterans
- Establishment of Nasarawa GRA for the elites and colonial officers
- Construction of the Railway that connect the city with Lagos

➢ Designing of the new urban developmental plan for the city which generally emphasize on developing land outside the old city

During the colonial government in 1900-1960, the city experience a rapid urbanization due to the many administrative changes that occur at the time, new neighbor hoods where open the city growth outside the traditional city wall (old city) and new urban plan was design for the future growth of the city (map 2), the land tenure system was changed whereby the emir was only authorized to control the land within the local areas, this gives the colonial government power to expand the lands and become entitle to the larger part of the city and gives many land titles to the multinationals. The colonial government also introduce a new urban plan that is not peculiar to traditional urban settings whereby segregation of neighborhood was introduced to the city to serve their economical and administrative interest, based on the spatial layout plan of the city, neighborhoods in the CBD such as Nasarawa GRA are design with physical separation from the old city, this leads to the establishment of new neighborhood outside the city wall, neighborhood such as Sabon Gari literally means (new town) was mainly established in 1913 for the non-Muslims migrant from southern part of the country, also Gwamaja was developed within the city wall reserved land for the migrants, also for the world war I and world war II veterans and other Hausa migrant laborers they developed Gwagwarwa village in 1940s which later integrated in to the urban land in 1953.

Map 2:Urban Expansion Map Of Kano Pre 1900 - 2016



Based on the colonial formal structuring of the city in 1915, the city was divided in to four different segments with a physical variation between the neighborhoods, old Kano city within the city wall and Fagge neighborhood where classified as native traditional sector, while Sabon Gari that is

established for the migrants was classified as African non- native, Fagge ta kudu as Arab sector and areas within CBD such as Nasarawa GRA,Bompai and railway area was classified as Europeans neighborhood. With the rapid urbanization growth and population growth in the city, all those free areas between the neighborhood where developed and leads to the agglomeration of the city (Barau 2011: 3-6). During the colonial government, the city experience a rapid change due to the administrative influence that the city gain, most of the neighborhoods of nowadays modern Kano where design during that time and later developed rapidly after the independence of the country in 1960. Many peoplemigrate from old Kano city within the city wall to the new established neighborhoods outside the city wall due to the congestion cause by rapid population growth and subdivisions of lands in the area as inheritance property, also both the economic and administrative viability of the city attracts population from many part of the country to the city which also contributes in speeding urbanization process of the city.

During the colonization Kano become one of the most important administrative economic strategic city of the British colony in northern Nigeria, this also leads to the detriment of growth to many cities around Kano, whereby most of the administrative function were carried out in the city, also with the change of trade route in northern Nigeria from trans Saharan to the trans-Atlantic route, Kano as one of the strategic administrative center was used for gathering agricultural produce to the Atlantic port in Lagos via railway line for export, this also help Kano to developed it many service sectors such as banks post office and printing press and other social services sector, the colonial government mainly employed the natives of Kano for the railway work due to their closeness to the administrative center and to developed the living standard of people within that area as an effort to control crime in related to social problems. Also with establishment of Malam Aminu Kano airport the first airport in Nigeria in 1932, the airport was used to serve as a military airbase for royal British force in West Africa and also used for commercial airlines in later years, this also makes a significant impact in the development of Kano city in which many colonial administrators in the region come in to Kano before boarding their flight to Europe and other colonial territories within the continent.

The city also become very significant in attracting population for educational and researchpurposes, many primary, secondary and tertiary schools where established in the city during the time to train youths in order to prepare them to help the colonial administrators in governing the country, the high educational institutions such as colleges of administrative studies where later established in the city as part of an effort from the colonizers to prepare an educated youths with western education so that

they will continue to rule the country after independence.

URBANIZATION PROCESS IN KANO CITY AS KANO STATE CAPITAL

Kano city become a capital city of Kano state after the formation of states in the northern region of Nigeria in 1967, the city become one of the earliest state capital of the new established states after the independent of Nigeria in 1960. The city become the administrative center of the state with more than 40 local area councils. Prior to 1991 state formation in the country, Kano state is one of the biggest state in the country covering land mass of 20,479.26 km². The state capital which is Kano metropolis comprise of six local area councils which are (Fagge, Gwale,Tarauni,Dala,Kano municipaland Nasarawa local area council). Kano city experience a rapid development as the capital city of the state whereby many infrastructures such as administrative buildings, schools and staff's quarters for workers where build to carter the needs of a new state capital with numerous local area councils, during that time, Kano state experienced a rapid spatial and population growth to the extent that some of the local area councils integrate to the city space. During the early years of independence and the economic boom in the country in 1970s, the annual allocation of revenue for the state increase rapidly this leads to the investments in the newly state capitals of the country, during the period development of social amenities in the cities triggers massive rural urban migration in the country, during this period most of the state urban spaces of the country expand to the detriment of the rural land.

Kanobecome modern city in northern Nigeria with proper town planning new roads with street lights and recreational areas, shopping centers and modern central business districts. During this urbanization process in the city new residential areas emerge with some distinctive properties due to difference social classes of the inhabitants, civil servant's neighborhoods developed around government reservation areas (GRA), new office buildings developed within the new city center (CBD) the government buildings are clustered around Ibrahim Taiwo road Sani Abacha road and within Murtala Mohammed road in the central district of the city. new economic sectors developed to carter the services need for the new emerging educated civil servant's population which some are transferred from different part of the country to serve in government agencies in the city. All those changes that occur in the city after it become state capital and administrative center of the state affect both economic sectors and social status of the city, even though there is little development in the service sector in the city since colonial time, after the city become an administrative capital the service sector improve significantly due to the fact that the industrial sector experienced a rapid development and the city

become more heterogeneous in term of economic activities.

Kano city developed in to two different parallel areas, the ancient city which is not well plan or plan based on African city needs with narrow roads that only carter the needs of moving people and animals such as camels and horses, the old city become over stretch with population and the streets within the area become almost impassable in some places, this leads to difficulties in providing social amenities in those areas. The middle class living in the old city (within the city wall) began to migrate to new developed areas outside the city wall, this also leads to the expansion of the existing neighborhoods and opening neighborhoods in the urbanfringes. Outside the city wall, most of the neighborhoods where plan with a very good modern urban settings and buildings.

Picture 3: Satellite Image OfKano City Showing Three Different faces Of The City

Source: Google Earth Image 2020

The google earth image above shows how the city growth and expand from its initial founding areamarked A which is within the city wall, the city developed in the later years of colonization and years of independence after the city become the administrative capital of the state.The area marked B which is part of the CBD of the city was part of the city that's is well planned inhabits the government offices, hotels, banks, shopping malls as well as residents for high class inhabitants of the city. The area growth rapidly to the extent that the new city and the villages in marked area C which is the fringes of the city integrate with the old city and form single entity with a distinctive difference in the buildings between the areas due to social and economic factors.

Kano city continue to grow due to the administrative factors that

enhance the process, the rural areas and agricultural lands within the fringes of the city integrate in to the bigger Kano city (map 2), whereby in some part of the area the city not only integrate the settlements around the city but also the urban growth engulfed many villages and become part of the city, and the urban land grow beyond them as the urbanization process continues. The establishment of Bayero University Campus 7 km away in the north west of the city also triggered the urbanization within the area, the university which is one of the pioneer universities in the country established in 1977, the university was initially situated within the same Kano- Gwarzo road in the outskirt of the city wall, after many years of Kano urban growth, the university become part of the citycenter, with the growing population of the city and students number, the university established a new campus 5km away from the existing one to carter the need of their increasing student number and providing suitable learning environment, this also gain the city a new urban land to the detriment of rural land, the vast open land that was initially an agricultural land developed in to the urban area due to the influence of administrative decision of establishing a university campus within the area.

With the rapid urbanization in the city due to increase in population, people begin to migrate from the old city in search of new convenient habitable environment away from the city. These leads to the opening of new residential layouts in an area away from the city as a major to decongest the city centers as they almost reach their population carrying capacity. The state government using public private partnerships engage in constructing housing unit in those layouts away from the city center as a major for providing affordable housing units for the peoples and also attract people to build their houses within such areas as basic amenities such as roads, water supply, schools and hospitals are also built in the new layouts. The program helps many people to own houses as the government used to gives out the houses as mortgage.

Many projects are being carried out to provide affordable housing units to civil servant of the state whose find itsometimes difficult to getaffordable house in the city. The state government embark in building housing estate in areas kilometers away from the city due to the fact that finding land for such projects in the city is difficult, this leads to the expansion of the urban land use plan to the rural lands which are generally used for agricultural purpose, example of such projects was that of Kwankwasiya city a new housing estate build in the outskirt of the city along Kano-Zaria highway the housing project was design to carter the needs of the civil servant and other middle class people in the city, the two housing estate where developed in adjacent to each other with a reasonable distance between them,each of the housing estate cover a land area of approximately 2.50

km², the neighborhood are design with all the basic amenities needed such as roads street lights pipe born water networks school and many other social amenities, this leads to the attraction of many middle class dwellers of the city to developed their lands within the area of the established new estate in other to use the basic amenities within the estate, this practice leads to the development of new neighborhoods within the government established areas.

3-URBANIZATION IN KANO IN THE POST-COLONIAL PERIOD

After the independence of 1960. The city experience a two phase of urbanization, during 1960-1990 the city developed within the old city center and the central business districts towards the north western part of the city, this can be as a result of opening a many high density residential layout within the North –West axis of the city, the price of the land in the areas which is relatively away from the central business district and Nasarawa area is cheap compare to other part of the city, also the north-west axis which is the extension of the old city around Gwamaja attracts population a lot due to the over stretching of the land within the old city. This gives a chances to people within the congested old city to migrate to the new extension outside wall residential layout that has a relatively cheaper land value compare to the eastern part of the city wall in the central business districts and its environs. Also looking at the urban expansion between 1960-1990 the total areas developed within the metropolis can be seen as smaller than that of 1990 to date, although the country experience a rapid economic growth after the years of independence, more especially with the oil production during 1970s, the country also experience many political instabilities with the numerous occurrence of coup de tat and counter coups, this affect the development in many part of the country including Kano metropolis, also the civil war experience in the country during 1967-1970s affect both the social and economic development of the country.

URBAN FUNCTIONS OF KANO METROPOLITAN DISTRICTS

Urbanization as continues process has a very large influence in the city, not only on the expansion of urban space, increase of the buildup areas, and land use.The impact of urbanization goes beyond that to the level of completely overhauling of social and economic structure of the settlement, with the new trend of urbanization, social and economic activities of the cities tend to be newly shaped with the emerging of new economic activities, from traditionally known Agric based economy to industrial based economy which gives way to the immerging of

heterogenic social services. These leads to the formation of different income classes in the cities that leads to the segregation of neighborhoods based on the economic status. All those changes and diversification goes entwine with the urbanization process in the cities. “Cities are the focal points in the occupation and utilization of the earth by man. Both a product of and an influence on surrounding regions, they develop in definite patterns in re- sponse to economic and social needs. Cities are also paradoxes. Their rapid growth and large size testify to their superiority as a technique for the exploitation of the earth, yet by their very success and consequent large size they often provide a poor local environment for man” (Harris & Ullman, 1945, p. 7).

Kano city which is one of the ancient and fast growing city in Nigeria, the ongoing rapid urbanization process reshapes many social and economic activities in the city for a decade. As the rapid population growth goes interweaving with the rapid urban expansion in the city, many economic activities tends to surface within the population of the city. The city which is known as traditionally agrarian and local manufacturing based economy, the rapid population growth and urbanization leads to the growth of industrial sector that later developed the social service sectors. Prior to the colonial time, the people of the city where largely depended on agriculture which is generally subsistence farming and animal production, due to the availability of large fertile lands within the area and farm produce boom, the city become center of trading grains to the many cities in Nigeria and countries within North Africa, this makes the city to be focal point for the traders from within and outside the country come with produce from their areas to sell in Kano and buy goods which are largely farm produce , the location of the city in a strategic trade route and the economic potential boost the urbanization process in Kano and attract many artisans to the city in search of a job to sustain their livelihood.

The sustenance of the city relies on functions it performs within itself and the one it offers to the areas around. Many activities serve not more than population of the city. Economic activities such as bakery, barbing saloons, dry cleaning, car wash, cinemas and grocery shops, serve the real actors behind the main economic sectors of the city such as industrial sector, mining and many other principal economic activities, the sectors by which the city gained it source of sustenance are generally depends on the nature of the economy and the hinterland. Most of the cities are generally not self-sufficient in terms of resources, due to the fact that most of the cities are not sufficient when it comes to the productive lands, these rise to the needs of a surplus production in order to carter the demands of the cities, most of the demand deficient were overcome in the cities due to their strategic location and expertise in terms of technology and transportation where by demands are supplied to the city from distance far away within a possible short times.

Although most of the cities has deficient in terms of productive lands, the expertise and ingenuity of a man and interdependency economy enables most of the economic activities of a man to be focused in the city centers (Harris & Ullman, 1945).

Coming of colonization in to the city re triggered the rapid urbanization, many structures such as railway lines, airport and industries were built in the city, the city become more populated and expand to the detriment of agricultural land, the city become more economically vibrant and many people gain employment in companies, railway corporations and many other industrial and service sectors. The larger population of the city which are farmers ventures in to the trading and other white collar jobs. During the last years of colonial era the city experience a rapid change in social and economic status whereby the immergence of working classes become significant and segregation of neighborhoods become crystal clear among the inhabitants of the city.

The work force in the industrial sector increase significantly in the city during the last days of colonial regime to the early years of independence, after the city become state capital in 1967, the increase of work force in social service sector become eminent, due to the administrative functions and the development of industries in the city. With the oil boom in the country during 1970s, the workforce in industrial and Agric sector of the city shows decline, whereby many companies are closed in the city, which in later years of 1990s worsen due to power outage. The city still has the much of it population engage in commercial activities, and agriculture with a significant number of people working in industries and other social services.

Kano city as one of the oldest city in Nigeria and second largest metropolis after Lagos is one of the earliest cities in the country that serve not only the metropolis but also many cities that surroundthem, long before the colonial era in the country, the city serves as an administrative and commercial center of the region during the Sokoto caliphate of Usman Dan Fodio during.With the coming of colonial government in 1903, the city becomean administrative capital of the British colony of northern Nigeria. After the independence of the country in 1960 Kano city continue to play it roles of administrative, commercial, education and industrial center in the region. The city become a state capital of the new established Kano state in 1963 which is one of the early created states in the country after the independence and dissolution of the regional government.

Looking at the timeline of the city, there are some of the most influential historical occurrence that shapes the urban functions of the city from pre-colonial era to colonial up to the post-colonial era of independent Nigeria state.

- 1095 The Commencement ofthe Building of Kano Wall
- 1430 The City Become the Capital of Sultanate
- 1905 The City Become the Capital ofBritish Northern Nigerian Protectorate
- 1909 Establishment ofNasarawa School
- 1911 Kano –Lagos Railway Begins Operation
- 1930 Kano Girls School Established
- 1931 Daily Newspaper Begins Operating
- 1932 Electricity and Water Project Inaugurated
- 1936 Airport Begins Operating
- 1967 Bayero University Was Established
- 1985 The Population of Kano Urban Agglomeration Become 1,861,000.

This are the major occurrence in the history of the city that transform the urban function of the city, from a traditional African city to the modern Nigerian metropolitan city, with a variety of function serving both the city dwellers and beyond the borders of the country, also it is important to emphasize on the administrative influence of the city, which is the state capital of Nigerian state with 44 local government areas which is highest in the country and also a second largest city after Lagos.

URBAN LAND USE IN KANO METROPOLIS

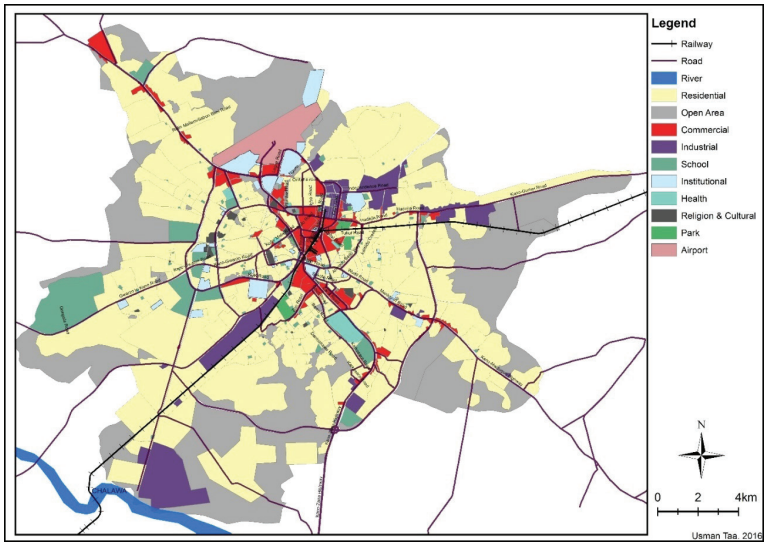
Urban land use as an act of planning and classification of urban land in reference to the different functions the land was used for within the urban areas. The land use, is one of the major research areas in the field of human geography. The land use is generally divided in to two different types, one is the rural land use which is generally classified the land use within the rural areas, which comprise of residential areas, agricultural lands forest and many other rural functional land classes, while the urban land use is capturing more different aspect of the land usage due to the heterogeneity of social and economic functions of the urban centres, this leads to the classification of lands in the cities to different categories such as residential, commercial, industrial, parks and many other urban functional used. Looking at the land use map of Kano metropolis, the land within the metropolis are divided in to different functional areas, this include the residential, commercial, industrial, health, schools, security, religion and cultural which include mosque and churches and many other functional areas

Looking at the above table which shows the total land cover of the metropolis to be around 372.3km^2, the breaking down of the total land cover to the land use, the residential area covers the largest part of the city

which is 193 km^2, while the industrial area in the metropolis also engulfed a very large portion with 19km^2 commercial area is the fifth largest area in the metropolis with the 14km^2 land cover (map 3). The commercial areas within the metropolis are generally concentrated in the central areas such as Fagge, Sabon Gari market, and the old Kurmi market in the centre of the old city. The commercial centres also concentrated within the major street of the city whereby shops aligned in the first plots looking at the major roads while the plots behind comprise of the residential buildings, this examples seen in most of the major streets within the metropolis.

Industrial areas in the metropolis also are situated in the major industrial layouts of the city which are Bompai in the north east part of the city and Sharada industrial layout along Kano Sharada highway in the north western part of the city, the Bompai industrial layout in the north eastern part of the city was one of the most initial layout reserved for industrial development in the metropolis during the expansion of the city layouts in the colonial era, the layout was situated in the east of the central business district of the city and the major commercial centre established in the metropolis outside the old city, also the location of the industrial layout by the side of the railway line that links the city with port in Lagos gives the industrial layout a perfect advantage for growth with the easy means of transporting good, with the growth of industrial sector in the metropolis and over stretching of the layout within the Bompai industrial layout by the expansion of residential and commercial layout in the area, leads to the opening a Bompai industrial layout in the outskirt of the metropolis.

Map 3: Urban Land Use Map Of Kano Metropolis (2016)



The government offices such as ministries, parastatal among many other public office structures are dispersed within the metropolis, this can be as a result of the fact that the metropolis comprise of six local areas councils, and all those local areas councils has their departments and parastatals such as local government secretariats, departments of works, agricultures, health and local government education authorities, also the metropolis been a state capital of Kano and centre to many government organizations of northwest geopolitical region of the country, attract the government administrative office of some organization, most of the administrative or government offices within the metropolis are concentrated within the government reservation area of the city and the central business districts which is refer as the civic centre. By the land use law of the country, commercial and residential plots cannot be allocated within the government organizations such as schools, hospitals, offices and security posts, but with the high demand of commercial shops within the metropolis, such rules can be seen are violated within most of the government offices that are around the major roads or population combining areas.

Education centres or schools of primary and secondary education, are generally dispersed within the residential areas of the metropolis, only the higher institution of learnings such as universities, colleges, polytechnics, and other higher institutions can be seen to be located in an isolated areas or areas that a bit far away distance from the core city centre, this can be as a result of non-availability of large land within the city and also the need for a conductive learning environment away from the urban chaos, but still with the rapid growth of urban sprawl in the metropolis, such isolated areas are also integrating in to the core city areas, examples of this can be seen on Bayero University old site which at the time of establishment was situated outside the city centre but later urban growth reach the area and makes the university open a new campus away from the city in Kano-Gwarzo highway but also attracts the urban growth within the area. Parks and recreational areas such as sports centres, race course, golf club, zoological garden and many other recreational areas in the metropolis are also design and located within the new urban area outside the city old city wall, most of the recreational areas are within the Nasarawa, Fagge area council of the metropolis, thus are the areas within the metropolis whereby the modern face of the metropolis can be seen also there are few number of green parks in the metropolis in which is open for the public usage, within the old city, the royal garden within the emirs palace is one of the most oldest parks in the metropolis.

Other urban functional land within the city that are also dispersed in the metropolis are the religion centres such as mosques and churches, security post, and tourism attraction areas, mosques are the major religion centres

within the metropolis due to the fact that the majority of the city population are Muslims, mosque can be seen to be dispersed in almost all parts of the residential areas within the city, with only exception in the Sabon Gari neighbourhood of the city, although there are mosque within the area, but the majority of the religion centres in area are churches, this shows the variation religion based difference in the neighbourhood of the metropolis. The health sector also has significant land cover within the metropolitan area, the city has more than one hundred health service centres, thus health service centres includes the primary health care units which are generally dispersed within the residential areas and their function is to provide the basic health care needs of the inhabitants of the neighbourhoods, the primary health care units are very small centres to the extent that majority of them cannot be seen in the used scale, the major health care centres or specialist hospitals are the health care units that are used for major health care services in the metropolis, the specialist hospital are dispersed within the four region of the metropolis.

The residential areas which captured the largest part of the land in the metropolis was dispersed throughout the all parts of the city, the land cover for the residential areas in the city continue to grow in an centrifugal form, from the centre of the city to the environment around, a very clear example of it can be seen in the residential areas within the old city, whereby a residents were developed around the major significant centres of the city such as market square, mosque, and within emirs palace, and later on developed within the radial of such centres. The example of such plan can be seen in most of the contemporary African city form. If we look at the urban land used map of the entire metropolis, the development of the residential areas can see to be spreads around the major centres, such as central business districts, major commercial areas and also within the industrial areas, this can be as a result of the social and economic significant of such centres within the city, even the industrial layouts which are generally plan in the outskirts of the city can be seen to be attracting population around their area, the example of it can be seen on the Bompai industrial layout of the city, the layout was among the first industrial site situated in the outskirt of the city, but later on the areas almost integrate to the central business districts, which leads to the opening of new industrial site in the south western part of the city along Kano-Sharada layout. Also with the congestion of the city centres, there is project of decongesting the areas within the metropolis that are densely populated to the new layouts away from the city centres, example of such new residential areas can be see along Kano-Sharada, and Kano-Maiduguri roads. Ado Bayero Mall is one of the new shopping centres that began to emerge within the central business districts of the metropolis, the new trend of shopping malls began in the country during 2000.

Institutional areas where most of the government and organizational institutions situated in the metropolis, the area which known as the Nasarawa GRA was among the first areas in the city design and developed by the colonial government in Kano, the area was initially design for the houses of the British colonial officers, and their offices. After the independence in 1960, the city become the state capital of the Kano state, and many government offices where developed within the area. The Nasarawa GRA was still one of the most well design layout in the city.

CONCLUSION

Location of Kano metropolis in a very strategic location give the city a significant interest of many different rulers which plays a very important role in the development and resistance of the city to stand the test of a time, the natural environment around the city which characterised by a wide plain with many rivers traversing around the area and also the climatic condition are some of the major factor that attracts the initial settlers of the city to settled within the area, farming, hunting as the initial economic activities of most of the society in the pre-industrial time, the vicinity of the Kano was enriched with a fertile land and bushland around, the people of the city become more attached to the area for the purpose of practising those economic activities.

- The urbanization process in the city was started long before the colonial era which is generally perceived to be the event that trigger the process in Africa, Kano is one of the major biggest city in sub Saharan African countries with a well-established system of administration,

- Conqueringthe city in 1805 by Sokoto caliphate makes a remarkable change in the development of the city, whereby the city was used as a strategic location for capturing many cities towards south of the caliphate, this leads to the new era of both population and economic growth of the city.

- The city has a long reputation of trade between the area and the north African cities, this givesKano a rare advantage of economic growth, the city attracts merchants with their caravans of hundreds of camels that come to buys and sells their goods in the ancient kurmi market at the centre of the old city, most of the goods that are trade within the city in that time are grains, such as millet, maize, wheat, rice among many other agricultural produce, also products of hide and skins are among the popular material sold to the merchants that come to the city, also textiles, and local tools such as hoe, spears, swords are among the craft material that are popular in the market.

- With the capturing of the city in 1903 by the British empire, the city experience a tremendous change in the ruling system whereby in the past the city was govern by an emir and members of his councils which are the districts heads, to the more complex system of government whereby the local authority was only restricted to govern their people and makes decisions on local affairs of the city, such as land administration for farms and houses, but the major administrative activities such as taxation, land administration for large scale farming and industrial purpose was strictly done by the colonizers, this gives the colonizers a room for administering a large portions of land to the multinationals companies to established their industries in Kano and its environs.

- The establishment of airport in the year1932 is one of the most important project in the city, during that time Kano airport was the first and the only international airport in the whole northern and southern protectorate of Nigeria, the airport which is used as a military airport for the African British frontiers forces was later converted to the civil aviation airport, this gives the city a new economic potential, also the construction of Kano to Lagos railway line marks the new flowof trade in the city from the old trans Saharan trade to the transatlantic trade routes, this leads to the economic growth in the city whereby many people are employed by the railway companies and also growth in the production of cash crops within the region due to the improvement in the transportation system by rail to the port for export.

- During the colonial regime of 1903-1960 independence of the country, the city become populated with people from different social and cultural background this makes the city to be heterogeneous society with multi ethnic populace and different economic activities. The city also experiences a new face of urbanization that transform from its traditional African city setting concentrated within the wall of the old city to the European city setting in the new developed layouts outside the old city wall.

- With the independence of the country in 1960 after the amalgamation of the northern and southern protectorate of Nigeria and form an independence country Nigeria, the ruling system was change from the regional government to a federal government with the capital of the country in Lagos before it was transferred to Abuja in 1991, during the early years of independence, many states where created out of the two regions of the country in which Kano state is one of those state that created in 1967, the state capital was situated in the Kano city which is the largest city of the state, this gives the city another administrative functions whereby all the local council areas of the state become under the command of the state capital which is Kano city. This could be as a result of many institutional

buildings that are built within those areas which are generally equipped with the basics social amenities such as roads, electricity, pipe borne water and also provision of security. This triggered the urbanization within such areas as they are perceived as the well arrange neighbourhoods of the city.

- Also the city experience a rapid growth in the economic sector more especially in the industrial sector whereby the initial industrial layout designed during the colonial era at the Bompai become over stretched by the industries which leads to the expansion of the layout and also opening of new industrial layouts such as Bompai and also by Kano-Zaria highway. As the city continue to experience an economic potential after independence throughout 1970s and 1980s, the city continues to attract population from different corners of the country and boundaries beyond the country, this leads to the massive population growth in the city that leads to the formation of many shanties around the fringes of the city and also a traffic problem around the central business districts of the city.

- The Kano city will continue to experience both spacial and population growth over years to come, but with the uncontrolled spacial development of the city many environmentally related problems such as floods, due to the building of shanties along the canals and also construction of illegal structures within the major roads which increase traffics gridlocks that is common due to the higher population in the city more especially during the peak of rush hour.

- Also there is need to control the urban fabric inside the old city, as it continues to be more congested as the land within the area are divided in to smaller lands by families due to inheritance, this affect the neighbourhood quality of the old city by contributing in narrowing the already existing narrow streets within the area and affect air movement in the area. Also the historical monuments within the old city such as left portions of the old city wall, city gates, traditional mud houses and old Kurmi market which is as old as the city itself needs to be restored and protected so that the face of the old city can be seen in many years to come, the city wall which is one of the greatest historical African city monuments in the region was the only historical heritage site declared by UNESCO, but unfortunately most of the part of the wall was fall and the mud was used by people for the construction of the mud bricks use in building houses, the part of the wall that was restored is also shading away due to non-maintenance, which supposed to be provided by state government.

- There is also need for driving policy in order to control the city growth to be strictly on the urban development plan whereby no structures will be allowed to build within the developmental plan map of the city but

only if to be approved by the town planning authority, this will help in controlling the development of unplanned building inside the metropolis.

- Also Kano metropolis as the city with more than two million populations, and known as the commercial and industrial centre of the northern Nigeria, there is need to provide a conventional transport system in the city that will carter the need of urban transport to keep the city moving, the use of local taxi, tricycle, motorcycle as well as small buses for the transportation in the city, non-availability of proper transportation system such as RBTS within the metropolis leads to the congestion of traffics within the roads of the metropolis by the tricycles popularly used for the urban transport that only take three passengers maximum, also the use of motorcycles as the commercial transport means also contribute in the formation of traffic gridlocks in the major routes in the city

- As Kano state government continue to expand the urban land of the city to the detriment of many rural land, there is need for a proper planning as well as the construction of needed infrastructures in the new layouts that are open away from the city, so that as the city developed toward the areas, the recurrent problem of demolition to give away space for infrastructure and paying huge compensation fund to the owners will not be the case in the new open layouts if the proper planning for a long years was done.

BIBLIOGRAPHY

Abdullahi, M., Abubakar, G., & Nuhu, U. (2015). Journal Of Urban Studies, 50-76.

Abideen, O. A., Adewale, A. A., & Adeola, S. E. (2013). Analysis Of Rural Literacy As A Panacea For Socioeconomic Development Of Nigeria. International Journal Of Sociology And Anthropology, 385-386.

Akdemir, İ. O. (2013). Elazığ'ın Kentleşme Sürecinin Coğrafı Analizi. Geçmişten Geleceğe Harput Sempozyumu, Elazığ 23-25 Mayıs 2013 (Pp. 1-2). Elaziğ: Fırat Üniversitesi Harput Uygulama Ve Araştırma Merkezi.

Ayedun C.A. D. O. (2011). "Towards Ensuring Sustainable Urban Growth And Development In Nigeria: Challenges And Strategies." Vol.1, No.2, Pp. Pp.99-104.

Ayila, A. E., Oluseyi, F. O., & Anas, B. Y. (2014). Statistical Analysis Of Urban Growth In Kano Metropolis, Nigeria. International Journal Of Environmental Monitoring And Analysis, 50-56.

Bala, G. S. (1997). Public Land Ownership And Urban Land Management Effectiveness In Metropolitan Kano, Nigeria. Habitat International (P. 305-317). London: Elsevier Science Ltd.

Barau, A. S. (2008). The Glimpses In To Triple Heritage Of Kano Built Up Environment. The Relevance Of Traditional Architecture: Housing Rural Communities And Urban Poor (Pp. 1-17). Kano: International Network For Traditional Building, Architecture And Urbanism (Intbau).

Barau, A. S. (2011). The Good, The Bad, The Ugly: Colonial Linkages And Postcolonial Dilemmas Of African Muslim City. Postcolonial Postgraduate Conference – Urban Spaces Panel: Goethe Universitat, Frankfurt Germany June 2011 (Pp. 4-5). Frankfurt Germany: Urban Spaces Panel: Goethe Universitat, Frankfurt Germany.

Barau.A, S. (2010). An Account Of The High Population In Kano State, Department Of Geography. Federal College Of Education, Kano, Nigeria (Pp. 10-12).

Barth, H. (1857). Travels And Discoveries In North And Central Africa. Journal Of An Expedition Undertaken Under The Auspices Of H.B. M's Government In The 1849-1855, Harper And Brothers Publishers, New York, Pp 492-493.

C.A. Ayedun, D. O. (2011, August). Towards Ensuring Sustainable Urban Growth And Development In Nigeria: Challenges And Strategies. Vol.1, No.2, Pp. Pp.99-104.

Daramola, A., & Ibem, E. (2010). Urban Environmental Problems In Nigeria: Implications For Sustainable Development. Journal Of Sustainable Development In Africa, 124-145.

Foot, D. (1981). Operational Urban Models. Bungay, Suffolk: Richard Clay (The Chaucer Press) Ltd.

Harris, C., & Ullman, E. (1945, November). The Nature Of Cities. The Annals Of The American Academy Of Political And Social Science, Vol 247, Pp. 7-17

Ibrahim, A. M. (2014). Evolutionary Trend, Spatial Distribution Of, And Issues Associated With Markets In Kano Metropolis. Research On Humanities And Social Sciences, 26-37.

Imam, M. Z., & Rostam, K. (2011). The Impacts Of Unauthorized Subdivisions Of Residential Plots In Gadon Kaya, Kano City, Nigeria.Malaysian Journal Of Society And Space, 2180-2491.

Kibon, U. A., & Ahmed, M. (2013). Distribution Of Primary Health Care Facilities In Kano Metropolis Using Gis (Geographic Information System). Research Journal Of Environmental And Earth Sciences, 167-176.

Knox, P., & Pinch, S. (2010). Urban Social Geography. London: Pearson Education Limited.

Liman, M. A. (2015). A Spatial Analysis Of Industrial Growth And Decline In Kano. A Dissertation Submitted To The School Of Postgraduate Studies Ahmadu Bello University Zaria (Pp. 55-65). Zaria, Nigeria.

Maconachie, R. (2007). Urban Growth And Land Degradation In Developing Cities Change And Challenges In Kano, Nigeria. Hampshire: Ashgate Publishing Limited.

Madsen, E. L., Daumerie, B., & Hardee, K. (2007). The Effects Of Age Structure On Development. Washington: Population Action International (Pai).

Mitković, P., & Dinić, M. (2004, September 21). City Center Organization And Its Influence On The City Structure. Facta Universitatis, Architecture And Civil Engineering Vol. 3, No 1, Pp. Pp. 41 - 56.

Moughtin, J. C. (2013). The Traditional Settlements Of The Hausa People. Liverpool: Liverpool University Press.

Mustapha, A., Ibrahim, I., Alhaji, M., Nabegu, A. B., Dakata, F. A., Umar, Y. A., & Musa, B. U. (2014). Overview Of Physical And Human Setting Of Kano Region. Research Journal Of Geography, 2-10.

Mustapha, D. I. (2013). Affordable Housing Provision In Kano North Western Nigeria: The Imperative For The Creation Of Sustainable Cit. International Journal Of Management And Social Sciences Research, 190-198.

Mustapha, D. I. (August 2013). Affordable Housing Provision In Kano North Western Nigeria: The Imperative For The Creation Of Sustainable Cit. International Journal Of Management And Social Sciences Research (Ijmssr).

Ogunsote, D., & Prucnal-Ogunsote, D. (2002). Defining Climatic Zones For Architectural Design In Nigeria: A Systematic Delineation. Journal Of Environmental Technology, 1-14.

Olofin, E. (1987). Some Aspects Of The Physical Geography Of Kano Region And Related Human Responses. Kano Nigeria.: Geography Department, Bayero University, Debis Standard Printers,

Olujimi, J. (2009). Evolving A Planning Strategy For Managing Urban Sprawl In Nigeria. Journal Of Human Ecology, 201-208.

Prussin, L. (1968). The Architecture Of Islam In West Africa. African Arts, 32-74.

Rikko, L., & Gwatau, D. (2011). The Nigerian Architecture: The Trend In Housing Development. Journal Of Geography And Regional Planning, 273-278.

Stock, R. (2013). Africa South Of The Sahara A Geographical Interpretation 3rd Edition. New York.: Guilford Press.

Tiffen, M. (2001). Profile Of Demographic Change In The Kano-Maradi Region, 1960−2000. Crewkerne: Drylands Research.

Udo, R. K. (1970). Geographical Regions Of Nigeria. Ibadan: Heinemann Educational Books 22 Bedford Square, London United Kingdom.

Official Reports

Federal Republic Of Nigeria. (2012) Annual Abstract Of Statistics, National Bureau Of Statistics, Nigeria.

Federal Republic Of Nigeria. (2011) Annual Abstract Of Statistics, National Bureau Of Statistics, Nigeria.

Kano State Government. (2015). State Strategic Health Development Plan. Kano Nigeria.

Kano State Government. (2013). Kano State Investors Hand Book A Guide To Business And Investment In Kano State.

Chapter 7

HISTORY OF DESIGN METHODOLOGY STUDIES AND THE FIRST MODERN DESIGN SCHOOLS: A CRITICAL APPROACH RELATING TO THE CONTEMPORARY DESIGN LANDSCAPE

Seda DUMAN [1]

Şebnem TIMUR [2]

1 Dr. Seda DUMAN, ITU, Architecture Faculty, Industrial Design Program, PhD. (Graduate).

https://orcid.org/0000-0002-4526-5139

2 This chapter is from a part of a Ph.D. thesis, completed in 2021 at Istanbul Technical University, Industrial Design Department under the supervision of Prof. Şebnem Timur.

https://tez.yok.gov.tr/UlusalTezMerkezi Künye: 693038

Nigel Cross defines design methodology as "the study of the principles of practices and procedures of design in a rather broad and general sense" (Cross, 1984, p. vii). In the literature 'design methodology' and 'design methods' are often used as substitute terms. However, in this research, design methodology is used as a cover term referring to all the activities a designer undertakes; including the design process, application of design methods, techniques, and procedures. The 'design process' be in this research as "the set of actions, or methods to be carried out in series or in parallel" (Jones, 1971, p. xxv), and 'design methods' as supportive tools for the design process.

This Chapter provides information about the key movements in the design history by highlighting pivotal events, influential approaches and the recent projections and validity of these approaches in a critical perspective. Particular attention was given to the history of design methodology studies and to the history of the first modern design schools training architects, artists, and designers. The overview was provided within a quasi-chronological order, depicting the zeitgeist of the influential decades in design studies and their correlation. This exploration provides a panaroma and understanding of how design methods and approaches progressively expanded from positivist and product-centered focus towards large-scale systemic changes.

The chapter was structured by categorizing design methods into five main periods from the early 1920s up to contemporary design approaches. Chronological structure done by Nigel Cross (2006), one of the leading researchers in the field of design methods, has been adopted. At the end of this part, as a short overview of the design methodology evolution, mappings from Sanders (2006), Jones (2014), and Broadbent (2003) are presented. These mappings are especially useful since they provide an overall panorama of design methods and approaches and their relationships in the current design landscape. Discovering the history of design methodology will provide a better understanding of the advancements in design discipline.

1920s: The establishment of pedagogical principles of industrial design

According to many researchers, the first steps towards contemporary design methodology were taken in the early 1920s with the De Stijl movement, and with the foundation of Bauhaus School (Cross, 2001; Bayazıt, 2004). As a school of arts Bauhaus was founded in Weimar in 1919 by the architect Walter Gropius. Combining crafts and arts as a total work of art (Gesamtkunsterk), Bauhaus is the avant-garde of modern style in all fields of applied arts. Bauhaus style is the most prominent and influential

current in the fields of design, art and architecture. It had a profound contribution to the formation of pedagogical principles of industrial design, architecture, graphic design, interior design, and art disciplines.

Educational Courses in Bauhaus and its structure had no existing precedent. Therefore, Gropius had to design it as a completely new model. The conceptual diagram in Figure 1 is showing the teaching model at the Bauhaus which was developed by him in 1922 (Bauhaus Archiv, n.d.). Pedagogical model consists of concentric circle groups depicting workshops at different levels. When a student increases his/her skills, s/he moved inward of the circle which means gaining deeper mastery. Framework was structured in four tiers. Macdonald (2004) explains this structure as below:

The course which Gropius established there was the most purposeful ever practised in art education, planned to foster creativity, analysis and appreciation of art, craftsmanship and technology in order to produce the artist / craftsman / industrial designer. After six months' preliminary instruction (Vorlehre) on theory of form together with experiments with materials, each student, having signed articles of apprenticeship, served three years in a Bauhaus workshop receiving craft instruction (Werklehre) and instruction of form (Formlehre) ... Talented pupils could attempt the more difficult Bauhaus apprenticeship ... the structural instruction (Baulehre), which consisted of gaining experience of additional crafts in the workshops, working on building sites, and experimenting in the Bauhaus Research Station and Design Studio. (p. 315)

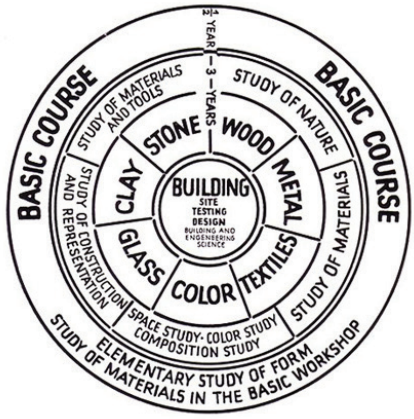


Figure 1. The structure of teaching at the Bauhaus, designed by Walter Gropius in 1922 (Bauhaus-Archiv Berlin).

Bauhaus gave particular importance to the craftsmanship. Each course had two masters: *form masters* for aesthetic problem solving, and *work masters* who was a trained craftsman and a master of industrial tools

(Bauhaus Archiv, n.d.). The fundamental doctrine was 'form follows function'. Students were actually working with materials and developing prototypes for industrial manufacturing in the workshops. Among all the courses preliminary design course (Vorlehre) was the most important one. It can be said today, Bauhaus mainly owes its fame to the Vorlehre for design education. This course is formally structured and taught by Johannes Itten and after his departure László Moholy-Nagy and Josef Albers continued the course. The main purpose of this course was to break down all the stereotypes and beliefs students had before entering the Bauhaus program, and to encourage them to rediscover the nature and materials around them. Students could experiment with color, shape and materials with no specific goals. They learned foundations of composition such as dark-light and color theories, did exercises on construction, balance, and craft techniques (Bauhaus Archiv, n.d.).

Conservative circles on the other hand, never approved radical ideas and education system at Bauhaus. When the National Socialists seized power in 1933, the Bauhaus closed immediately and many of the renowned instructors and students emigrate to France, Great Britain, Switzerland and the US (Bauhaus Movement, n.d.). These instructors brought their ideology to these countries. Their ideology and methods widely influenced the subsequently established design and art schools. Many of them copied Bauhaus methods and teaching, particularly Itten's basic design course. Today, most of the design educators are still following the Bauhaus principles in their teachings. In Turkey and in many other countries "most design curricula have maintained their original configurations, going back to the Bauhaus, with only minor adjustments in the distribution of specialized and general education courses" (Teixeira, 2010). "Although design schools want to get closer to the glow of this Golden Age; art and industry have moved on, and translating the Bauhaus to our modern world is impossible" (Dorst, 2015).

Don Norman criticizes the curriculum wheel by indicating that "it contains three years of study starting with form and materials, moving to composition and construction…It never mentions of usage and people, it is all about form" (2018). He continues by adding designers today have entirely new ways of working, playing and inventing. At Bauhaus emphasis was on simplicity and designing simple objects like furniture, kitchen tools and tableware. But as Norman also emphasizes, the world is very complex indeed, so too must be the things that enable us to work within this world (2018). According to Mulgan, it is also repelled the critics of numbing conformity in mass production and standardization in our age (2014).

Bauhaus was a democratic and innovative movement a century ago. It created huge breakthrough for art and design education and their role in the society. However, hundred years later we are facing with a completely different landscape. The problems we are concerned with today, are not the same with the problems of Bauhaus era. Designers need more than just the design and production of material objects. "Design is a way of thinking, so it can be applied to any aspect of a company and any aspect of society" (Norman, 2018). Founders of Bauhaus developed a completely new design curriculum responding the needs of its own period. With a likewise innovative initiative, it is necessary to develop the current pedagogical systems that can respond, and adapt to the complex problems of the 21st century.

1960s: Scientific approaches

While establishing the first pedagogical principles in Bauhaus, there was no concern about constituting a formal research area in design methodology. However, its perspective and practical contributions to applied arts education constituted the basis of the design methodology movement took place in the 1960s. Since 60s on developments in design methodology started to take shape especially with the two outstanding cases. First one is the Hochschule für Gestaltung (HfG) which was founded in 1951, and the second one is the conference of design methods held in London in 1962. Before going on to explain these two important cases, it would be necessary to describe the zeitgeist of that period which prepared the grounds for the Design Methods Movement (DMM). Langrish (2016) describes the atmosphere in 1950s as the years of 'The Post-War Optimism'. He claims DMM itself was the result of this post war optimism, and a belief that making design more scientific would help to produce a better world. He explains the overall panorama in 1950s as follows:

> People born since 1970 have not lived through such a period… Following the recovery from the depression of the 1930s and the world war of the 1940…science was seen as producing antibiotics, synthetic fibers, thermoplastics, TV, computers, etc. leading to a healthier and more colorful way of life... Antibiotics cured infections that killed in the 30s. Going to work on a bicycle or by public transport was increasingly replaced by the availability of affordable new car designs. Expensive silk stockings were replaced by cheap nylon ones. Grimy metal washing up bowls were replaced by shiny red plastic ones produced cheaply by injection molding. There were many such changes, and they had one thing in common, they were believed to be the product of 'science'. (Langrish, 2016)

What Langrish has intended by science in this short paragraph is the classical type of science such as physics, which is based on the assumptions of consistent causation. Complex design problems however, are not consistent and identical to each other. They can't be reduced to a minimum number of laws and methods.

After Bauhaus, Hochschule für Gestaltung Ulm (HfG) is one of the most significant institutions in the field of applied arts. It is founded after WWII in the west of Germany. Unlike the Bauhaus approach which combines crafts with arts, the method of instruction at HfG was integrating science, technology, art and craft. It was highly mathematical in nature. Their pedagogical approaches led Ulm designers to create a highly geometric, neo-functionalist aesthetic for their products, a neo-rationalist style which characterized in fact much German design in this period (De Negreiros Gomes, 1991, p. 64).

School was founded in 1953 at the initiative of Inge Scholl, Otl Aicher and Max Bill as a private institution (Maasberg, 2013). Max Bill was a former Bauhaus student, and rector of the school until 1956. During his management, the teaching methods in HfG represented the direct continuation of the Bauhaus tradition (Bürdek, 2015, p. 40). While Bill was favoring arts and crafts teaching approach of Bauhaus, some of the first lecturers at Ulm, particularly those of theoretical classes, were thinking analytical methods from science and technology should be featured in the education of the school. They were advocating that rationally designed objects and their interrelation might help actualize a more rational and progressively ordered society. Over time scientific methods and approaches began to be included in the curriculum. Since Max Bill was not approving these changes in the schools philosophy he left his position in 1956. After his resignation Tomás Maldonado took his place and become the rector of the school (1964-1966).

During the management of Maldonaldo, teaching approach at Ulm shifted to a more methodological, technological and scientific structure. This resulted in a new design education model called *The Ulm Model* (Figure 2). Program was for 4 years of study. First year was common for all of the students and devoted to the basic design course (Vorkur), second and third year were for elective specialization between: product design, architecture, visual communication, information and film, and the last year was for graduation thesis. Different scientific studies such as, politics, economy, philosophy, psychology, ergonomics and sociology were integrated in the curriculum. "The social and economic context of design had a central importance to Hochschule educational theory: approximately 27 per cent of the students' time was devoted to these subjects listed above" (De Negreiros Gomes, 1991, p. 65).

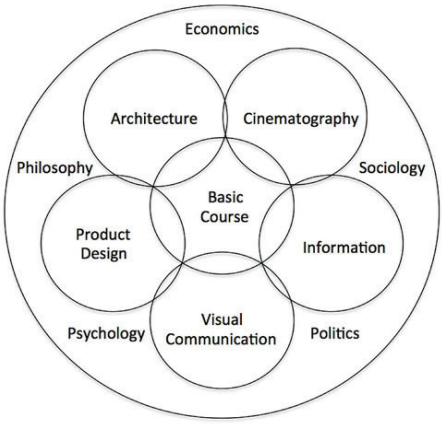


Figure 2. The Education scheme for the Hochschule für Gestaltung, 1951.

Because of integral disagreements among the stuff and students HfG closed in 1968. Despite it operated for a short period of fifteen years, Ulm teaching model significantly influenced the international design education, especially industrial design education. According to Bürdek (2015), the field of design methodology would be unimaginable without the work of The Ulm School of Design. He describes that, "the basics of design methodology, starting with systematically dealing with problems, using methods of analysis and synthesis, and justifying and selecting design alternatives was developed at HfG" (Bürdek, 2015, p. 46).

In 1962, Design Methods Movement (DMM) inaugurated with the conference called *The Conference on Systematic and Intuitive Methods in Engineering, Industrial Design, Architecture and Communications*. It is organized by John Chris Jones, and Peter Slann and held in London. In an environment where the industry was rationalizing its processes, "It was an obvious step for designers to try to integrate scientific methods into the design process so that they could be accepted as serious partners in the sphere of industry" (Bürdek, 2015, p. 78). The DMM is usually described as the outcomeof the work by four key researchers, Bruce Archer, John Chris Jones, Christopher Alexander and Horst Rittel but others were also involved (Langrish, 2016). Following conferences such as *Design Method* in Birmingham in 1965, and *Design Methods in Architecture* in Portsmouth in 1967 increased the recognition of the field.

Alexander and Jones, who were commonly known as the founding fathers of DMM, published two influential books about design methods in this period (Bayazıt, 2004). Mathematician and architect, Christopher Alexander wrote *Notes on the Synthesis* of Form in 1964. In this book, Alexander claims that if a designer identifies the appropriate solutions with a rational and systematic approach, it is possible to manage complexities

and deliver meaningful results for people. For managing complexity he proposes dividing forces into subsystems and inventing new physical order containing relatively independent groups. Later in 1971, Jones published his book *Design Methods: Seeds of Human Futures* presenting collection of tools to assist design activity. With this book first he wanted to enable designers to work systematically at the higher levels of complexity from components to community design, second he intended to make designer methods more transparent to change the common belief design arose from a black box of inspiration (Margolin, 2010). Jones also presented divided steps for managing the design process. These steps were: breaking down of the problem into smaller pieces, putting them together in a new way and, putting this new arrangement into practice (Jones, 1971, p. 63). This approach created the basis for subsequent design methodology studies.

Alexander and John's books were not the only ones written in the period. Other authors also published books on design methods (such as Hall, 1962; Asimow, 1962; Archer, 1965; Broadbent, 1973). Many different design models have been shared and proposed in Design Methods conferences and in the first method books published. Some of the outstanding models are demonstrated in Figure 3 and Figure 4.

The first one is Asimow's model presented in his book *Introduction to Design* (1962). This model is one of the first model including the life cycle of the product. Bruce Archer's design process (1963), Figure 4, was presented in a sequence of articles in Design Magazine. This model proposed different approaches for different phases: inductive reasoning for analytical phase, deductive reasoning for creative phase and descriptive approach for executive phase.

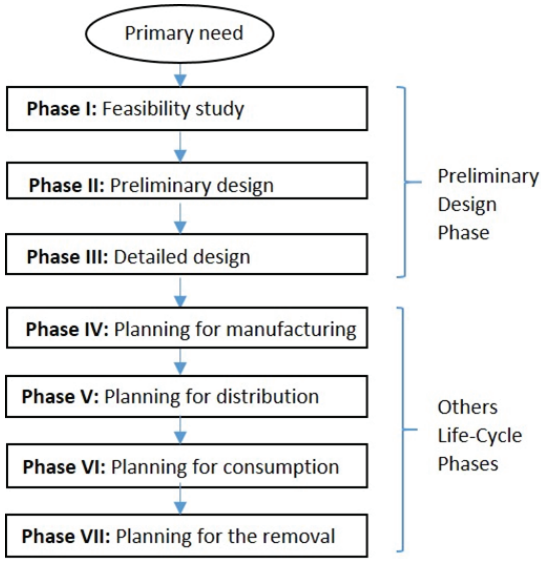


Figure 3. Morris Asimow's method (Adapted by the author).

According to Van der Linden et al. the essence of design methods developed in 60s, relies on the division of the process in well-defined steps (2011). The common belief behind all these methods was based on a Cartesian thinking: "divide each difficulty into as many parts as possible and necessary for its adequate solution" (2008, Descartes). Most of the proposed models were the personal design processes of the authors illustrated in black and white, and with linear graphic representations. Although some were also iterative and had feedback loops, it was mainly for correcting the previous errors during the design process. This situation led to the discussions and disassociations among the pioneers of design methodology.

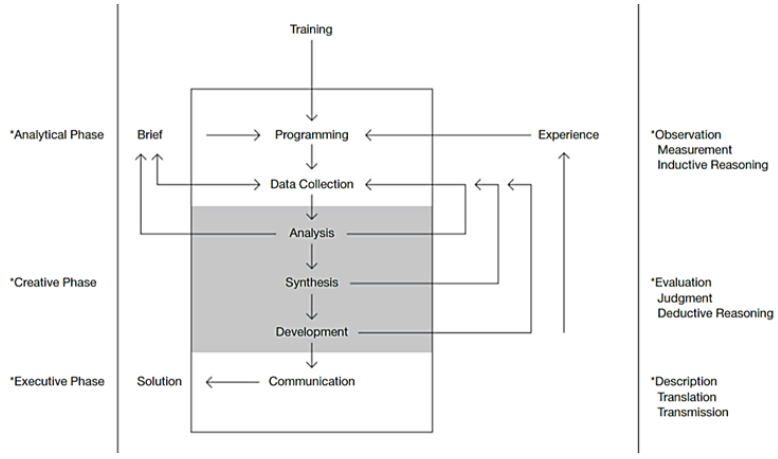


Figure 4. Archer's (1965) model of the design process (Dubberly, 2004, p. 98).

Firstly Christopher Alexander left the design methods group by saying:

> I've disassociated myself from the field ... There is so little in what is called 'design methods' that has anything useful to say about how to design buildings that I never even read the literature anymore ... I would say forget it, forget the whole thing ... If you call it 'It's A Good Idea To Do', I like it very much; if you call it 'A Method', I like it but I'm beginning to get turned off, if you call it 'A Methodology', I just don't want to talk about it. (as cited in Cross, 1993)

Referring to the design methods movement in 60s Christopher Jones also asserted that,

> Design methods became more theoretical and many of those drawn to the subject turned it into the academic study of methods instead of trying to design better things. The language used became more and more abstract. The words lost touch with how it feels to be a designer. (Jones 1971, p. xi)

Jones also announced his rejection from the group by saying "In the 1970s I reacted against design methods. I dislike the machine language, the behaviorism, the continual attempt to fix the whole of life into a logical framework" (as cited in Cross, 1993). According to Nigel Cross these were pretty harsh things for the founding fathers to say about their offspring (1993). However, Rittel's proposal of 'generations of methods' created a new promising route for the future developments and saved the field.

1970s: Reactions against the scientific approaches

According to Langrish (2016), in the 70s the post-war optimism evaporated and the belief in scientific progress was replaced by a distrust of science. The socio-cultural climate in the late 60s -campus revolutions, new liberal humanism current- as well as Kuhn's, Poppers and Feyerabend's ideas in late 70s led up to a new paradigm in design methodology movement. But also it had to be acknowledged (and it was) that there had been a lack of success in the application of 'scientific' methods to design (Cross, 1993).

In 1971 designer and educator Victor Papanek published one of the most widely read books on design: Design for the Real World. In this book, he advocates socially and ecologically responsible design and suggests strategies for developing products for real human needs. Papanek was against using rules, taxonomies and procedural design systems. He criticized methodological approach by saying: "such a method leads to reductionism and frequently results in sterility and the sort of high-tech functionalism that disregards human psychic needs at the expense of

clarity" (Papanek, 1988). His approach emphasizes the consideration of ethical, social and environmental issues in design process as well as the scientific methods.

Fundamental problems and discussions in the field were addressed by Rittel and Webber in 1972. They characterized the nature of design problems as 'wicked problems'- problems that are so complex and can't be treated by the systematic and rational approach. As in the majority of the earlier methods design process can't start by 'understanding the problem' because you only understand a wicked problem when you solve it (Rittel & Webber, 1972). They have suggested to call studies in the 60s as 'first generation methods', which is good for 'tame' problems and necessary for the beginning and pointed out 'the second generation' is on the way. According to Cross (1993), this suggestion was brilliant because it let the new methodologists escape from their commitment to inadequate 'first generation' methods, and it opened a vista of an endless future of generation upon generation of new methods. Cross summarizes first two generations of DMM as follows:

> The first generation (of the 1960s) was based on the application of systematic, rational, 'scientific' methods. The second generation (of the early 1970s) moved away from attempts to optimize and from the omnipotence of the designer (especially for 'wicked problems'), towards recognition of satisfactory or appropriate solution-types and (…) participatory process in which designers are partners with the problem 'owners' (clients, customers, users, community). (2006)

1980s: "Designerly" approaches for wicked problems

"The design research movement almost died in the 1970s, but seems now to have hung on to life and to have re-emerged and grown with some vigor in the last decade"(Cross, 1993). In the thirtieth anniversary of the design methods movement, Cross describes developments took place in the 70s in this way. Taking advantage of newly developing industrial production technologies, designers were aiming to meet the urgent needs of the society after the WWII. Since they had no precedent formal discipline except from crafts tradition, they have turned to science fields that offer more systematic and rational methods. But now it was time to clarify the research and knowledge collected in the past to establish a coherent design discipline and design education.

In the 80s the design research was mostly concentrated on establishing the design discipline which has "domain-independent approaches to theory and research" (Cross, 1999). In his seminal paper Nigel Cross introduced 'designerly ways of knowing' by positioning that design has its own

distinct things to know, ways of knowing them, and ways of finding out about them (Cross,1982). He distinguished 'designerly way of knowing' from 'scientific' or 'artistic' epistemology with these aspects:

- Designers tackle 'ill-defined' problems.
- Their mode of problem-solving is 'solution-focused'.
- Their mode of thinking is 'constructive'.
- They use 'codes' that translate abstract requirements into concrete objects.
- They use these codes to both 'read' and 'write' in 'object languages' (Cross, 1982).

Another significant development in this period was the emergence of new academic journals such as Design Studies in 1979, Design Issues in 1984, and Design Research in Engineering Design in 1989 (Cross, 1993). There are also two significant books published within this period. First one is Donald Schön's *The Reflective Practitioner* (1983) in which he challenges scientific doctrine of design and offers a constructivist and phenomenological paradigm. He identifies the terms such as 'tacit knowledge', and 'reflection-in-action'. Schön says:

> I begin with the assumption that competent practitioners usually know more than they can say. They exhibit a kind of knowing-in-practice, most of which is tacit…Indeed, practitioners themselves often reveal a capacity for reflection on their intuitive knowing in the midst of action and sometimes use this capacity to cope with the unique, uncertain, and conflicted situations of practice. (1983, p. viii)

The second significant book in this period was Design Thinking by Peter Rowe (1987). In this book Rowe provides the general portrait of design thinking that has become widely known today. These books and research studies in the 80s liberated design from the dilemma of scientific design discussions and opened up new routes.

From 1990s to present

The 1980s and 1990s opened a new era in design research. Many U.S. departments of design began to establish new academic research units, which were brought about from the government's release of funds on design research, and the encouragement and demand by American industry (Beyazıt, 2004). With the digital revolution in the 90s design shifted from analog to digital and designers started to develop small electronic appliances such as computers, mobile phones, music devices. The new wealth of materials became available, and it increased the public's access

to more affordable and desirable products. The design methods movement influenced the design practice in the upcoming decades. One of the most influential design consultancy firm IDEO which was founded in 1991, extensively used design methods and design thinking approach in their 'designer kits', 'method cards' and consultancy businesses. Frog Design is another design company that became influential in this period. In contrast to modernist aphorism 'form follows function' they used 'form follows emotion'. These companies were typical of the design world at the turn of the millennium, unlike their 20th-century counterparts, such design firms practice internationally (Zukowsky, 2017).

Since 90s right up to today design broadened its scope. In her book *Introduction to Design and Culture: 1990s to the Present* Penny Sparke describes the common discussions and research areas in the design field and their evolution up to today with these words:

> Several debates, which surfaced in the 1990s, focus on whether design research informs design from outside or whether it emanated from within; whether it was about or for design; whether design was a single or a multi-discipline; whether a Western-centric history of design continued to have any relevance; whether design history subsumed design theory or vice versa; and on what was design's relationship with culture, politics, globalization, etc. Arguably, by the second decade of the twenty-first century some of these debates have been superseded, as, in the early twenty-first century, the world has changed, and design has had to change with it. (2013)

The dramatic transformations occurred after the 90s in economy and technology, changed the relatively recognizable industrial design discipline, and made its previously defined borders more porous and open-ended. Recently, design scholars have been addressing new issues, new themes, and sub-disciplines that have a particularly contemporary relevance. As we have already seen, these have included design thinking, sustainable design, service design, design for well-being, interaction design, social design, universal design, design activism, co-design, participatory design, design anthropology…, and many others (Sparke, 2013).

Mapping the evolution

In order to summarize and conclude the short overview of the evolution in design methodology and describe the state of design research nowadays, we will refer to the three mappings proposed by Broadbent (2003), Jones (2014), and Sanders (2006).

Broadbent (2003) introduces four generations in design methodology – craft, design by drawing, hard system methods, and soft system methods.

He compares these generations to establish possible trends through time and to define the most likely features of the next generation in design methodology (Table 1). He claims that consecutive generations illustrated in this table indicate that design methodology is developing towards more complex, high level, and more influential for design in society.

Table 1. Features of four generations in design methodology, extrapolated to define the next such generation (Broadbent, 2003).

Feature	*Craft*	*Design-by-Drawing*	*Hard Systems*	*Soft Systems*	*Next Generation*
Emerging cognitive state	Reflective consciousness	Reductionist science	Structured systems thinking	Holistic systems thinking	Evolutionary systems thinking
Scale	Local	Usually regional/ national	National/global	National/global	Global and local
Grounding in science	Mostly pre-scientific	Mathematical sciences	Mathematical and natural sciences	Mathematical, natural and social sciences (reductionist)	Holistic and reductionist sciences
Typical design cycle	Centuries	Decades/ years	Years	Years/months	Months/ weeks
Technological support	Simple hand tools	Manual/ mechanical	Mechanical/ electronic	Mostly electronic	Extensive electronic support
Knowledge base	Largely personal, tacit	Tacit and explicit; limited	Extensive information flows, mostly text-based	Huge information flows, mostly electronic	Knowledge management/ information visualization/ artificial intelligence
Interdisciplin-ary	Mostly pre-discipline	Within design discipline	Interdisciplinary, across professions	Interdisciplinary, across professions and wider community	Inclusive of all stakeholders

Jones (2014) claims that, the history of design methods reveals the characteristics of design thinking expressed in the methodological perspectives of their time. In order to identify the paradigmatic shifts in the prevailing design theory, he illustrates the three generations of design methods introduced by Bousbaci (2008), and he adds the fourth generation at the end of it (Table 2).

Table 2. Four generations of design methods (Jones, 2014).

Generation:	First	Second	Third	Fourth
Philosophy	Rational 1960s	Pragmatic 1970s	Phenomenological 1980s	Generative 2000s
Methods	Movement from craft to standardized methods	Instrumentality, Methods customized to context	Design research and stakeholder methods Design cognition	Generative, empathic & transdisciplinary
Authors & Trends	Simon, Fuller Design Science Planning	Rittel, Jones Wicked problems Evolution Sciences	Archer, Norman User-centered Design, Participatory Design	Dubberly, Sanders Generative Design, Service Design
Systems influences	Sciences, Systems engineering	Natural systems, Hard systems	System dynamics, Social systems, Soft systems	Complexity

The four generations of design methods illustrated by Jones are in parallel with the theoretical streams of philosophy, whose underlying intellectual frameworks share significant influences among systems theorists. He characterizes these philosophes (epistemological stances) as rational, pragmatic, and phenomenological. The fourth generation that Jones added represents the generative epistemology and approaches that were put forward by Sanders and van Stappers (2013).

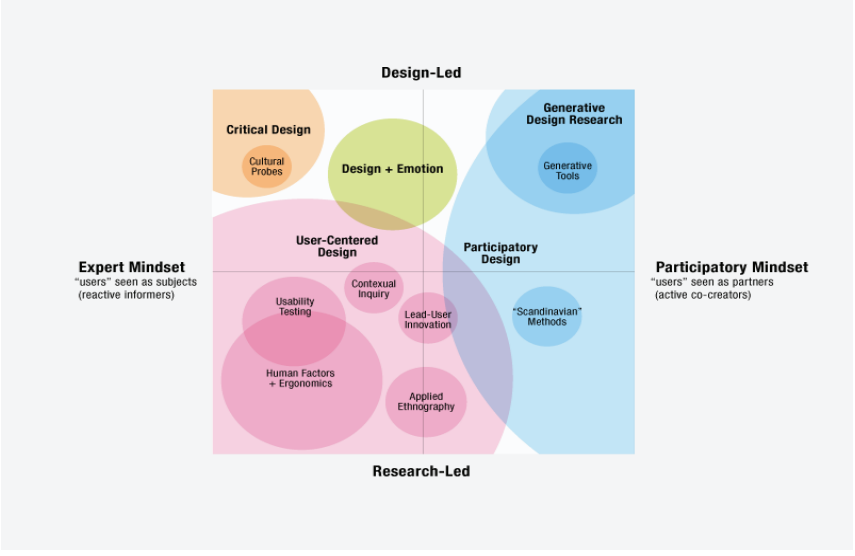


Figure 5. An evolving map of design research (Sanders, 2008).

In order to describe the state of design research in 2006, Liz Sanders introduced a cognitive map for visually representing the contemporary design research spaces in a panoramic landscape (Figure 5). The landscape

is defined by two dimensions. The vertical one defined by approach-design-led or research-led, and the horizontal one defined by mind-set-expert or participatory. Within these two dimensions, Sanders positions the contemporary design zones and methods: user centred design, design and emotion, critical design, participatory design, and generative design. She states that research-led perspective has the longest history but the design-led perspective is more recent.

As it can be seen from the scale of the zones and tools within these zones, the largest and the most developed area on the map is the user-centred design zone. However, more recently the participatory design zone is spreading both across the research and design-led axes. "The generative design methods which are fuelled by the participatory mind-set and design-led approaches, empowers everyday people to generate and promote alternative design concepts" (Sanders, 2008).

Sanders's cognitive collage and generations of design methods proposed by Broadbent and Jones provides us a wider perspective about the developments in design research and methodology. Through these perspectives it is easier to observe the situation of design research, practice, and design education and to make some implications especially for the future direction of the design related disciplines.

REFERENCES

Archer, L. B. (1965). Systematic method for designers. London, The Design Council.

Asimow, M. (1962). Introduction to design: fundamentals of engineering design. Prentice Hall. São Paulo: Mestre Jou, 1968.

Bauhaus-Archiv. (n.d.). Teaching at the Bauhaus. Retrieved June 12, 2018, from https://www.bauhaus.de/en/das_bauhaus/45_unterricht/.

Bauhaus Movement. (n.d.). Retrieved June 12, 2018, from http://www.bauhaus-movement.com/en/.

Bayazit, N. (2004). Investigating Design: A Review of Forty Years of Design Research. Design Issues, 20(1), 16–29. doi: 10.1162/074793604772933739

Broadbent, J. (2003). Generations in Design Methodology. The Design Journal, 6(1), 2–13. doi: 10.2752/146069203790219335.

Broadbent, G. (1973), Design in architecture. Chichester, UK, John Wiley & Sons Ltd.

Bürdek, B. E. (2015). Design: History, theory and practice of product design. Basel: Birkhauser.

Cross, N. (1982). Designerly ways of knowing. Design Studies, 3(4), 221-227.

Cross, N. (1984). Developments in design methodology. Chichester: Wiley.

Cross, N. (1993). A History of Design Methodology. In Design Methodology and Relationships with Science (pp. 15–27). Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-015-8220-9_2.

Cross, N. (2001). Designerly ways of knowing: Design discipline versus design Science. Design Issues, 17(3), 49–55. https://doi.org/10.1162/074793601750357196

Cross, N. (2006). Designerly Ways of Knowing. Springer, London. https://doi.org/10.1007/1-84628-301-9

Cross, N. (2007, January). Forty years of design research. Design Studies, 28(1), 1–4. https://doi.org/10.1016/j.destud.2006.11.004.

De Negreiros Gomes, L.A.V. (1991).An examination of design education in Brazil; and the value of a design language structural model as a basis for teaching (Doctoral dissertation). Retrieved from http://discovery.ucl.ac.uk/10020192/1/536527_Redacted.pdf.

Descartes, R. (2008). Discourse on the method: of rightly conducting the reason and seeking truth in the sciences. London: HV Publishers.

Dorst, K. (2015). Frame Creation and Design in the Expanded Field. She Ji: The Journal of Design, Economics, and Innovation, 1(1), 22–33. doi: 10.1016/j.sheji.2015.07.003

Dubberly, H. (2004). How do you design? A compendium of models. San Francisco: Dubberly Design Office.

Hall, A D. (1962). A methodology for systems engineering. Princeton, NJ, Van Nostrand.

Jones, J. C. (1971). Design methods: Seeds of human futures. Wiley-Interscience. Great Britain.

Jones, P. (2014). Design research methods in systemic design. In Proceedings of RSD3, Third Symposium of Relating Systems Thinking to Design. Oslo, Norway: Oslo School of Architecture and Design, October 15-17, 2014.

Langrish, J.Z. (2016). The design methods movement: From optimism to darwinism. Proceedings of DRS 2016, Design Research Society 50th Anniversary Conference. Brighton, UK, 27–30 June 2016.

Maasberg, U. (2013, November). Back to the Future. Retrieved June 12, 2018, from https://www.goethe.de/en/kul/des/20377826.html.

Macdonald, S. (2004). The history and philosophy of art education. Cambridge: The Lutterworth Press.

Margolin, V. (2010). Design research: Towards a history. Proceedings of DRS 2010, Design Research Society International Conference, 2010.

Mulgan, G. (2014, January 8). Design in Public and Social Innovation. Retrieved June 12, 2019, from https://www.nesta.org.uk/report/design-in-public-and-social-innovation/.

Norman, D. (2018). Why We Need So Much More Than the Bauhaus". Bauhaus Now, 1(1), 18-21.

Papanek, V. (1988). The Future Isn't What It Used to Be. Design Issues, 5(1), 4-17. doi:10.2307/1511555

Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. Policy Sciences, 4(2), 155-169. doi:10.1007/bf01405730

Rowe, P. (1987). Design thinking. Cambiridge, MA: MIT Press.

Sanders, E.B.N. (2006). Design Research in 2006. Design Research Quarterly, 1(September), 1–25.

Sanders, E.B.N., & van Stappers, P.J. (2013). Convivial toolbox: generative research for the front end of design. Amsterdam: BIS Publishers.

Schön, D.A. (1983). The reflective practitioner: how professionals think in action. New York: Basic Books.

Teixeira, C. (2010). The entrepreneurial design curriculum: Design-based learning for knowledge-based economies. Design Studies, 31(4), 411–418. https://doi.org/10.1016/j.destud.2010.03.003.

Van der Linden, J. & De Lacerda, P. & De Aguiar, J. P. O. (2011). The evolution of design methods. 9th International Conference of the European Academy of Design. Porto, Portugal, May 2011.

Zukowsky, J. (2017, May 25). Industrial design. Retrieved from https://www.britannica.com/topic/industrial-design