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Content

CHAPTER I

Historical Landscapes Within the Urban Fabric And Their Interactions In Natural And Cultural Processes

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INTRODUCTION

Urban fabric is a complex set of components that determine the physical structure and social dynamics of a city. Historic landscapes are areas that play an important role in shaping this structure and carry the traces of the past and have deep social and cultural meanings. With the developing urbanization, the protection of historical landscapes and the integration of these areas into urban life are becoming increasingly important. The interaction between natural environmental elements and man-made cultural values is one

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of the main factors that determine the identity of cities. In this context, the importance of historical landscapes should be considered not only in terms of aesthetics but also in social and economic terms.

Social, economic and social conditions in urban life and contemporary living conditions are in a constant state of change, development and transformation. The dynamics within this differentiating urban fabric put pressure on the local landscape fabric that is unique to that place (Kapuci and Cengiz 2023).

Urbanization is one of the main factors affecting historical landscapes. The rapid urbanization process that started with the industrial revolution has led to the opening of natural areas to construction and the deterioration of historical landscapes. Modern cities often present an urban texture full of human-oriented structures instead of a balance between nature and man-made elements (Aytin, 2020). This can lead to the loss of the organic structure of the urban landscape. However, in recent years, there has been an increasing awareness of the conservation of historic landscapes and sustainable management of these areas in urban planning processes.

With globalization, historic cities are losing their unique identities. Historic places contribute significantly to the creation, strengthening and promotion of place identity. In other words, historic urban spaces are a narrative of an idealized past that keeps urban culture and history on the agenda (Lynch, 1972). Cities are living settlements with their nature and structuring as a whole. The globalizing world, rapid urbanization, industrialization, technological inventions, wars and mass migration have also

affected cities. As a result of these, cities have become places without their own identity with the destruction of historical areas and the use of architectural styles that have no connection with their past and that do not match one another in the elements that make up the city. For this reason, while conducting a literature review, it was determined that the important determinants of urban identity are historical urban landscapes such as historical urban textures, archaeological areas, local housing textures, unique and traditional function areas, which have gained historical depth in a certain process (Birnbaum, 1996; Dincer, 2013; Karabulut, 2018; Demir & Demirel, 2018).

It is not correct to talk only about the artificial environment that forms urban identity. Through the cognitive, perceptual and past experiences of the landscape, images are formed in the individual's mind with the concrete values of the city and the spirit of the place. The common images formed in the minds of the society also form the city identity (Karagüler & Korgavuş, 2014; Kaya, 2016).

The depletion of natural and cultural landscape values by unsustainable uses and the need to take measures for this has been addressed by many researchers and solutions have been produced at the national level at most. This unconscious and unplanned consumption of landscape values has brought the necessity to evaluate landscapes as a whole on an international scale within a common framework (Uzun et al. 2007; Washer et al., 2005). According to the European Landscape Convention (ELC) prepared for this purpose, each country should define the landscapes within its borders, analyze their characteristics and the pressures that transform them, detect change, protect, plan, manage and, if

necessary, improve them (Atabeyoğlu and Bulut, 2017). In many countries, studies to determine the natural and cultural resource values of landscapes have been handled within the scope of landscape character analysis and assessment. However, historical landscape assessment studies, which are addressed in determining the historical values of landscapes, are still in their infancy. Although the concept of landscape planning has been brought to the agenda with a few studies in Turkey, it has not yet been integrated into the planning process. This situation makes Turkey one of the countries experiencing the most rapid pressure on its landscapes.

Throughout history, cities have been influenced by the natural landscapes around them and have integrated these landscapes into their structural, social and economic processes. Historical landscapes within the urban fabric are one of the important elements that form the identity of the city. These landscapes are not only aesthetic elements but also cultural heritage elements that establish a link between the past and the present. However, modernization and rapid urbanization processes cause these valuable landscapes to face the danger of extinction (Siravo, 2014). Historic landscapes are areas formed as a result of historical processes, cultural interactions and human activities in a region. These landscapes are important areas where natural and cultural elements come together and shed light on the past of humanity.

In the context of historic landscape assessment, historic landscape character reflects the overall historic character of contemporary landscapes and identifies historic land uses, surviving historic landscape patterns and features. It encompasses everything where human traces are found on the landscape (Taylor, 2016)).

Historic landscape assessment reveals a long-term interaction between human activities and natural processes. It identifies the historic resource value, interest and historic character of urban, rural and marine landscapes (Mills, 2005). This assessment, also defined as the temporal depth of the landscape, follows the traces of the past in the landscape. It often covers large areas such as national parks or provinces/districts (Taylor, 2016). Historic landscape assessment studies are closely related to the definition of landscape as "human perception" of areas shaped by the actions and interactions of natural and/or human activities as stated in the APS.

This study will examine how historical landscapes interact within the urban fabric and the role of natural and cultural processes in this interaction. By examining the interaction of historical landscapes with various components of the urban fabric, this study aims to examine the contribution of these processes to the sustainable development of cities. It will also address the potential impacts of these interactions, where natural and cultural elements come together, on the future of cities. From this perspective, the conservation and integration of historic landscapes is of critical importance in ensuring the identity and sustainability of modern cities.

Historic landscapes are areas formed by the combination of natural and cultural elements and reflect the historical processes of human societies. While these landscapes bear the traces of local cultures, traditions and historical events, they also reveal the interaction between different societies and the transformations that occur as a result of interactions. The study of historic landscapes not only reveals information about the past, but is also known to help

contemporary communities understand their identities, social dynamics and environmental relationships. This study aims to contribute to the development of strategies for the conservation and sustainable management of historic landscapes by examining how they have been shaped by cultural interactions, their processes of change and their current significance. As a result, historical landscapes are critical for the preservation of cultural heritage and the reconstruction of social memory. This study emphasizes the importance of historical landscapes and their cultural interactions, both in terms of understanding the past and supporting the sustainable development of contemporary communities, and demonstrates the necessity of their conservation and management for the continuity of cultural heritage.

CONCEPTUAL FRAMEWORK

Historic Environment

Historic environments establish a connection between the past and the present, and while exhibiting the whole of the buildings with high historical and architectural value, they give clues about the period to which these cultural assets belong. The importance of the concept of historical environment is increasing day by day. Today, while drawing attention to the concept of historical environment, the importance of the historical environment is also revealed. Since the 18th century, many definitions have been made about historical environments and the protection of historical environments. In the first definitions of the historical environment, the concept of historical monument is more predominant. Gradually, definitions have evolved from monuments to the concept of environment. The concept of historic environment was first examined in the Venice

Charter. The concept of “historic environment” has come to the forefront as a result of the acceptance of urban and rural settlements that witness past civilizations, important developments and historical events as historical values, as well as architectural works at the level of a single building (Url-1, 2024).

The historic environment is “a natural or man-made whole, which should be protected and evaluated for its integrity and artistic, aesthetic, historical, ethnographic, scientific, literary or legendary features.” This is how it is defined in the “Inventory of European Cultural Heritage” by the European Council for Cultural Cooperation. A good example of historical cities formed by natural structures is Venice, Italy, which has a distinctive natural and physical appearance, which was formed depending on the geographical and geological characteristics of the region in which it is located and developed by using these characteristics, and which has gained a worldwide touristic identity based on these characteristics (Figure 1).

Figure 1. A view from Venice, Italy (Url-2, 2024)

According to the Washington Charter, the values to be protected are the historic character of the city and urban area and the material and spiritual components that make up this character (Ahunbay, 2016):

- Urban fabric defined by parcels and streets,
- Relationships between buildings and green and open spaces,

The scale, size, style, construction technique, materials used, materials used, forms defined by colors and ornaments, interior and exterior appearances of buildings, the relationship between the city or urban area and its natural and man-made environment, and the different functions that the city or urban area has assumed over time are emphasized as values to be protected (Url-3, 2024).

Zeren defines the values to be protected as "all structures, movable and immovable properties and all kinds of documents of the same nature above ground, underground or in water belonging to prehistoric and historical periods and related to nature, science, culture, religion and fine arts". The values to be protected are analyzed in two groups as natural values and cultural values, and the cultural values to be protected are listed as follows according to their dimensions:

- Building components,
- Individual historical structure,
- Historical building group,
- Historical environment,

- The whole historical city,
- Historical region

The concept of “Historical Environment” is defined as the textures consisting of one or more streets that show integrity with their historical, architectural, archaeological and artistic values (Zeren Gülersoy, 2004).

Although “Historic Environment” mostly refers to urban sites, rural, historical and archaeological sites are also included in this definition and the general characteristics of these areas are listed below (Ahunbay, 1996):

- Historic environments are instructive and interesting as human scale spaces.
- They positively affect social relations and help reinforce the sense of belonging among individuals. Living in such environments makes people happy.
- In a world where everything is changing rapidly, they are open-air museums that provide information about living conditions, construction techniques and spaces of the past.
- Historic cities have a mystical atmosphere. Many details about the social and economic structure, philosophy of life and aesthetic sensitivity of past civilizations are hidden in these environments (Ahunbay, 1996).

Determination of Quality Criteria in the Historic Environment

The complex mix of quality criteria for the historic environment is not always clear and unambiguous. In order to analyze these criteria, it is necessary to understand and grasp the characteristics that need to be discussed. Methodologically, it is necessary to measure each quality criterion separately so that a realizable baseline emerges. Often in the effort to preserve the historic environment, mistakes are made in trying to preserve many features, and the essential elements that should be preserved are not preserved (Bandarin and Oers, 2012). Therefore, as the first step in planning, it is necessary to examine and evaluate the area to be protected or planned from the past to the present. First of all, what should be known is what is the function of public spaces in the historical environment, how this function and physical form change over time, and what will be their condition in the future. These are questions whose answers need to be examined and researched. In the reorganization of spaces and their environments, how their functions will change in the future and where they should be located are controversial issues. Uncontrolled rapid change damages the historic environment, destroys its identity and reduces its quality (Kubat et al., 1990).

Main Characteristics of the Historical Environment

In order to identify the most important characteristics of the historic environment, it is first necessary to examine the areas that need to be preserved. The most important question at this point is what exactly needs to be preserved and which characteristics need to be analyzed. For this purpose, the criteria chosen should be measurable/quantitative so that the results can be evaluated. Clearly,

it is insufficient to develop a prototype for the concept of conservation in the historic environment. Its uniqueness should be determined by comparing it with other prototypes. This comparison allows to see if the prototypes have their own unique characteristics. The characteristics investigated for the historic environment are very diverse. In general, it is difficult to decide where a quality criterion ends and where a quality criterion begins. Accordingly, the criteria should be unique and homogeneous, and all of them should be original and eye-catching. The main characteristics of the distinguished historical environment should be aesthetic and historical quality criteria, which should also be in relation to cultural symbols (Dinçer, 2013).

Historical Environment Key Quality Measures

The five main quality criteria and general characteristics that are important for historic preservation objectives are listed below (Cohen and Sofer, 2017; Stubbs, 2004).

- *Urban Settlement:* An urban settlement is an area whose boundaries are clearly defined and integrated with its surroundings. These boundaries can be easily determined. The naturalness of the area can be defined physically and theoretically. The area should be a focal point in the environment, and depending on its urban structure, this may be more crowded and wider.
- *Sense of Place:* Sense of place is defined by emotional and historical associations such as appearance, the presence of certain urban themes, comfort, shading, relaxation, connectedness to

nature, topography and vegetation. In addition to these; urban perception and comprehensible spatial location and their impact on identity formation also constitute the concept of sense of place.

- *Internal Connections:* In the urban environment, there is a singularity of spaces and connections, including urban open spaces and blocks. Spatial design (not just buildings) that dominates the elements, positions, street size/length/height of the environment is infrequent and ephemeral.

- *Style and Design:* This criterion includes color, materials, textures, and silhouettes, including similarities and differences between buildings. All these elements are very important, unique and striking. Three-dimensional, characteristic and artistic style, such as a certain scale, is dominant in this concept and is not ambiguous for regional characteristics.

- *Craft (Craftsmanship):* The materials used in buildings undergo a specific process to make them original and authentic. This includes features such as arches, domes, plastering of walls and especially worked stone. The construction methods complement the urban elements. These methods form a continuous process, not only in single buildings but also in their surroundings. These five central quality criteria are very important in identifying areas for the protection of the historic environment and in creating an

infrastructure for this. The evaluation of these quality criteria is also a reason for conservation. Two other reasons for preserving the old urban fabric and buildings, which include quality but are different from it, are objective and physical reasons.

History and Landscape

Landscape is the totality of natural, cultural, ecological, archaeological, historical, aesthetic, social and sensory components that provide the necessary environment for our daily life (Tudor, 2014) and is related to the relationship between people and place. The term landscape does not only mean a special or designated landscape, it can mean an urban wasteland as small as a mountain range or an urban park covering a vast plain. It is perceived as a form of interaction between the natural environment and the development of different components of the cultural environment (Swanwick, 2002).

The European Landscape Convention emphasizes that human perception is important in making sense of the landscape. According to Antrop (2005), the definition of landscape in the APS draws attention to cultural landscapes in art as well as landscapes in everyday life. Since landscape is part of the culture and heritage of every citizen, it is associated with daily life practices and this is the reason why landscape is valuable. Therefore, democratic processes should be adopted to determine how its value should be interpreted. The city is the source of the landscape essence of perspectivist form. When we see the city in this way, we pay homage to its formation, recombine the elements involved in its emergence, and transform every sensation we experience with our senses of sight, hearing,

touch and smell into elements of an ideal landscape (Bandarin and Oers, 2012).

Historic landscapes and historic landscape character encompass a variety of areas recognized as elements of cultural heritage. They can be urban, rural, suburban, agricultural, recreational, institutional, institutional, industrial, cemeteries, or junctions. For example, some historic landscapes symbolize military battlefields, while others are associated with important historical events or people. Others may be the aesthetic creation of a master landscape architect, gardener or horticultural artist. There are also ethnographic landscapes that represent certain traditions and contain various natural and cultural resources of humanity (Turna, 2012).

The concept of Historic Urban Landscape has been expanded to include a broader urban and geographical context with the "Recommendations on Historic Urban Landscape" published by UNESCO in 2011. This concept goes beyond merely defining urban areas as "historic centers" or "communities" and considers them from a historical perspective based on cultural and natural values. A comprehensive definition of UCD encompasses the topographical features, geomorphology, hydrology, natural features, surrounding historic and contemporary buildings, underground and aboveground infrastructure, open spaces, gardens, land use and spatial organization, as well as perceptions, visual relationships and other elements of the urban fabric. In addition, social and cultural values, practices, economic processes and the intangible dimensions of identity heritage are also included in the scope of TKP (Url-2, 2024).

In this context, UNESCO emphasizes that urban conservation is not limited to the protection of individual buildings

and that architecture should be considered as a holistic part of the urban fabric. These definitions place urban conservation at the center of the urban planning process, and UNESCO's 1976 Recommendations recommend the protection of all groups of buildings and open spaces, including historical, archaeological and paleontological sites. These sites are defined as settlements in urban or rural areas and their architectural, prehistoric and historic periods, with a sense of aesthetic or socio-cultural harmony and value. In this context, homogeneous monumental groups, especially prehistoric sites, historic towns, old town neighborhoods, villages and village houses, are recommended to be protected without modification (Url-3, 2024).

These recommendations promote a landscape approach that aims to protect, manage and distinguish historic sites in their wider urban context, taking into account their social, cultural and economic value.

The Effects of Natural and Cultural Processes on Urban Landscapes in Historic Landscapes

Historic landscapes are defined as the product of long-term interactions between humans and nature. These landscapes are spaces shaped by the natural environment together with architectural structures, parks, gardens, agricultural areas and other urban structures. Historic landscapes are an important source of data to understand how a city has evolved throughout history (Turna, 2012).

Natural processes include elements such as geographical structure, climate, water resources and topography. These elements, which determine how and where a city is built, also play a critical role in shaping the urban landscape. Cultural processes are shaped

by social structure, economic activities, religious beliefs and political changes. These two processes determine how urban areas transform over time. For example, the areas surrounding a river may have been shaped for a variety of purposes such as agriculture, trade or religious rituals (Karadağ and Koçman, 2007).

Natural and cultural processes have profound impacts on the formation and evolution of urban landscapes. Each of these processes determines the way cities are shaped and the dynamic nature of their landscapes. Detailed information on these two processes is presented below.

1. Effects of Natural Processes on Urban Landscape

Natural processes are among the key elements that determine the physical infrastructure of the urban landscape. Geographical and ecological factors leave lasting effects on the location, growth and landscape characteristics of cities. The most basic elements of natural processes are as follows (Karadağ & Koçman, 2007; Turna, 2012; Onur & Demiroğlu, 2016; Karadağ, 2007; Karadağ, 2009):

- *Geographical Location and Topography:* The natural geographical characteristics of the places where cities are built directly affect urban development. For example, while cities established on the banks of rivers provide advantages in terms of trade and agriculture, mountainous areas have become settlements due to their natural defense and strategic locations. Topography also affects the layout of buildings, the shape of roads and the development of infrastructure systems.

- *Climate:* Climate plays a major role in the planning of settlements. While hot climates increase the need for shaded areas, water sources and ventilation, cold climates cause more emphasis on thermal insulation and indoor arrangements. Throughout history, it has been observed that people have developed settlement strategies in accordance with the climate, and architectural structures have been shaped according to climatic conditions.
- *Natural Disasters:* Earthquakes, floods, volcanic eruptions and other natural disasters play an important role in the transformation of the urban landscape. These disasters may require the reconstruction of cities or the complete abandonment of some areas. It also leads to the development of disaster-resilient structures and planning.
- *Water Resources:* Water has been vital to the development of civilizations throughout history. Rivers, lakes and seas have shaped the settlement plans and economic activities of cities. The natural landscape around water sources has often been the center of agricultural, industrial and commercial activities.

2. Effects of Cultural Processes on Urban Landscape

Cultural processes are shaped by the values, beliefs, economic activities and social organizations of societies. These elements, which greatly affect the aesthetics and order of the urban landscape, are listed below (Gençer, 2017; Kalemci and

Hacıhasanoğlu, 2024; Çatalbaş and Kılıç, 2022; Bandarin and Oers, 2012):

- *Social and Economic Structures:* The economic activities and social structures of societies play a decisive role in the organization of the urban landscape. While agricultural societies develop around large agricultural lands, industrial societies are concentrated around factories and business centers. The impact of economic activities on the settlement pattern can also affect social stratification, leading to the gathering of rich and poor in different areas.
- *Architectural and Design Traditions:* Culture and architecture are two of the oldest and most deeply intertwined areas in human history. Each society has its own unique identity, and this identity is reflected in architecture by being kneaded with cultural values. The traditions, beliefs, social structure and aesthetic understanding of a society are embodied in the form and function of the structures built by that society (Acı et al., 2017). Therefore, the architecture of a structure should be evaluated not only as a technical achievement, but also as a document reflecting the spirit and history of that society. Culture has a profound effect on architecture and urban design. Different cultures, different belief systems and lifestyles shape the architectural features and landscape layout of cities. For example, while mosques and water structures are of central importance in Islamic cities, structures such as churches and castles are at the

forefront in medieval cities in Western Europe. Below is a beautiful example of the reflection of cultural identity through architecture in the "National Museum of African-American History and Culture", which combines architectural and design traditions (Figure 1).

Figure 2. A view from the National Museum of African/American History and Culture (Url-4,2024).

- *Religious and Ritual Areas:* Religion can have a strong influence on the urban landscape. Sacred areas, places of worship and public spaces suitable for religious rituals have a prominent place in the physical structure of cities. Throughout history, large temples, churches, mosques and other religious structures have served as the social and cultural centers of cities.

- *Historical and Cultural Heritage:* Historical heritage is an important cultural process that preserves and

maintains the urban landscape of cities. The preservation of old structures and areas ensures the continuation of historical ties that form the identity of cities. In this context, many cities continue to live their historical monuments, squares and streets today, thus uniting the past and the present.

- *Political Changes and Governance:* Political decisions have great effects on the transformation of the urban landscape. Government policies can directly affect urban planning and infrastructure, enabling cities to grow or shrink. For example, in some political periods, the power of the state has been emphasized by building large monumental structures; in other periods, more human-centered urban design approaches have been adopted.
- *Ecological Elements:* The adaptation of cities to the natural environment is important for the sustainability of ecosystems. Green areas, forests and water resources play an important role in maintaining the ecological balance of cities. The protection of the natural landscape is critical for the sustainability of both environmental and cultural processes.

CONCLUSION AND EVALUATION

Cultural processes are addressed in an integrated structure of social, economic, religious and political factors in the formation of urban landscape. The socio-economic structure of cities, their architectural and artistic traditions, religious and political factors are the basic elements that constitute the cultural identity of cities. These processes can play an important role in the urban landscape gaining

a unique identity by interacting with cultural heritage and the natural environment (Acı et al., 2017). For example, the reflection of social class differences in the structure and usage patterns of cities, or the arrangement of agricultural areas and parks by human hands are elements that reflect the cultural richness of cities. The transformation of the natural environment through cultural processes not only determines the physical boundaries of cities, but also may require the development of ecological balance and sustainability strategies to protect the natural and cultural heritage within these boundaries. In the management of cultural processes, the protection standards determined by international organizations such as UNESCO are also very important in terms of the sustainability of cultural and natural heritage.

The harmonious management of natural and cultural processes is of critical importance for the sustainability of the urban landscape. There is a strong relationship between the protection of natural ecosystems and the continuity of cultural heritage; therefore, integrated urban planning and ecological protection strategies come to the fore. Sustainable management of cultural processes enriches not only the physical structure of cities, but also the social and cultural life of society (Bulut and Demirel, 2021). Public awareness and participation of local people are very important for the successful implementation of this process. Thus, cities can achieve a sustainable structure by both preserving their ecological balance and maintaining their cultural identities.

Natural and cultural processes constitute the cornerstones of the physical and social structure of cities (Büyükkaracığan, 2016). The interaction of these two processes has shaped the development

of the urban landscape both in the past and today. The sustainability of modern cities depends on the management of natural and cultural processes together and in a balanced manner. In order for future generations to experience this rich heritage, the implementation of integrated urban planning and protection strategies is of critical importance.

Cultural processes are important factors that shape the dynamics of the urban landscape as a result of social changes, belief systems, economic structures and political transformations. The settlement patterns of different societies, the spatial distribution of social classes and architectural preferences are the reflections of cultural processes in the physical structure of cities. For example, religious buildings, squares, monumental structures and marketplaces are the areas where cultural processes are most visible in the urban landscape. These structures not only provide a physical space by forming the social centers of cities, but also reflect the cultural and historical heritage of a community.

Historical landscapes within the urban fabric play a determining role in the identity and aesthetic value of cities as areas where natural and cultural processes intersect. Historical landscapes are living examples of urban heritage by reflecting past lifestyles, architectural understandings and cultural values of societies. The protection of these elements is important in terms of transferring the historical depths and cultural accumulations of cities to future generations. However, if the dynamic interaction between natural processes and cultural processes is not taken into account, the sustainability of these landscapes in the urban fabric may be at risk.

Today, integrated protection strategies need to be developed for the sustainable management of urban landscapes. An approach that considers both natural and cultural processes should be adopted; historical landscapes should be protected in harmony with natural ecosystems. In addition, increasing public awareness and active participation of local people in this process make significant contributions to the preservation and sustainability of historical landscapes. Urban landscapes are in a constant state of change due to the interaction of natural and cultural processes. The balanced management of these processes can enable cities to both preserve their historical heritage in the past and make sustainable plans for the future. Historical landscapes are an inseparable part of the urban fabric as one of the basic elements that ensure the identity and continuity of cities. At the same time, the sustainable management of natural processes is necessary to protect the environmental and ecological health of cities. In this context, it is critical for cities to establish a balanced relationship between natural and cultural processes in the future and to manage these processes in a sustainable manner.

As a result, historical landscapes are an expression of dynamic structures resulting from the interaction of natural and cultural processes, and this interaction is a fundamental element in terms of the sustainability of cities. In urban planning, both the protection of the natural environment and the preservation of cultural heritage are among the most important strategies that carry the historical identity of cities into the future.

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CHAPTER II

Evaluation of Malatya Province's Gunpınar Waterfall Nature Park According To The Forest Parks Regulation

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Metin DEMİR[2]

1.Introduction

Recreation is acknowledged as a fundamental need that facilitates the physical, mental, and spiritual relaxation of individuals, while also assuming a rejuvenating role for humanity from social, cultural, and psychological perspectives. This concept is progressively evolving, and the nature of recreation is undergoing a transformation in alignment with this development (Yılmaz, Yılmaz & Demircioğlu et al., 2003). The renewed character has been shaped by the proliferation of rich activities, as well as various games, entertainments, and activities like picnics that support

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individuals' inner transformation (Rüzgar, Koçak, and Demir, 2022). This process has led to an intensification of enjoyable events organized in expansive parks and gardens, discussions on art and politics, diverse visual arts activities, and outdoor events over time. Consequently, recreation has taken shape in a modern sense, fostering the emergence of a rich recreational lifestyle in contemporary times (Pehlivanoğlu, 1987; Günaydın, 2011; Sağlık, 2014; Seyhan, 2019).

Recreation possesses a significant feature that contributes to the social structure. The gathering of individuals participating in the same recreational activities facilitates acquaintanceship, friendship formation, and collective action towards common goals (Demircioğlu & et al., 2011). This situation allows for the strengthening of social relationships and the fortification of societal bonds (Rüzgar & Demir, 2023). The experiences gained during recreational activities play a crucial role in regulating interpersonal relations and in adhering to social norms. Therefore, recreation is considered an important tool that meets the social, physical, and spiritual needs of the public (Müderrisoğlu, 2002; Güneş, 2019).

The pressure on natural areas has progressed in parallel with rapid population growth, industrialization, urbanization, and technological advancements. In the last century and today, humankind's unconscious, unplanned, and rapid consumption of natural resources has led to serious problems, including the extinction of fauna species, disruption of natural balance, and degradation of ecosystems inhabited by many living beings, primarily humans (Göktuğ & et al., 2013). This degradation has been

a significant factor in the emergence of the concept of ‘protected areas’ (Kervankıran & Eryılmaz, 2014; Şahbaz & Altınay, 2015).

Urban dwellers frequently utilize forest rest areas to meet their recreational needs. These areas, which are parts of forests endowed with superior aesthetic values, have been designated as picnic and camping sites and equipped with the necessary facilities and services, playing a significant role in fulfilling the open-air recreation needs of city residents (Vujko & et al. 2017). Activities conducted in these areas, such as picnicking, hiking, landscape viewing, sports activities, or simply breathing the quiet and tranquil forest air without physical activity, have a positive impact on individuals both physically and/or mentally (Akten, 2003; Suana & et al. 2020; Ak, 2022).

The purpose of this study is to evaluate the recreational areas of Günpınar Waterfall Nature Park according to the Forest Parks Regulation published in the Official Gazette No. 31849 on 28.05.2022, which includes the necessary procedures and principles for the management, operation, additional structures and facilities, and supervision of forest recreation areas.

2.Material And Method

The material for this study is constituted by the Günpınar Waterfall Nature Park, located within the boundaries of Darende District in Malatya Province. The geographical location of the area is presented in Figure 1.

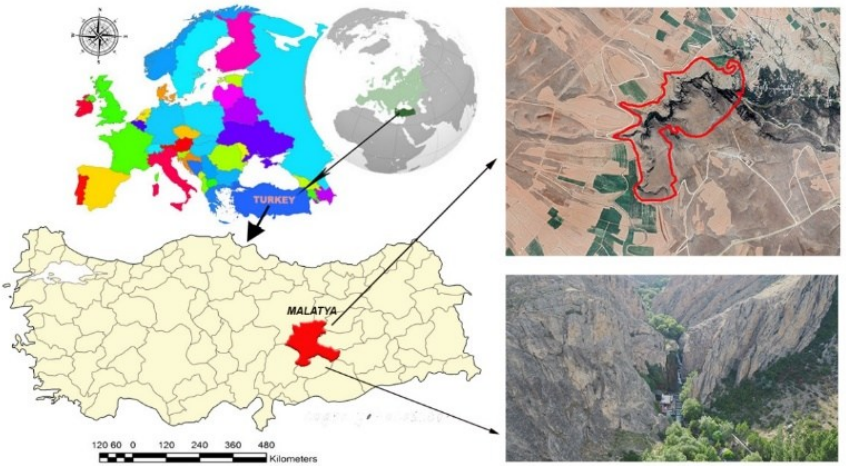

Figure 1. Günpınar Waterfall Nature Park Location Map

Günpınar Waterfall Nature Park encompasses an area of 135.20 hectares and, due to the topographically dynamic nature of the region, it features the highest elevation point at 1,506 meters and the lowest at 1,240 meters, with an average elevation of 1,408 meters (Karakaş, 2009; Şahin & et al., 2012).

The Günpınar Waterfall Nature Park includes a 0.64-hectare (CUZ-1) meadow area located on the northern border and a 0.94-hectare (CUZ-2) area on the eastern border, both defined as Controlled Use Zones within the Development Plan, totaling 1.58 hectares. According to on-site examinations, currently, only the 0.94-hectare Controlled Use Zone-2, which is located on the eastern border and encompasses the waterfall, actively offers structures and facilities for recreational activities.

Within the boundaries of Controlled Use Zone-2, observations and examinations have been conducted, and photographs of the area have been taken. Based on the data obtained,

the recreational potential of the area has been evaluated according to the Forest Parks Regulation.

The Forest Parks Regulation, published in the Official Gazette No. 31849 on 28.05.2022, aims to ensure the highest level of recreational benefit from forests for the community, protect public rights, clarify the practices to be carried out in forest parks, ensure that operators make their investments in forest parks in accordance with legislation and contracts, and elevate the procedures and transactions related to forest parks to an internationally recognized level.

3.Findings

3.1. Picnic Areas

According to the Forest Parks Regulation; for Day-Use Areas, it is accepted that one hectare can serve a minimum of 150 and a maximum of 250 people. Additionally, picnic tables, preferably made of wood or wood-like materials, should be available to meet the picnic needs of users. Accordingly, it has been determined that:

A family unit (5 people): should have 200-350 m² of usage area and one table,

A group unit (20 people): should have 800-1,400 m² of usage area and four tables.

When the picnic area within the study area is evaluated according to the regulation; It has been calculated that it has the capacity for a picnic area for 50 people (10 families), as (0.20 \times 250 = 50) (Figure 2).

Figure 2. Picnic Area in the Nature Park

3.2. Buffet

According to the regulation, a kiosk should be planned with shelves, a refrigerator, and a beverage cabinet, having a maximum floor area of 20 m² and a height of up to 3.50 m, with one unit per 5 hectares. Observations indicate that there is one kiosk within the study area; however, it has been noted that it is not actively in service (Figure 3).

Figure 3. Buffet at the Entrance of the Nature Park

3.3. Fountains

According to the regulation, within forest parks, fountains should be constructed using materials such as wood, stone, brick, or block to meet user needs. According to the examinations conducted, there is one fountain located within the picnic area that lies within the boundaries of the Nature Park (Figure 4).

Figure 4. Fountain in the Nature Park

3.4. Children's Play Area

According to the Forest Parks Regulation; for Day-Use Areas, a children's play area should be designed to provide 1 m² per person (for 2 out of 5 people in a family unit), and for Camping Areas, 2 m² per person. These areas should be located as close as possible to the toilets. According to the examinations conducted in the nature park, the children's play area has been planned adjacent to the toilets and picnic area (Figure 5). Based on the measurements, the play area is 94 m² and is considered to have sufficient capacity for the families using the picnic areas, which is regarded as a positive aspect of the planning.

Figure 5. Children's Playground in the Nature Park

3.5. Entrance (Door) Control Unit

According to the regulation, the entrance control unit should be designed to accommodate one table, one chair, one shelf, etc., with a maximum height of 3.50 meters and a maximum area of 15 m². Entrance control units must not create traffic problems and should be planned considering the expropriation limits of highways in forest parks adjacent to highways. According to the examinations conducted in the study area, the entrance control unit has been placed at the end of a pedestrian path extending from the parking area into the field, at a distance from the highway (Figure 6). Since there is no possibility of vehicular entry into the area, no traffic issues are encountered at the entry point.

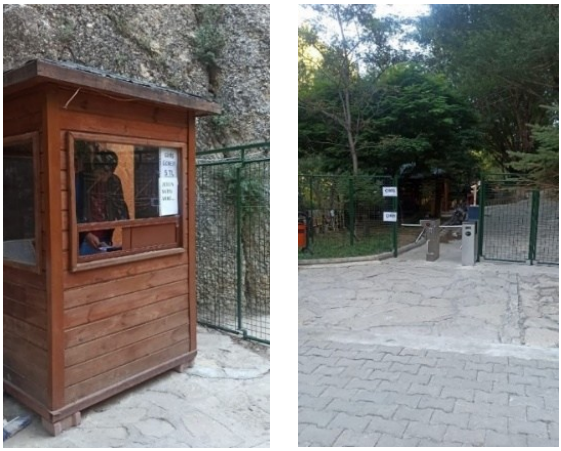

Figure 6. Access Control Unit Located at the Area Entrance

3.6. Retaining Wall

According to the Forest Parks Regulation, the use of stone material is recommended for retaining walls constructed on sloped terrains to prevent soil erosion. The retaining wall located at the entrance of the Nature Park ensures the safety of the sloped pedestrian path and blends with the natural environment through the use of stone material (Figure 7).

Figure 7. Retaining Wall at the Entrance to the Area

3.7. Bower

According to the regulation, for Day-Use and Camping Area users, gazebos with a cage-like structure, domed and covered on top, having a maximum floor area of 20 m², should be positioned in areas where the natural texture is not dense. A maximum of 25 gazebos can be constructed per hectare. For an area of 1 hectare, a maximum of 25 gazebos can be built, For an area of 0.20 hectares, a maximum of 5 gazebos should be present. According to on-site observations, there are 29 gazebos within the study area (Figure 8).

Figure 8. Bowers in the Nature Park

3.8. Countryside Cafeteria

According to the regulation, country cafes are to be planned with a maximum floor area of 250 m² and a maximum height of 7.50 m, accommodating storage, baby care room, preparation and cooking, dishwashing, toilet, and service area facilities, without exceeding the ground floor and one upper floor, with a maximum of two such establishments throughout the entire area. Observations made within the Nature Park reveal the presence of one country cafe.

However, this structure lacks storage, a baby nursing room, and toilet facilities (Figure 9).

Figure 9. Country Coffee House in the Nature Park

3.9. View Observation Terrace

According to the regulation, landscape viewing terraces should be constructed with consideration for the safety of life and property during their construction, without damaging the natural texture of the space, in locations with high landscape value and expansive views. The landscape viewing terrace located within the study area offers the opportunity to observe the waterfall from the front and, due to the use of glass material in its construction, also allows for the observation of the current flowing beneath (Figure 10).

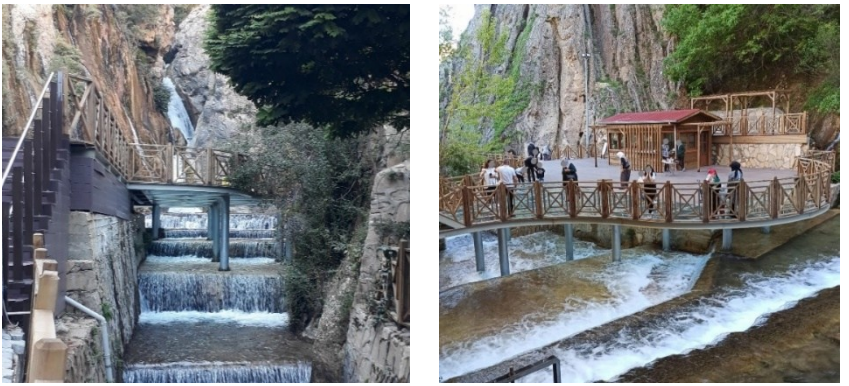

Figure 10. Landscape Observation Terrace Built to Watch the Waterfall in the Nature Park

3.10. Furnance

According to the regulation, the area should be planned with a sufficient number of facilities based on the carrying capacity and regional characteristics. It has been observed that there are three furnaces in the study area, which meet the needs of the users (Figure 11).

Figure 11. Stoves Located Next to Picnic Areas

3.11. Parking Lots

According to the regulation, parking areas should be constructed on leveled ground, accommodating 80% of the number of family units, and additionally, if there is a settlement or public transportation line within 2-3 km of the forest park, another 80% of this number should be added. If bus parking spaces are planned, 8 car parking spaces should be deducted for each bus park. When planning parking areas, avoiding allocating a large area at a single point is recommended; instead, they should be distributed across the area, preferably behind the usage areas and within walking distance.

According to the regulation, since an area of 1 hectare must serve at least 150 people, for 0.94 hectares, this number is at least 141 people. For a family unit (5 people), at least 28 car parking spaces are required. It has been observed that there are 19 car parking spaces arranged adjacent to the highway at the entrance of the Nature Park (Figure 12).

Figure 12. Parking Lots Available to Nature Park Visitors

3.12. Toilets

According to the regulation, toilets should be planned according to need and additionally for the disabled, and can be constructed from wood, prefabricated materials, or different materials suitable for the region's characteristics. It has been observed that within the nature park, there are three sinks and three toilets each for men and women. Additionally, a fee of 2 Turkish Lira is charged for each use (Figure 13).

Figure 13. Toilets Available to Nature Park Users

3.13. Pedestrian Paths

According to the regulation, pedestrian paths should be planned with suitable widths to facilitate internal circulation within the area, and as much as possible, without damaging the vegetation or cutting down any trees. Observations within the study area indicate that pedestrian paths have been designed using wood and stone materials to ensure circulation and harmonize with the natural environment (Figure 14).

Figure 14. Planned Pedestrian Paths within the Nature Park

3.14. Local Products Sales Kiosks

According to the regulation for forest parks, when planning units for the sale of local products, each unit should consist of no more than five sections, with each section occupying a maximum area of 6 m² and a maximum height of 3.00 m, with at least one open side, and a total of no more than five units can be planned. At the entrance of the study area, adjacent to the parking lot boundary, there are three units for the sale of local products, but it has been observed that they are not actively in service (Figure 15).

Figure 15. Local Products Sales Units Located Outside the Nature Park

4.Conclusion

Industrialization leading to rapid urbanization has caused a reshaping of the physical and social fabric of settlements, resulting in the loss of traditional values and identities. In contemporary cities today, the planning processes prioritize enhancing the quality of life, economic strengthening, addressing environmental issues, and adhering to sustainability principles. Moreover, an effective management approach also considers preserving local characteristics while being globally oriented. The importance of these approaches is increasingly recognized for maintaining social equilibrium and supporting the sustainable development of cities (Demir & et al., 2011; Henden Şolt, 2019; Kara, Celep & Kanıgür; 2020).

The fundamental aim of recreational planning is to develop physical plans and programs that will establish the most suitable and long-term balance between recreational resources and individuals' recreational needs (Altunkasa, 1998; Pauleit & Duhme, 2000; Dağ, 2016).

Recreational areas not only enhance environmental quality and provide aesthetically pleasing spaces but also offer numerous benefits to urban ecology. They are valuable not only for the mental and physical health development of city dwellers but also because they create an environment for relaxation, entertainment, and socialization.

The sizes of recreational spaces vary depending on the potential number of users, frequency of use, diversity of activities offered, the social carrying capacity of the community, and the ecological carrying capacity of the area. These factors are directly related to the social, economic, and cultural structure of the society.

Studies conducted in the work area have assessed the adequacy of structures and facilities according to the Forest Parks Regulation. While there are units of construction and facilities that can be considered positive from the regulation's perspective, deficiencies or incorrect units that could be deemed negative have also been observed. Considering the balance between conservation and use, as well as the visitor potential due to the area's location, the management has proposed the following recommendations to enhance the recreational appeal of the area:

• A literature review regarding carrying capacity should be conducted, and analyses for the area should be performed to determine acceptable visitor numbers.

• Daily, monthly, and yearly visitor numbers should be established to identify seasonal or permanent recreational activities that can be planned within the area.

• Areas that are lacking or faulty should be replanned in a manner that will not cause any damage to the natural structure of the area, taking into consideration the principles of the Forest Parks Regulation.

• Particularly to provide economic benefits to the local population and to promote local cultures, regional product sales units should be activated and their numbers increased.

• To improve visitor satisfaction levels, surveys should be conducted to include the opinions and suggestions of the public in the development plans to be created.

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CHAPTER III

An open space design that allows for different uses: The unity of culture-art and daily activities

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Tuğba DÜZENLİ[2]

Introduction

Making cities more livable for people involves creating spaces where individuals can engage in activities not only physically, but also socially, culturally, and artistically. At this point, urban design plays a crucial role. Urban design is not merely about physically altering spaces; the open spaces generated through urban design facilitate social, economic, artistic, and cultural cohesion. They also foster the sharing of these experiences, contributing to

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collective societal action. In this way, such spaces become focal points for accumulating the city's memories, enabling the transmission of experiences to future generations. Consequently, urban design occupies a pivotal position in shaping societies, both functionally and symbolically.

One of the most significant challenges cities face today emerges at this juncture. Poor planning in urban design processes leads to a loss of identity in cities, both culturally and physically. Homogeneous, low-quality environments and communities arise. Managing this negative process through urban renewal practices, accurately diagnosing the issue, and intervening in cities with proper diagnoses are essential. In this intervention process, considering the concept of urban design alongside renewal forms a central component of the work (Alpak and Yılmaz, 2022; Seyhan and Bayramoğlu, 2023; Kurdoğlu et al., 2019; Adilhan and Ünver, 2018). Therefore, design constitutes a significant part of urban renewal. Revitalizing and reactivating dysfunctional and dilapidated urban areas, and producing livable spaces, is achievable through urban design practices (Özkan et al., 2017; Bayramoğlu and Seyhan, 2021; Alpak and Düzenli, 2022; Bayramoğlu et al., 2019; Eren, 2019; Eren, 2022).

In a general framework, urban renewal and design processes can be described as the transformation, rehabilitation, and revitalization of urban fabric that has, for various reasons, become outdated, dilapidated, deteriorated, or in some cases, abandoned over time, by considering the socio-economic and physical conditions of the present day. The revitalization and reintegration of urban areas deemed as "decaying zones" back into the city is made possible

through urban renewal. Urban renewal achieves this by imparting a new socio-cultural, economic, and physical identity and character to neglected, dilapidated, and outdated urban spaces (Özden, 2001).

As the Department of Landscape Architecture at Karadeniz Technical University, it has been decided, within the scope of the Environmental Design Project III course, to re-functionalize a historic building located in the city center—currently serving as the "Architects' Chamber"—along with its immediate surroundings through urban renewal and design processes. The building has been used for various functions over the years. The primary goal here is to design the space in a way that reflects the cultural and artistic activities happening inside the building into the outdoor environment, without disrupting the function of the Architects' Chamber. At the same time, the project aims to create spatial solutions for daily outdoor activities by developing scenarios that address the recreational and social needs of urban users through shared public spaces.

In this way, students will be instilled with an awareness of their responsibility to contribute to the sustainability of urban identity in cultural, physical, and social terms, through the integration of cultural-artistic events and everyday activities without disrupting the function of a historical building during urban renewal and design processes. Moreover, they will understand their role in ensuring the preservation of these elements for future generations.

Urban renewal

The rapidly changing and developing urbanization worldwide has brought with it environmental issues, along with unplanned, identity-lacking structures that have no connection to the past or future. Despite the presence of these structures, historic buildings that continue to exist in city centers remain significant elements of urban identity. Although these historic buildings may lose their social and functional characteristics over time, the importance of preserving their original identity, which reflects the accumulated knowledge of the period they represent, has become increasingly critical (Enlil, 1992). Necessary maintenance and restoration must be undertaken to preserve cultural identity and ensure the continuity of cultural heritage (Açıcı and Konakoğlu, 2019).

The concept of urban renewal can be said to have emerged at the turn of the 20th century, during periods of significant socio-cultural, economic, and physical transformations. As mass population movements and urban congestion intensified, particularly in city centers, urban transformation began to take shape, with new social strata replacing the populations that originally inhabited these areas. Alongside functional changes, urban decay became apparent. As historical city centers were vacated, residential functions in these areas were replaced by commercial units, small workshops, or warehouses, and the original inhabitants left, making way for a new social class brought in by the new functions. This functional transformation had highly negative effects on city centers, causing them to lose their distinctive qualities both socio-culturally and physically.

In a general framework, urban renewal can be defined as the transformation, rehabilitation, and revitalization of urban fabric that has become outdated, dilapidated, worn out, or in some cases abandoned over time, by taking into account the socio-economic and physical conditions of the present day. The revitalization and reintegration of urban areas, particularly those considered as "decayed zones," back into the city is made possible through urban renewal. Urban renewal achieves this by imparting a new socio-cultural, economic, and physical identity and character to neglected, dilapidated, and outdated urban spaces (Özden, 2001). The types of urban renewal actions can be briefly outlined as follows:

a- **Revival –** RevitalizationUrban renewal involves the revitalization of urban areas that are undergoing a process of decay from socio-cultural, economic, or physical perspectives. This is achieved by eliminating or altering the factors that have caused the deterioration, thus breathing new life into the area and restoring its vitality.

b- **Renewal – Renovation:** This type of action, which focuses on the renewal of urban areas, also encompasses the concept of demolition and reconstruction.

c- **Regeneration:** It involves creating a new urban fabric or improving the existing one in areas that have become completely degraded, dilapidated, and thus turned into zones of decay, with the goal of reintegrating these areas back into the city.

e- **Rehabilitation**: It can be defined as the restoration of old urban areas that have begun to undergo deformation but have not yet lost their original character.

f- **Re-Functioning;** Rehabilitation involves creating new usage opportunities for historic buildings while preserving their architectural, aesthetic, social, and cultural values. This process includes interventions that address spatial requirements to meet user needs. Function change in historic buildings represents a contemporary approach to conservation.

In the context of this study, among the types of urban renewal, the focus is on how rehabilitation can make an urban area a focal point that connects the past and future through multidimensional use.

Trabzon "Chamber of Architects" and Re-Functioning

The building serving as the Trabzon Branch of the Chamber of Architects was constructed in the 19th century on a site in Kemerkaya Mahallesi, which could be described as a "city balcony" with a commanding view of the sea. Over time, the building has served various functions, including as a residence, a girls' dormitory, a school, a forestry administration office, and a staff quarters, before being allocated to the Chamber of Architects in 1997. Its spatial layout is based on the common internal courtyard (karnıyarık) plan schema used in Trabzon. The building features a colonnaded and porticoed front facade and exhibits some elements of Greek architecture, making it the last of its kind in Trabzon.

Functional changes in such historic buildings can be associated with a contemporary conservation approach (Gazi and Boduroğlu, 2015). This preservationist approach saves structures that have become obsolete and no longer meet user needs from being lost. For these buildings, new usage opportunities that are

compatible with their original spatial and structural characteristics are created, thereby ensuring the continuity of the historic fabric and maintaining the unique character of urban life. In other words, functional transformations can be defined as methods that facilitate the revival of historical values, enabling society to connect with its past and carry it into the present (Eren Akaydın and Canbay Türkyılmaz, 2018).

The building currently used as the Chamber of Architects has been renovated according to preservation projects that adhere to its original plan. The existing staircase was reconstructed in its previous location, maintaining its original dimensions. The ground floor has been converted into an exhibition hall, the first floor's rooms around the central courtyard have been adapted for administrative services, and the attic has been arranged as a reference library. A kitchen and a small dining area have been designed in the subsequently added basement. The facade elements, including the wooden moldings, have been restored to their original details, with contemporary materials and comfort features integrated in a way that preserves the existing fabric.

However, the rehabilitation process aims not only to preserve the physical fabric of the building but also its symbolic and artistic values. For buildings to be preserved, they must possess one or both of these values. Mere functionality is not sufficient for preservation; the buildings must have cultural significance, as they play an important role in the collective history or memory of a society or humanity, or are valued aesthetically (Kuban, 2000). Historical buildings, which have served users since their construction and bear the traces of cultural heritage, are significant artifacts that provide

insight into a society's culture, architecture, art, traditions, and way of life.

Located in the Ortahisar district center of Trabzon, the "Chamber of Architects and its surrounding area" occupies a beautiful position amidst greenery where residents can connect with the outdoors. The building, reflecting the community's culture and bearing traces from the past, functions as a venue for various cultural and artistic activities and also serves as a café with a garden of approximately 800 m², addressing users' daily needs. However, there is a lack of a spatial solution that integrates cultural and daily activities. While cultural and artistic events occur indoors, they are distanced from users, and the outdoor space does not fully integrate with the users. The goal is to achieve this integration through the urban design process, ensuring the continuity of societal values and preserving the messages from the city's past for future generations. As a structure that has witnessed different periods of the city, it will play a prominent role in preserving these values while engaging with the urban community through cultural and artistic events. The preservation of this building, which contributes to the unique identity of the city and carries significant architectural features from its era, will play a crucial role in maintaining cultural continuity and shaping the city's identity for the future (Birol, 2007).

Aim

In the Spring Semester of 2022-2023, the Department of Landscape Architecture at Karadeniz Technical University selected the "Chamber of Architects and its Surroundings" as the focus area for the Environmental Design Project III course. The objective of the project was to develop a landscape design that integrates the needs

of both café users and cultural-artistic activities (such as exhibitions and talks) into a cohesive whole.

Students were tasked with creating spatial designs that reflect the activities of the Chamber of Architects from the interior to the exterior, devising scenarios for communal spaces to address the recreational and social needs of café and city users, and providing spatial solutions for these activity areas.

The project involved a comprehensive process, including literature review, scenario development, user needs assessment, creation of a needs list, function diagram, analysis of needs and area capabilities, development and critique of initial spatial organization sketches, and refinement of proposals. The final deliverables included plans, sections, and elevations. Designs were expected to be functional and aesthetically valuable in line with landscape architecture principles, ensuring that the space serves its users effectively.

Findings

A Design Process for Integrating Cultural-Artistic and Daily Activities: Rehabilitation

The project was carried out by a total of five students. Each student individually identified issues related to the site and developed a conceptual framework. They then translated these concepts into graphical representations, which were further developed into concrete visual scenarios. In this process, students also created syntheses for:

Integration with Urban Context: Establishing connections between the project area and other parts of the city.

Green Space Proposals: Proposing green space integrations that span across the city.

Pedestrian Accessibility: Developing proposals to improve pedestrian access.

Additionally, students designed activity spaces to meet user needs and established the relationships between these spaces. These preparatory efforts contributed to the formation of the preliminary project. Each student reflected their concepts, spatial usage, and rehabilitation processes in their designs, producing projects that integrate cultural-artistic activities with daily life. The process of one student was examined in detail as part of this study.

Student: Melisa KARAMARA

After completing the programming phase, where students, through group work, identified problems, strengths, and conducted site analyses (such as slope, orientation, and cultural data), they moved on to the Design Stage, which involves individual efforts. This stage encompasses:Concept Generation: Creating initial ideas and frameworks. Concept Development: Refining these ideas into more detailed concepts. Scenario Creation: Developing scenarios that illustrate how the concepts will be implemented. Spatial Usage: Planning how the space will be used and arranged. Option Generation (Sketch Work): Producing preliminary sketches and exploring different design options. Final Product Design: Designing the final product based on the refined concepts and scenarios.

Students were particularly encouraged to integrate the rehabilitation process into their designs, emphasizing the historical

value of the site, its significance to the city, and the integration of cultural-artistic activities into their design approaches.

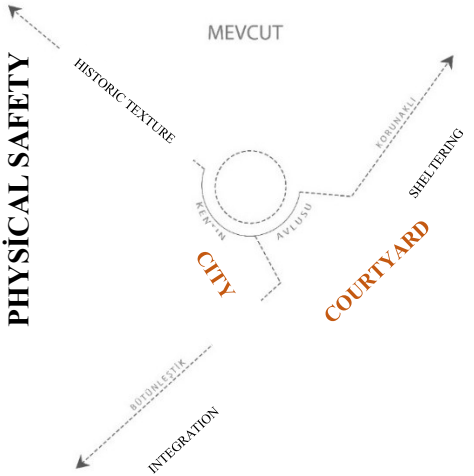
Notion Development

QUERENCIA: Seeking Order Amidst Disorder: Mimarlar Odası

The feeling of safety extends beyond mere physical security; it requires spatial legibility to foster emotional attachment and a sense of belonging. This concept, known as semantic security, is crucial for spaces to be embraced and protected by their users, much like their own homes. The goal is to design the Architects' Chamber as a refuge amidst the challenges of urban distortion and heavy traffic—a sanctuary within the city. Nature and greenery are known to evoke calming, peaceful, and secure feelings. Therefore, preserving and enhancing the green elements of the Architects' Chamber, a rare oasis in the city's irregular landscape, is vital. This green space should be extended throughout the city to create a coherent and legible environment, thus providing semantic security. The intention is for this green area to become a central part of the city, integrating with other urban spaces. Additionally, another key objective is to reinforce the physical and historical integrity of the space through its repurposing. The design will incorporate daily activities such as dining, sitting, and resting, and integrate these with the external spatial arrangements for cultural and artistic events. This integration aims to diversify user experiences and establish the space as a social hub, thereby enhancing both social and semantic security.

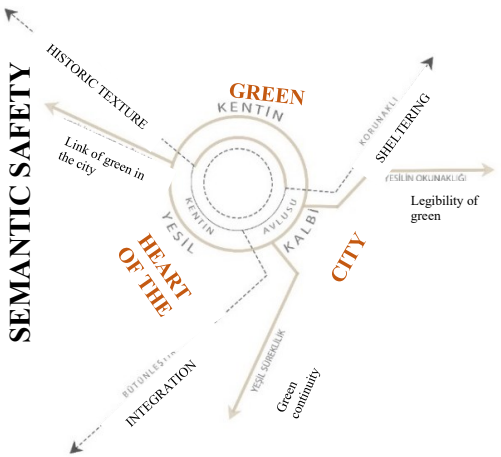
Notion Development

QUERENCIA: I am pleased to share this space with you in an atmosphere of tranquility, calm, and security.

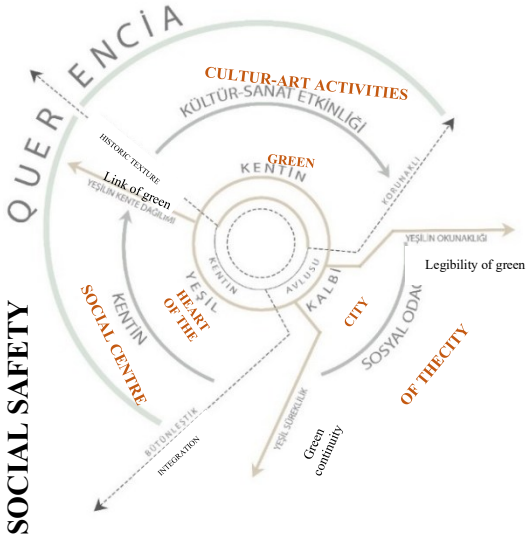


The sense of security is the foundation of this design. The workspace currently accommodates routine uses such as dining, drinking, and seating. Its location within the city, its sheltered historical fabric, unifying power, and its role as a safe escape point amidst heavy vehicular traffic position it as a courtyard of the city. This aspect provides physical security to users. The concept development extends beyond this existing function by incorporating dimensions of social and semantic security.

Present Situation



A fundamental issue is the lack of coherence in the green fabric of the city. Although the study area includes greenery, its relationship with the city is disconnected. The objective is to enhance the green fabric within the area and integrate it into the urban structure, thereby achieving a systematic and legible environment. By spreading the green fabric from the designed area throughout the city, sustainability can be ensured, and the space will gain a semantic dimension as the green heart of the city. This green heart's growth and extension into the city will contribute to providing semantic security.



One of our other objectives is to repurpose the existing use and enhance the space with social security, thereby transforming it into a social focal point for the city. By integrating existing activities such as dining with cultural and artistic events like exhibitions and talks to be held in the outdoor spaces, the aim is to increase user diversity and provide social security. In this way, the repurposing will incorporate both past uses and new activities, ensuring a cohesive blend of the old and the new within the space.

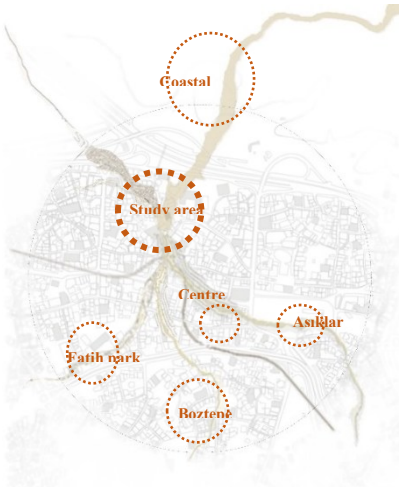
Figure 1. Development of the Concept

Notion Development

The aim of synthesis work is not only to provide solutions specific to the study area but also to address problems throughout the entire city, offering a comprehensive solution. To achieve the primary goal of ensuring semantic security, a connected green space system proposal was initially developed. A solution was proposed for integrating the city's fragmented and isolated green spaces with the study area. Subsequently, to make the study area an organic part of the city and ensure coherence, proposals for linking it with other similar city elements were presented. Additionally, pedestrian access proposals were made to connect the study area to other parts of the city, supporting ecological balance.

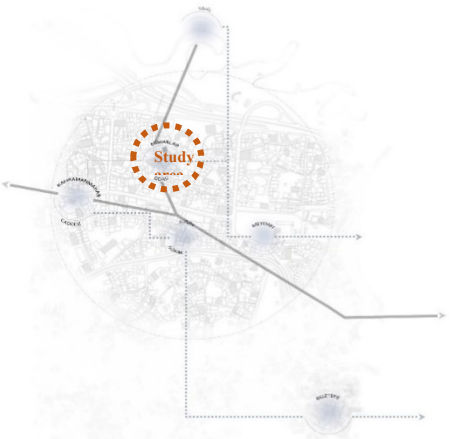
In design education, the most crucial objective of synthesis is to enable students to take the first step in translating their abstract conceptual and conceptual stages into concrete data on the study area in response to the problems they have identified.

Table 1. Connected Green Space Proposal, Urban Relationship-Pedestrian Access Synthesis



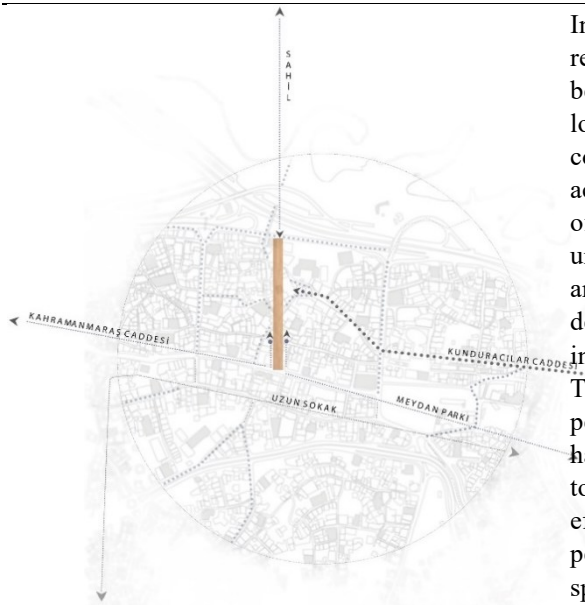
Urban green spaces are a fundamental component of the urban fabric, providing users with multifaceted services and contributions as meaningful environments. By linking disconnected green spaces such as the Square Park, Lovers' Park, Coastal Park, and Boztepe areas in Trabzon's city center to the Chamber of Architects, I have created a continuous green network. People arriving from these open spaces will be seamlessly integrated into our design area, where they will encounter cultural, artistic, and daily activities within a continuous green system.

GREEN LİNK



Trabzon is a small city with a settlement pattern concentrated in its city center. Despite this, there is a lack of connectivity between its open spaces. The primary goal here is to integrate the nearby residential areas, social spaces, and commercial zones with the design area. This integration aims to attract a diverse range of users to the area and establish it as a central social hub within the city.

AREAS TO BE CONTACTED



PEDESTRİAN ACCESS ROUTE

In Trabzon, despite the relatively short travel times between different city locations due to the city's compact structure, walking access to these locations is often limited. Fragmented urbanization, heavy traffic, and unplanned development have resulted in disjointed urban areas. To address this issue, a pedestrian route proposal has been developed, aiming to provide safe and effective access for pedestrians based on green space proposals and connectivity between areas.

Materializing the Concept: Scenario Creation

Scenario creation is the stage where the concept is fully materialized, offering visual data on how solutions to problems are generated beyond verbal or graphic descriptions. This stage is the first point where major design decisions are made to address the problems identified through analyses, syntheses, and the data provided by the concept, without yet working on the existing plan. In other words, there is no field usage study at this stage. It visualizes how the identified issues of the area (such as elevation differences, lack of green spaces, insufficient activities, security problems) can be resolved based on the decisions made during the concept phase. This visualization is referred to as scenario creation in the design phase. Through these scenarios, clues about what the final product will achieve are obtained (Alpak and Düzenli, 2022; Alpak and

Düzenli, 2023; Kurdoğlu et al., 2019). In this study, the process of how the decisions made during the concept phase were turned into scenarios was examined. Ultimately, it was assessed whether the proposed solutions were effectively related to the decisions made.

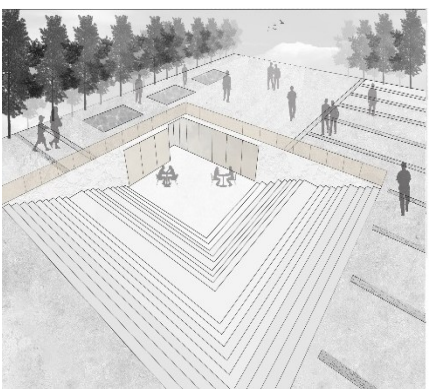
Scenario Development of the Opportunities Offered by the Area:

The study area has a 4-meter elevation difference, which currently lacks any proposed solutions. Additionally, the Mimarlar Odası's open space currently only accommodates dining activities. During the concept phase, it was stated that the goal was to enhance the social security of the space. In line with this, the intention is to divide the area into two distinct sections based on the existing elevation difference:

The upper level is planned to be an open hall for cultural and artistic activities (such as exhibitions, talks, etc.). The lower level is intended for daily activities (such as dining, sitting, and resting). This arrangement aims to create a diverse environment where different user groups can coexist while preventing potential confusion that might arise from simultaneous activities. At the upper level, a broad green space is designed to ensure semantic security. This green space serves as both a buffer and an active green area, while also establishing a connection with the city. Furthermore, the significance of water elements for the city was highlighted through literature research. As a coastal city, users prefer environments with water features. It was noted that a water feature previously existed in the area but was destroyed over time. Therefore, incorporating water elements into the design of both cultural-artistic and dining spaces aims to create a warmer environment (Figure 2).

Final Product

After the initial 9-week period, the design decisions made to address the identified problems transition into the spatial organization phase. This phase involves preliminary sketching and option generation. From these options, the one that best aligns with the conceptual approach, concept, and scenario is selected for further development. The final design project is then completed with plans, sections, details, and three-dimensional representations. Figure 3 illustrates the plan description of the final product achieved by the student. The project's details are examined to ensure consistency with the concept, concept development, and scenario. For this analysis, the materials used include the student's submitted project plans and three-dimensional representation techniques. The students were expected to design spaces that integrate the Architects' Chamber with cultural and artistic activities, reconfigure the internal activities into the external space, and create scenarios for communal spaces to meet recreational and social needs for café users and other city inhabitants. The design process involved producing spatial analyses for these activity areas.



1. Design of the Elevation Difference and Green Space

The elevation difference will be designed to create two distinct event spaces. The green space will be extended across the area, functioning both as an active zone and a buffer zone. These spaces are planned to accommodate activities such as sitting, lounging, and resting on the green surface, while also serving as a social hub for seasonal festivals and other events. The design aims to enhance the functionality and versatility of the space by integrating it with the green environment.

2. Cultural-Artistic Hall

An open space hall will be designed on the upper elevation to accommodate cultural and artistic activities such as exhibitions, lectures, and similar events.

3. Daily Activity Hall

On the lower elevation, utilizing the level difference, a space will be designed for social activities such as dining, seating, and resting.

4. Interaction with Water

The goal is to achieve semantic coherence by combining users with both greenery and water. The design includes dining and drinking terraces situated within the water, aiming to facilitate closer interaction with the water element.

Figure 2. Scenario Development

The final design product demonstrates that the solutions proposed in the conceptual, conceptual, and synthesis stages have

been successfully translated into the implementation phase. Primarily, it has been determined that the spatial solutions aimed at enhancing social security, i.e., user and activity diversity, are effectively resolved in proportion to the scenario stage's setup (Figure 4). The upper levels are dedicated to cultural and artistic events, such as exhibitions and talks, integrating these activities into the outdoor space, while the lower levels are allocated for dining, seating, and other daily activities. The green network system proposed during the synthesis phase to contribute to semantic security and to aid in integrating the working area with other parts of the city has been implemented. The green space includes areas for relaxation, seating, and viewing, accommodating activities throughout the day. As conceptualized during the scenario phase, the water element has been utilized in various ways throughout the space. It serves as a pleasant backdrop for dining, a functional area offering play opportunities for children, and a physical buffer separating different spaces and activities (Figure 4).

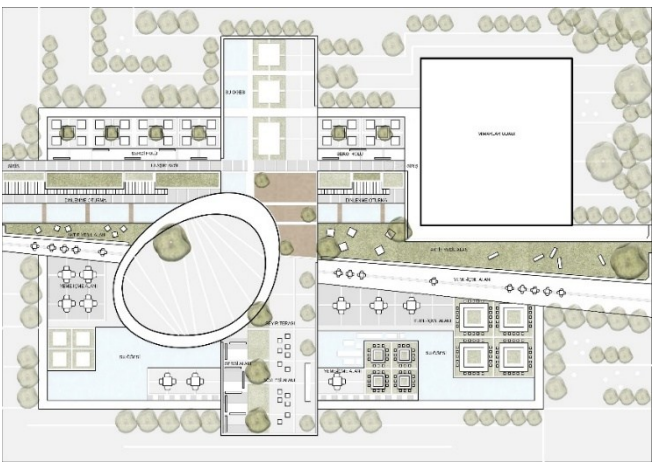


Figure 3. Final Design Plan

1. Solution for Elevation Difference, The idea of dividing the 4-meter elevation difference into two distinct levels, upper and lower, has been implemented in the project. The green fabric has been repurposed to include seating, reclining, and resting areas, thereby ensuring social security.

2. Cultural-Art Hall Solution
In the upper level, the space has been designed to accommodate cultural and artistic events as outlined in the scenario. This approach has resulted in the creation of an open hall that contributes to social security.

3. Daily Activity Hall Solution
In the lower level of the site, leveraging the elevation difference, spaces for dining, sitting, and resting activities have been created. As envisioned in the scenario stage, dining activities have been integrated with the water feature to design an environment that is both aesthetically pleasing and inviting.

4. Contact with Water
The contribution of the water element to semantic security was visualized during the scenario stage. This was successfully reflected in the spatial solutions. The design incorporates various functions: a play area for children, seating for young adults, and a cooling feature for all users, adding a distinctive function to the space.

Figure 4. Spatial Solutions and 3D Visualizations

Results

Design processes encompass a multidimensional structure. Rather than focusing on a single goal, it is necessary to develop a multifaceted thought process. When this thought system is acquired during the student phase before entering the profession, it becomes much easier to adapt to the process (Yılmaz et al., 2020; Yılmaz et al., 2023). Research has shown that the most challenging part of solving a design problem is the beginning—the process of generating concepts and ideas. Transforming abstract thinking into a tangible form and bringing an idea to a living mechanism is a highly demanding process.

This research has demonstrated that the stage in which students face the most difficulty in the design process is the concept phase, where they visualize the abstract thought and take the first concrete step. The key factor in overcoming this challenging process is a thorough research phase that includes feedback, detailed exploration of reading phenomena, and ensuring the individual's freedom of thought. Addressing the problem not just through design

or aesthetic concerns but by adapting current issues has facilitated the students' processes.

Instead of merely providing solutions to the space, integrating the process of repurposing—an essential aspect of urban design—into the problem has helped students adopt a multidimensional thought structure and develop their solutions.

The results indicate that a design process that starts with a concept and evolves into a tangible form strengthens the design. Students who initially began with only an idea and later experienced its transformation into a physical space have learned how to construct a grounded design. By integrating the repurposing process into this thought system and relating the existing with the new, they have successfully completed a process of creating effective spatial solutions.

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CHAPTER IV

Monitoring 40-Year Lake Surface Area Change Using Landsat Satellites; A Case of Lake Salda

Mesut ÇOŞLU[1]

1. Introduction

Lakes are one of the important places for the water cycle of the ecosystem and the protection of ecological balance. (Zhang et al., 2023). Due to the importance of lakes, rapid and accurate determination of their surface areas is important in water management, water policy making and research studies (Deoli et al., 2022; Chen et al., 2024). Lakes are not only of economic value but also important ecological and environmental resources. However, lakes, one of the most valuable resources on Earth, face some challenges today due to climate change and anthropogenic activities (Acharya et al., 2017). One of the most important of these challenges

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is the changes in water surface areas. Remote sensing is frequently used to monitor the current status and changes in lakes and other water resources (Acharya et al., 2017). In this context, in recent years, object-based image analysis (OBIA) has been frequently used in addition to classical pixel-based classification. The most important pros of OBIA over pixel-based classification is that the user can create a ruleset and homogeneous pixel groups are used in image analysis (Avci et al., 2014; Zhang et al., 2023; Hölbling & Pooladsaz, 2024).

Lake Salda has significant similarities with the environment of the lake in Jezero Crater on Mars due to its geochemical and mineralogical content, extremely alkaline and cold water (Karaman, 2021). In this context, traces of ancient life and high biodiversity in Lake Salda will make great contributions to both Türkiye and the world with scientific studies to be carried out. There are many studies on different subjects in the literature about Lake Salda, which is important both globally and locally. Examples of these studies include tourism pressure, protection and sustainability in and around Lake Salda (Ceylan & Bulut, 2019), geomorphological features and use of coastal areas (Tuncer & Deniz, 2022), microbial ecology and protection (İnce et al., 2023), evaluation of hydrology parameters (Davraz & Aksever, 2023), stromatolite trace and geochemistry of the lake (Kaya et al., 2023), spatial distribution of atmospheric heavy metals with lichen monitoring (Çobanoğlu & Kaan, 2024), and investigation of mineral distribution with hyperspectral data (Akgül & Ural, 2024).

In alkaline clean lakes such as Salda, which contain traces of life on Mars, accurate determination of the shoreline and lake surface

area is of critical importance in monitoring changes caused by climate and anthropogenic effects (Garczynski et al., 2020; Karaman, 2021; İnce et al., 2023). In one of the studies conducted to determine the shoreline and surface area of Lake Salda, Dereli and Tercan (2020) detected the changes in the shoreline of Lake Salda using Landsat images, water index and machine learning classifier SVM. In another study, Sekertekin (2020) used Sentinel-2 and water index to extract the surface area of Lake Salda. Karaman (2021) conducted a study on Lake Salda and in this study the shoreline of the lake was determined from Sentinel, Landsat and different water indexes. In addition, the researcher compared the performances of automatic threshold algorithms in the study.

In this study, the areal change in Lake Salda, one of the important alkaline lakes of Türkiye, was monitored over 40 years. Using different Landsat satellite images, this study aimed to determine the areal change in Lake Salda due to climate change and human intervention from 1984 to 2024. In this study, OBIA was used to extract the lake area from Landsat images of both dates.

2. Material and Method

2.1. Study Area

The study area is located in Burdur Province in the southwest of Türkiye at 29°41' E Longitude and 37°33' N Latitude coordinates (Figure 1). Located within the borders of Burdur province, Lake Salda which is an alkaline lake, has a depth of up to 111 m and a pH value of up to 12. Additionally, in Lake Salda, hydrous magnesium carbonates are the dominant precipitating minerals. Lake Salda, which is approximately 1135 m above sea level, has been used

intensively in recent years, especially within the scope of activities such as tourism and fishing (Davraz et al., 2019; Dereli & Tercan, 2020; Karaman, 2021).

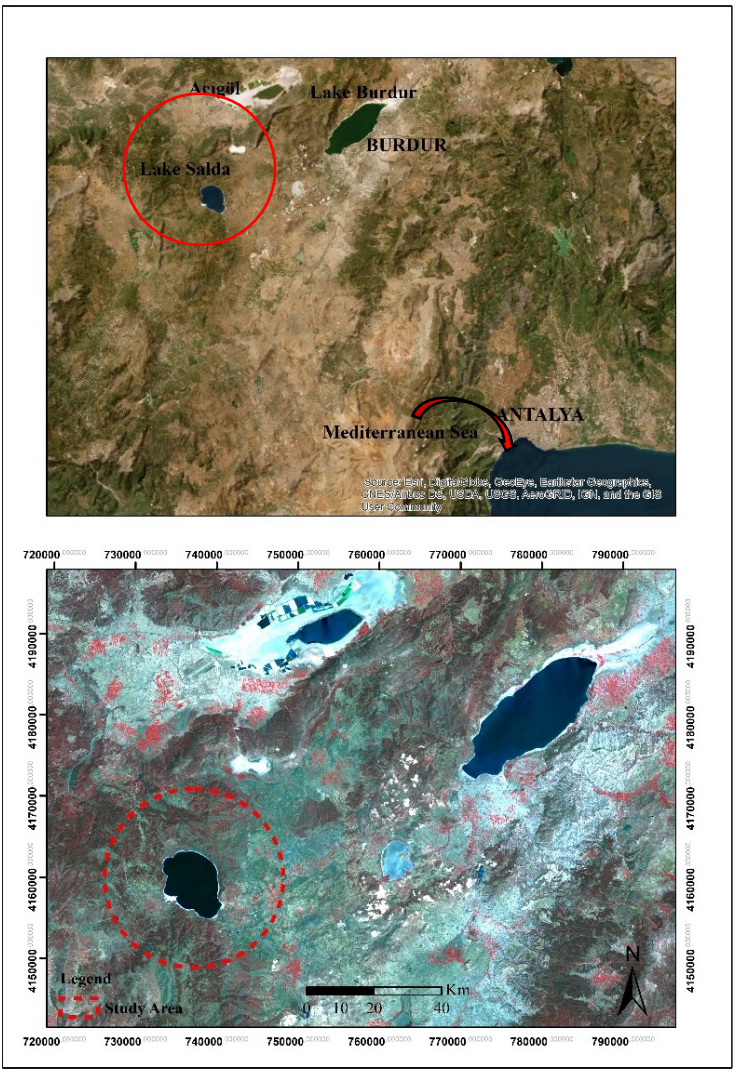

Figure 1: Study area

2.2. Data

Landsat satellites have been providing medium-resolution remote sensing data from space for nearly fifty years. Since 1972, a total of 9 Landsat satellites have been launched to observe the Earth. Of these, only Landsat 6 could not reach orbit. Other Landsat satellites have provided researchers with an unparalleled resource for applications such as global change detection, agriculture, land use/land cover determination, geology, forest research and planning over the past five decades (Sekertekin and Bonafoni, 2020).

Landsat 5 and Landsat 9 satellite images were used in this study. Landsat 5 was launched in 1984 and decommissioned in 2013 after completing its 29-year mission. Landsat 5 TM had a total of seven bands, six bands (visible, NIR, and SWIR) and a TIR band (Band 6) with a spatial resolution of 30 m (USGS, 2024a). The Landsat 9, launched in 2021, has the OLI-2 and the TIRS-2 sensors on it. There are 9 spectral bands on OLI-2 and 2 on TIRS-2, for a total of 11 (USGS, 2024b).

In this study, 1st, 2nd, 3rd and 4th bands (B, G, R, NIR) of Landsat 5 TM dated 23 July 1984 and 2nd, 3rd, 4th and 5th bands (B, G, R, NIR) of Landsat 9 OLI-2 dated 29 July 2024 were used. In the study, pre-processing and image analysis of Landsat satellite images were carried out using ArcGIS (ESRI, California, USA) and QGIS software, and the analysis of the images was carried out using e-cognition (Trimble Inc., Sunnyvale, CA, USA) software, which is frequently used in OBIA.

2.3. Method

In the first stage of the study, Landsat 5 TM and Landsat 9 OLI-2 images were downloaded from the Earth Explorer web page of the United States Geological Survey (USGS) (https://earthexplorer.usgs.gov/). The downloaded images belong to 1984 and 2024 for Landsat 5 TM and Landsat 9 OLI-2, respectively. For both years, the closest dates in July, the least cloudy dates and especially the cloudless dates in the study area were selected. In fact, in a study conducted by Li et al., (2019), cloudless images were selected in lake areas. In the pre-processing stage of the images, band merging and image clipping processes were applied according to the study area. In the band merging stage, the 30 m spatial resolution B, G, R and NIR bands of both Landsat satellites were used. The merged satellite images were clipped according to a 20 km diameter area covering Lake Salda and its surroundings.

In the second stage, the clipped images were classified with OBIA. OBIA is carried out with segmentation and classification sub-process steps. In this context, the process first starts with the segmentation stage, which is the pixel groups of satellite images and is expressed as the segmentation of satellite images into objects (Doronova, 2015; Blaschke and Strobl, 2001). There are segmentation algorithms used for different purposes in e-cognition software. In this study, multiresolution segmentation (MRS), which is frequently used in image segmentation, was used (Baatz and Schape, 2000; Cánovas-García & Alonso-Sarría, 2015). In MRS, the scale parameter and shape and compactness criteria must be entered by the user according to the object to be extracted from the image. Although there are different algorithms in the literature for

determining these criteria, these algorithms also have some disadvantages (Munyati, 2018). In this study, the scale parameter and shape and compactness criteria were determined by trial and error method. In this context, the scale, shape and compactness values for both dated Landsat satellite images were determined as 30, 0.1 and 0.5, respectively. After the segmentation process, the K-Nearest Neighbor (KNN) algorithm was used in image classification. In KNN, one of the machine learning algorithms, an image object is classified according to its neighbors. In this context, the image object is assigned to the most common class among KNN. For example, if the k value is 1, the image object is assigned to the class of its nearest neighbor (Trimble, 2016). In this step of the study, since the aim was to extract the lake water area, two classes were determined as water and other. Then, a total of 120 image objects, 15 training and 30 test objects from the water class and 25 training and 50 test objects from the other class, were selected as samples for both dated images. Images were classified using the selected training objects and some features (Table 1).

Table 1: Features used in classification

Classifier Type	K Value	Features
KNN	1	B*
		G*
		R*
		NIR*
		Brightness
		Max. diff.

** Mean value*

After the classification process, the accuracy assessment was performed using the samples selected from the image objects for testing purposes. In this context, 30 objects were used for the water class and 50 objects for the other class in both dated classifications for accuracy assessment. Overall accuracy (OA) and kappa statistics (K) values were calculated in the accuracy assessment.

3. Results and Discussion

Figure 2 shows the MRS process results for the years 1984 and 2024. For MRS, the scale parameter was determined as 30, the shape criterion as 0.1 and the compactness criterion as 0.5.

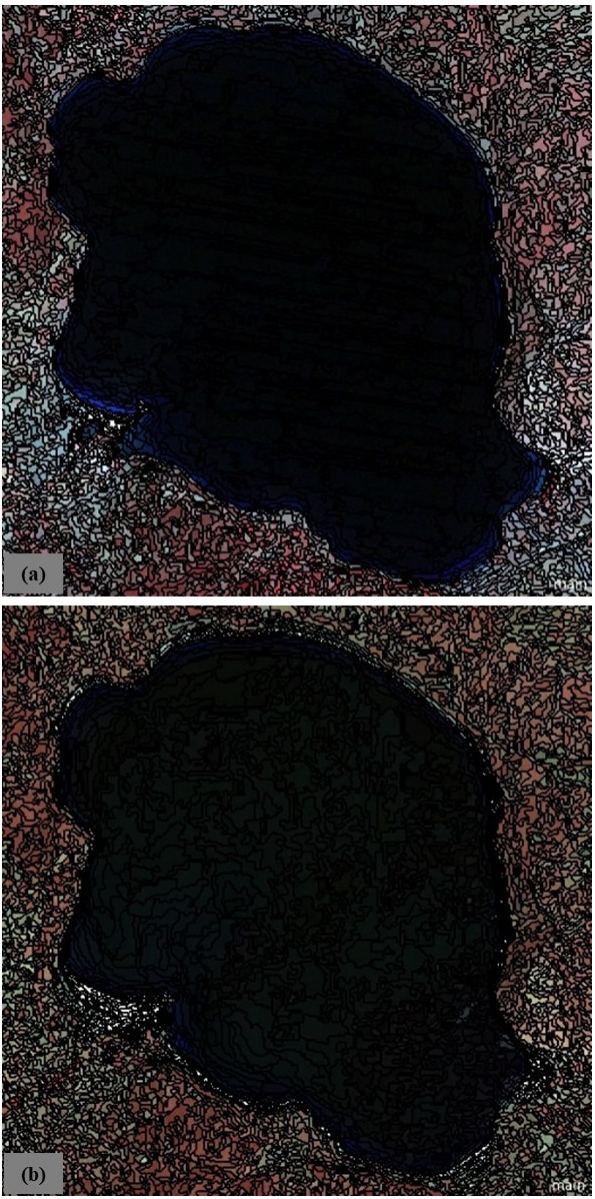

Figure 2: Segmentation results, 1984 (a); 2024 (b)

Using the objects obtained as a result of optimum segmentation, the lake surface area for both years was extracted with the KNN classifier, a machine learning (Figure 3).

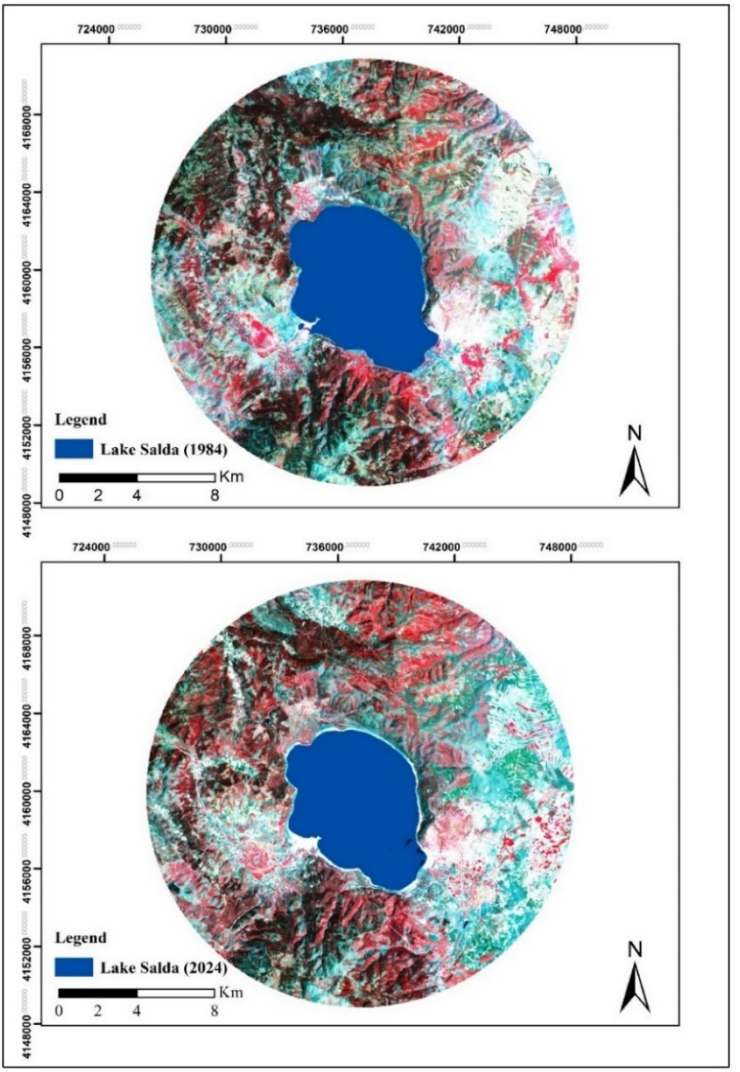

Figure 3: Extracted lake area

After the classification process, the accuracy assessment based on the test sample objects was performed. According to the accuracy assessment results, the calculated OA and K values are 99% and 0.98 for 1984; and 98% and 0.96 for 2024, respectively. These results reveal that the surface area of Lake Salda can be determined with very high accuracy with OBIA. As stated by Karaman (2021), the classification performance is quite good due to the homogeneous structure of both the shoreline and the surface of Lake Salda. In addition, in a study conducted by Avci et al. (2024) in Acıgöl with OBIA, the overall accuracy value of the classification process was found to be 85%.

While the surface area of Lake Salda obtained with OBIA was 46.06 km^2 in 1984, it decreased to 42.20 km^2 in 2024. This result revealed that the lake surface area decreased by 3.86 km^2 in 40 years. In Figure 4, the red polygon shows the shoreline of 1984, and the blue polygon shows the shoreline of 2024 (false color and histogram equalization were applied to the Landsat 5 TM satellite image of 1984). When the figure is examined, it is seen that the shoreline decreased almost all around Lake Salda from 1984 to 2024 (Figure 4a). It was determined that this decrease was more intense especially in the southwestern and southeastern regions of Lake Salda. The southwestern image of the lake is shown in Figure 4b, and the zoomed-in image of the south-eastern region is shown in Figure 4c. The yellow arrows in Figure 4b and Figure 4c show some areas where the decrease is intense from 1984 to 2024. In addition to the change in the shoreline of Lake Salda, changes were also detected in some other areas. One of the most remarkable of these areas is the areas that remained in the lake area as a result of the classification

made in 2024, but were not classified as lakes. These areas are considered to be small sand dunes formed in the lake. Another important change is that a small lake area located southwest of the lake in 1984 is no longer there in 2024.

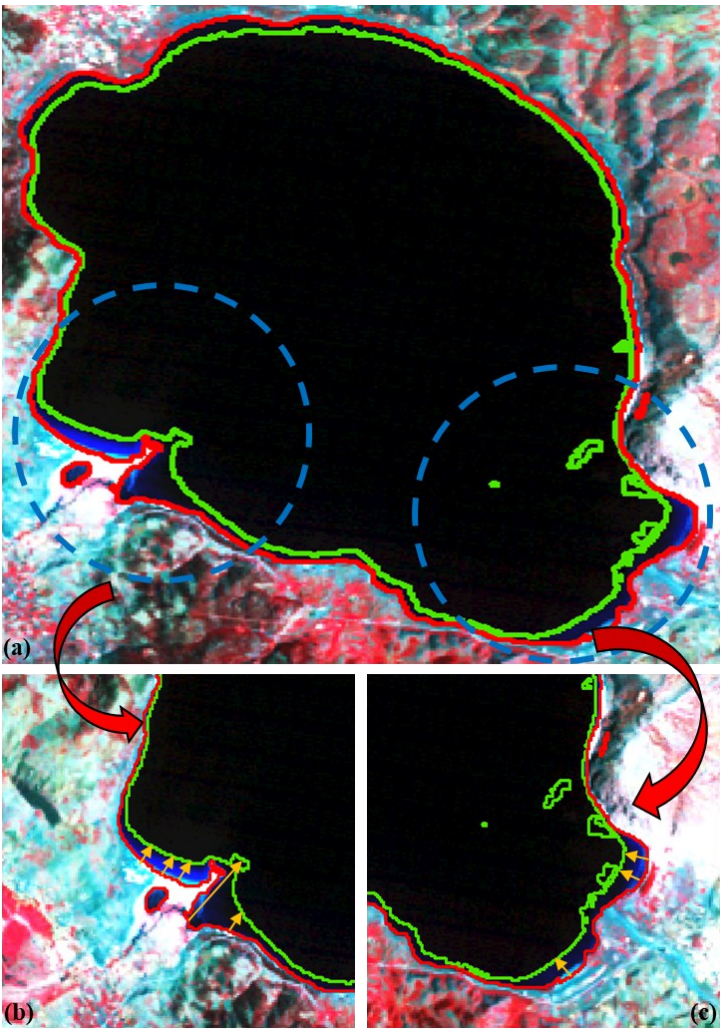

Figure 4: Extracted lake area

In addition to the classification process, water surface area can also be determined using water indexes. However, it is very crucial to determine the threshold value to be used in studies with water indexes. As a matter of fact, to determine the changes in lake surface areas, Zhang et al. (2023) used images of three different Landsat satellites between 1984 and 2021, and Deoli et al. (2022) used images of two different Landsat satellites and water indexes. Karaman (2021) determined the shoreline of Lake Salda using water indexes with Sentinel 2 and Landsat satellites and extracted the water surface. Şekertekin (2020) performed water body inference in Lake Salda using Sentinel-2 and water index. Sentinel-2 images used as reference data were classified with SVM. As a result of the classification, the OA value was calculated above 96%. The researcher emphasized that remote sensing technology can be used effectively in extracting water bodies, but the selection of the optimum threshold value for water indexes is very important. In another study conducted in the same field, Dereli & Tercan (2020) conducted a study using Landsat 5 TM satellite imagery and water index to determine the shoreline change between 1975-2019. The researchers stated that the use of multi-temporal satellite images was effective in shoreline change analysis. Similar to the researchers using the water index, the water surface area of Lake Salda extracted in this study was determined quite successfully with Landsat 5 TM, Landsat 9 OLI-2 data and OBIA.

4. Conclusion

As problems such as access to water increase globally, it becomes even more crucial to identify the current situation and changes in these areas. In this study, the areal change in Lake Salda

between 1984-2024 was determined using Landsat satellite images. Landsat satellite images, OBIA and KNN classifier, a machine learning method, were used in the study. The OA obtained as a result of the classification process is over 98% for both dates. The findings of the study revealed that the areal change in Lake Salda in the 40-year period was 9.15%. Future studies will focus on determining the land use/land change in Lake Salda and its surroundings using different machine learning algorithms with the integration of different water indexes.

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CHAPTER V

The Prospects of Data Science and Statistics in Landscape Architecture

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Introduction

Data science and statistics have become indispensable disciplines, especially with the rapid technological advancements reshaping various industries. The integration of innovative technologies such as big data analytics, artificial intelligence, and machine learning is transforming how decisions are made across diverse fields, including business, healthcare, and urban planning. In landscape architecture, these disciplines hold the potential to revolutionize the way we design, analyze, and sustain landscapes,

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offering data-driven insights that enhance both environmental and societal outcomes.

Data science involves extracting meaningful information from large data sets, encompassing processes such as data collection, cleaning, analysis, and interpretation. These processes enable practitioners to make well-informed decisions by understanding complex data patterns. Statistics plays a vital role in these processes, providing scientific methodologies for analyzing and deriving insights from data. Applied together, data science and statistics have become pivotal in areas like climate adaptation, urban design, biodiversity conservation, and resource management. This section explores the current applications, future development trends, and societal impacts of data science and statistics in landscape architecture. By examining the innovations and methodologies shaping this intersection, we can uncover new opportunities for addressing environmental challenges and advancing sustainable landscape practices.

Current Applications in Landscape Architecture

Technological advancements in data science and statistics are increasingly influencing landscape architecture. Tools and techniques such as geographic information systems (GIS), remote sensing, machine learning, and predictive modeling are being utilized to analyze spatial data, monitor environmental changes, and optimize urban green spaces. Ethical considerations, such as data privacy and inclusivity, are also becoming more prominent in landscape-related projects, reflecting broader concerns about responsible technology use (Vayena et al., 2015; Tandfonline, 2024).

Incorporating data science into landscape architecture significantly enhances urban planning and community engagement while addressing climate change impacts. The integration of Green Infrastructure (GI) designs facilitates participatory approaches, allowing stakeholders to visualize and evaluate scenarios that improve ecosystem services and urban sustainability goals (Leonard et al., 2019). Moreover, the use of planning support systems enables decision-makers to navigate vast data repositories, fostering evidence-based methodologies that enhance community buy-in and behavioral change (Langenheim et al., 2017). Big data analytics further empowers urban planners by providing sophisticated insights into sustainability challenges, thus transforming urban management and planning practices (Bibri, 2018). Additionally, interdisciplinary frameworks that combine analytical and generative workflows are essential for tackling complex sustainability issues, ensuring that landscape architecture adapts to rapid urbanization and environmental degradation (Hensel et al., n.d.). Furthermore, participatory design methods, including crowdsourcing, effectively engage communities in climate adaptation strategies, promoting informed decision-making and resilience (Vachon et al., 2013).

Definition and Importance of Data Science in Landscape Architecture

Data science in landscape architecture involves utilizing data-driven methodologies to solve spatial and environmental challenges. The process starts with data collection, which encompasses diverse sources such as satellite imagery, IoT sensors, and public records (Gispoint, 2018). The collected data, often unstructured and complex, undergoes cleaning and standardization

to ensure its reliability. This phase is crucial, as errors or inconsistencies can compromise the validity of subsequent analyses (Wu et al., 2014).

Once cleaned, the data is analyzed using statistical and machine learning techniques to identify patterns, trends, and relationships. For example, machine learning models can predict the impact of urbanization on biodiversity, while statistical analyses can reveal correlations between green spaces and public health outcomes (Brynjolfsson & McAfee, 2011; Jordan & Mitchell, 2015). The final stage, data interpretation, translates these insights into actionable strategies for sustainable landscape design and management (Brynjolfsson & McAfee, 2011).

Applications of data science in landscape architecture are diverse, ranging from designing climate-resilient cities to restoring degraded ecosystems. By leveraging data, professionals can develop targeted interventions that maximize environmental benefits, enhance human well-being, and optimize resource allocation (Steinitz, 2012; Grose, 2014). As urbanization intensifies and environmental challenges grow, the integration of data science will become even more critical in shaping resilient and adaptive landscapes.

The Role of Statistics and Challenges in Proper Application

Statistics provides the foundation for making data meaningful in landscape architecture. From hypothesis testing to spatial modeling, statistical methods enable practitioners to derive actionable insights and validate their findings. However, challenges

arise when statistical techniques are misapplied or misunderstood, leading to unreliable conclusions and ineffective solutions (Jordan & Mitchell, 2015).

One common issue is the lack of expertise in statistical methods among landscape professionals. While data engineers or GIS analysts may handle data preprocessing and visualization, the nuanced application of statistical models often requires specialized knowledge. Misinterpretation of statistical results or incorrect model selection can undermine the reliability of a project's outcomes (Simon, 1996; Grose, 2014).

To address these challenges, interdisciplinary collaboration is essential. Landscape architecture teams should include statisticians or data scientists to ensure the robust application of statistical methodologies. Proper training and continuous education in statistical concepts can also empower landscape architects to critically evaluate data-driven insights and apply them effectively in their work (Eliasson, 2000; Zhang & Bowes, 2023).

Future Trends, Technologies, and Innovations in Landscape Architecture

Big Data and Data Analytics

Big data analytics is transforming the way landscape architects approach planning, design, and management. By processing and analyzing large and complex datasets, professionals can gain meaningful insights into environmental, social, and economic patterns that influence landscapes (Anderson, 2008; Kitchin, 2014). Techniques such as data mining, machine learning, and artificial intelligence enable the identification of hidden patterns,

relationships, and trends, providing a foundation for evidence-based decision-making (Jordan & Mitchell, 2015).

For instance, big data analytics can integrate datasets from sensors, satellite imagery, and social media to inform urban green infrastructure design (MDPI, 2024; ResearchGate, 2024). Landscape architects can analyze these data sources to monitor environmental changes, assess biodiversity, and optimize land use strategies. Data mining can reveal trends such as urban heat island effects or pedestrian movement patterns, aiding in the design of resilient and sustainable landscapes.

Machine learning algorithms play a critical role in identifying complex patterns, such as the interaction between hydrological systems and urban development. Predictive analytics, powered by big data, allows landscape architects to simulate future scenarios, enabling proactive responses to challenges such as climate change, flooding, or urban sprawl (Wu et al., 2014). As technologies advance, the integration of big data analytics into landscape architecture will enhance the ability to create adaptive, sustainable, and human-centered environments.

Artificial Intelligence and Machine Learning

Artificial intelligence (AI) and machine learning (ML) are emerging as essential tools in landscape architecture, enabling professionals to analyze complex ecological systems, optimize resource use, and automate routine tasks. These technologies support processes such as site analysis, vegetation mapping, and environmental impact assessment, enhancing the precision and efficiency of landscape design (Brynjolfsson & McAfee, 2011).

AI applications include supervised and unsupervised learning techniques, which can assist in predicting environmental changes or identifying vegetation types. For example, supervised learning can classify plant species based on remote sensing data, while unsupervised learning can uncover patterns in land use changes (Jordan & Mitchell, 2015). Deep learning, a subset of machine learning, enables the processing of high-resolution aerial imagery to detect subtle variations in topography or vegetation health, facilitating informed design decisions (Wu et al., 2014).

In addition to design, AI-driven tools can optimize maintenance schedules for landscapes by analyzing real-time data from IoT-enabled devices. Predictive models can forecast irrigation needs or identify areas requiring restoration, reducing resource waste and improving ecosystem health. As AI and ML continue to evolve, their integration into landscape architecture promises transformative advancements in sustainable design and management.

Data Visualization and Interactive Analysis

Data visualization plays a pivotal role in landscape architecture by translating complex datasets into clear and interactive formats. Visualization tools help professionals communicate findings, collaborate with stakeholders, and make data-driven decisions (The Field, 2017).

- Charts and Maps: Heatmaps, contour maps, and flow diagrams can illustrate spatial relationships and environmental dynamics, such as stormwater runoff or habitat connectivity.

- Interactive Platforms: Tools like GIS-based dashboards enable users to explore data layers, adjust parameters, and visualize design impacts in real time. These platforms support participatory design processes by allowing stakeholders to engage with and contribute to planning decisions.
- Scenario Simulations: Visualization software can model future scenarios, such as sea-level rise or urban expansion, helping landscape architects develop adaptive strategies (Vayena et al., 2015).

By leveraging data visualization, landscape architects can effectively convey the value of their designs and ensure alignment with environmental, social, and economic goals.

Artificial Intelligence and Automation in Maintenance

Automation powered by AI is revolutionizing landscape management by improving efficiency and precision. For example, AI-driven drones can monitor vegetation health, detect invasive species, or assess erosion risks. Robotic mowers and automated irrigation systems can respond dynamically to environmental conditions, reducing labor costs and minimizing resource use (Brynjolfsson & McAfee, 2011).

In urban parks, AI-based systems can optimize the allocation of resources, such as water and fertilizers, by analyzing soil moisture and weather data. Similarly, predictive models can anticipate maintenance needs, ensuring that landscapes remain functional and aesthetically pleasing while reducing environmental impacts (McAfee & Brynjolfsson, 2012). These advancements not only

enhance operational efficiency but also contribute to sustainable practices in landscape architecture.

Future Developments and Expectations

The integration of advanced technologies into landscape architecture will continue to shape the profession, offering innovative solutions to complex challenges.

- Smart Landscapes: The rise of IoT-enabled sensors and real-time data analytics will enable the creation of responsive landscapes that adapt to environmental changes, such as rainfall or temperature fluctuations (Gispoint, 2018).
- Autonomous Systems: Self-learning systems will enhance the management of large-scale landscapes, such as forests or agricultural areas, by automating monitoring and maintenance processes (Zhang & Bowes, 2023).
- Health and Well-Being: AI-driven design tools will prioritize human well-being by analyzing data on air quality, noise levels, and thermal comfort, ensuring that urban green spaces provide optimal benefits for users (Jordan & Mitchell, 2015).

As these technologies evolve, landscape architects will play a central role in designing resilient, equitable, and sustainable environments that address global challenges.

Contributions of Statistical Analysis

Statistical methods are fundamental to the successful implementation of these technologies in landscape architecture. They ensure the reliability and accuracy of data-driven approaches by:

- Analyzing Environmental Data: Statistical models help interpret complex ecological data, such as species distribution or soil composition, guiding design and conservation efforts (Hastie, Tibshirani, & Friedman, 2009).
- Evaluating Model Performance: Metrics like accuracy, precision, and recall are used to assess the effectiveness of AI and ML models in predicting environmental outcomes (Jordan & Mitchell, 2015).
- Supporting Decision-Making: Statistical analyses provide evidence-based insights for site planning, policy development, and resource allocation, enabling more informed and sustainable decisions (Vayena, Salathé, Madoff, & Brownstein, 2015).

Advanced Applications and Implications in Landscape Architecture

In landscape architecture, the integration of advanced data science and statistical techniques is transforming the field by providing innovative tools and methods for designing sustainable and functional spaces. These advancements allow landscape architects to analyze complex ecological, social, and economic systems, enabling more informed decision-making processes.

Big Data Analytics in Landscape Design

Big data analytics plays a pivotal role in understanding large-scale environmental patterns and urban dynamics. For example, satellite imagery and geographic information systems (GIS) generate vast amounts of data that can be analyzed to identify trends in land

use, vegetation coverage, and urban sprawl. By leveraging these insights, landscape architects can design green spaces that mitigate urban heat island effects, improve air quality, and enhance biodiversity (Gill, Handley, Ennos, & Pauleit, 2007; Kitchin, 2014). This approach aligns with the goals of sustainable urban development by addressing both environmental and social challenges (Jordan & Mitchell, 2015).

Machine Learning for Predictive Landscape Modeling

Machine learning algorithms enable predictive modeling, which is particularly useful in landscape architecture for forecasting the impacts of design interventions. For instance, predictive models can simulate how a proposed park might influence local climate conditions, water management, or community well-being over time. This allows architects to test various scenarios and optimize their designs to achieve the desired outcomes. Such applications demonstrate the potential of machine learning to bridge the gap between theoretical planning and real-world implementation (Wu, Zhu, Wu, & Ding, 2014).

Artificial Intelligence in Sustainable Urban Planning

Artificial intelligence (AI) tools are increasingly being used to automate complex design processes and generate innovative solutions in landscape architecture. AI can process multidimensional data sets to identify optimal locations for green infrastructure, such as rain gardens or urban forests, based on factors like soil quality, hydrology, and population density. These data-driven approaches support the creation of resilient urban landscapes that can adapt to

climate change and other environmental pressures (Brynjolfsson & McAfee, 2011).

Ethical Considerations in Data-Driven Landscape Design

While the integration of data science and statistics offers numerous benefits, it also raises ethical concerns that landscape architects must address. Issues such as data privacy, algorithmic bias, and the transparency of decision-making processes are critical. For example, when using demographic data to plan public spaces, architects must ensure that their designs are inclusive and do not inadvertently marginalize certain communities. Adopting ethical guidelines and engaging stakeholders in the design process can help mitigate these risks and promote equitable outcomes (Kang, Zhang, & Roth, 2023; Tandfonline, 2024).

In summary, the application of advanced data science techniques in landscape architecture enhances the profession's ability to address contemporary challenges. By utilizing tools like big data analytics, machine learning, and AI, landscape architects can create spaces that are not only aesthetically pleasing but also environmentally sustainable and socially inclusive. However, it is imperative to approach these technologies with a commitment to ethical practices and interdisciplinary collaboration.

Conclusion

Data science and statistics are playing an increasingly critical role in the field of landscape architecture, offering innovative methods to address complex design and planning challenges. By leveraging technologies such as big data analytics, machine learning, and artificial intelligence, landscape architects can develop resilient,

adaptive, and sustainable solutions for urban and natural environments. For example, big data enables the analysis of urban heat islands to guide green infrastructure interventions, while predictive models support flood risk management and resource optimization.

Moreover, interactive data visualization tools facilitate clear communication with stakeholders, ensuring collaborative and transparent planning processes. However, the integration of these advanced technologies into landscape architecture necessitates adherence to ethical principles, including data privacy, transparency, and accuracy. Addressing these concerns is vital to fostering trust and equity in decision-making processes.

As the discipline continues to evolve, interdisciplinary collaboration and the ethical application of data science will remain central to achieving sustainable and inclusive design outcomes. Landscape architects must embrace these advancements while maintaining a commitment to environmental stewardship and social responsibility.

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CHAPTER VI

Urban Quality Of Life And Examining Recreational Preferences

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Okan YILMAZ[2]

INTRODUCTİON

The environment on which all living things live is a valuable phenomenon in terms of vital continuity. Since the 21st century, the world has changed and developed rapidly and the effects of globalisation on human and environment have started to reach serious dimensions. In this changing world, urbanisation has occurred and the relations between nature and

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human beings have started to change. People's lifestyles have started to turn towards differentiated recreation activities (Yılmaz, 2021).

Recreation is an interdisciplinary field of study that covers activities that people do voluntarily and voluntarily without harming nature in free time to improve the quality of life. The aggravation of living conditions and the increase in environmental problems have increased the need for recreation for human beings. It is one of the negative factors affecting the lives of individuals because of the stress that increases due to intense business life and the intense pace it brings. For these reasons, recreational activities play the most important role in protecting individuals against these adverse conditions and increasing the overall quality of life (Caner, 2024). While it is a centre of attraction with its beauty and historical values, negative effects such as intensive use of space, population growth, environmental pollution increase the recreational needs of the people. In order to meet the recreational needs of the people, the existing potential should be planned better. For this reason, a questionnaire study was conducted to obtain information that can form a data base for recreational planning.

Recreation comes from the Latin word recreatio, which means renewal, recreation or reconstruction. Its Turkish equivalent is widely used as leisure time evaluation. In the modern sense, recreation as a social institution, a community of knowledge and a professional field of study is a means of a full and happy life, independent of work, valuable in itself, meeting many important needs of the person. With this approach, recreation

can most commonly be defined as activities that people voluntarily participate in their free time and provide personal satisfaction (Koçyiğit & Yıldız, 2015).

Free time can be defined as the period in which people are free to evaluate their own wishes, except for the efforts and actions that they have to make in order to live, sustain and reach a higher level in the social structure (Uzun & Altunkasa, 1991). It is a time directed according to one's wishes. The important thing is how to use this time. Recreation is an activity that can be done in free time and includes many different activities (Burton, 1967). In this way, it contributes to solidarity within the society by reducing the feeling of loneliness and isolation (Aksu et al., 2022).

Unplanned, unhealthy urbanization caused by industrial developments, monotony of daily life, intense work tempo and crowding of the living environment day by day increase mental and physical wear and tear. As a result of immigration, the growing cities became increasingly crowded, difficult and tiring places to live. In selecting recreational activity; age, gender, education level, income rate, occupation, health situation, physical feature of living place, enjoyment, fashion, socio-economic and socio-cultural status of society are effective (Özkan, 2001).

Recreation is a set of actions used for people of all ages to rest, have fun and progress, renew themselves physically and spiritually, refresh their energy and connect to life by spending extra energy in their free time or getting rid of the fatigue of

daily life. Therefore, sportive activities to release energy are recommended.

Recreation activities take place within a general system and the steps involved in any recreation course are shown in Figure 1. In Burton's (1967) recreation system, the impression formed in the individual participating in the activity and the individual's knowledge of whether the resources are used or not afterwards causes a feedback between participation and available resources.

Recreation is the process of physical, mental and social renewal of society. This process creates a cyclical system by successively following elements such as users' value criteria, priorities and requirements, demands, current resources and opportunities. These steps aim to increase the quality of life of users by ensuring the sustainability and effectiveness of the recreation system (Şimşek Serbest, 2007).

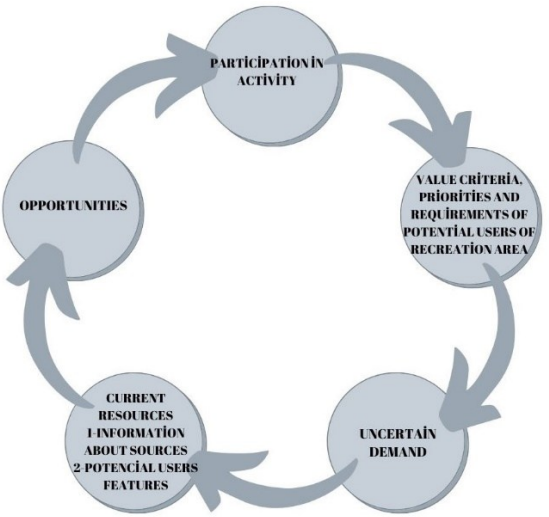

Figure 1. Recreation System (Burton, 1967)

Different people may choose different recreational activities and at the same time the same people may choose different recreational activities at different times of their lives (Özkan, 2001).

Coasts are important recreational resources that meet the increasing recreational demand of urban people. Coastal area is a resource whose natural integrity is deteriorated, with incorrect and unplanned use. Unhealthy plans and practices that do not rely on ecological database plans that are inappropriate for natural structures against recreational requirements are causing desturaction in large dimensions. For this reason, a clear, flexible, dynamic and practical methodology that can develop in coastal arrangements should be put forward and this existing plan, organization should be

able to adapt with the legal possibilities (Şimşek Serbest, 2007).

Recreation is an important stage that enables society to renew and develop physically, visually, psychologically and socially. In Figure 2, the effects of recreational activities that improve the quality of life in society are presented in detail.

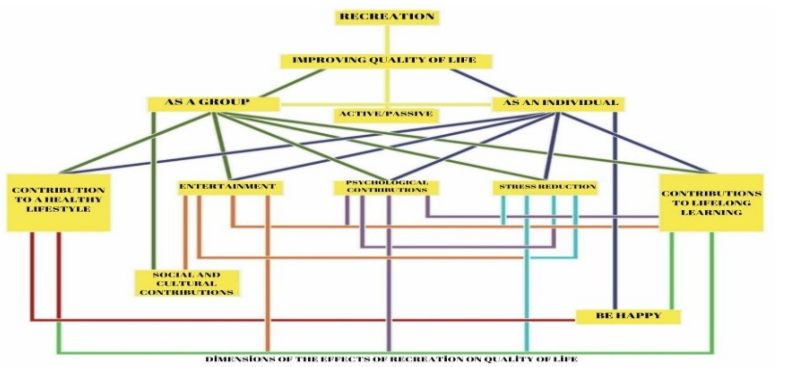

Figure 2. Dimensions of the effects of recreation on quality of life

The relationship between recreation and improving quality of life can be explained by many factors such as active and passive participation, healthy lifestyle, psychological contributions, stress reduction, entertainment, social and cultural contributions, lifelong learning. While recreational activities improve the overall quality of life of individuals with dimensions such as contribution to healthy lifestyle, psychological recovery, stress reduction, recreation, group activities contribute to increasing social well-being by strengthening social ties (Şimşek Serbest, 2007).

In this context, recreational activities strengthen the well-being of communities, reduce stress and increase happiness. In addition, recreational activities add fun to individuals' lives and contribute to socialization and strengthening social bonds through social and cultural contributions. Lifelong learning, on the other hand, contributes to the personal development of individuals, helping them to continuously acquire new skills.

In this study; it is aimed to make suggestions for recreational landscape planning studies by revealing how recreation and quality of life can be developed with the aspects that support each other.

STUDY AREA AND METHOD

Şarköy has a very rich potential in terms of natural, historical and socio-cultural values. The coastal region of Şarköy, which has existing potential resources, is highly demanded by local people, local tourists and foreign tourists. With this study, it is aimed to determine the recreational approaches of Şarköy people and to put forward suggestions according to the recreational needs of coastal users.

The surface area of Tekirdağ-Sarköy is 481 km2. Şarköy District is surrounded by the Marmara Sea in the East and South, Çanakkale Province in the West, Malkara and Central District in the North. It consists of 2 towns, 26 villages and 3 neighborhoods connected to the district center. The winter population of the district is 16.121 and the summer population is 120.000-130.000 (Anonim, 2008; Küçükaltan & Ultanır, 2012).

Şarköy research area in Tekirdağ province is shown in Figure 3. Because of the opportunities that the natural, historical and cultural resources of Şarköy have provided for recreational activities; All the natural, historical and cultural formations that have brought these resources to life have been examined as separate materials.

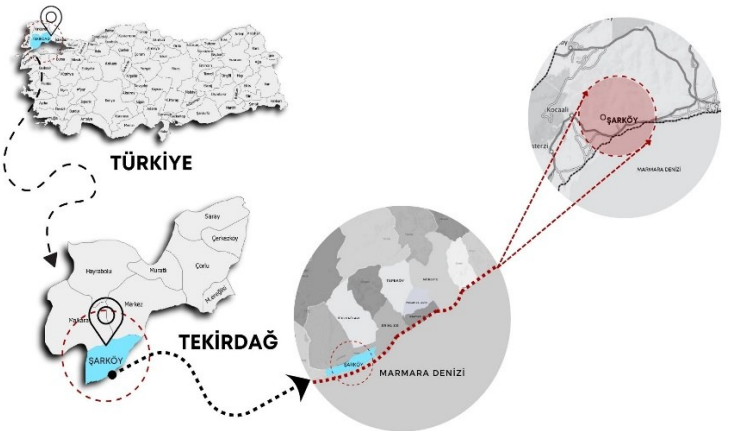

Figure 3. Şarköy research area

Current uses and recreational activities in the Şarköy coastal recreation area have been determined as a result of observations and individual interviews with locals. The views of the area's past and future expectations have been taken by referring to the views of the people living in Şarköy coast and surrounding villages. Obtained datas were evaluated in SPSS 18 programme, recreational approaches of the Şarköy people were analyzed with ANOVA, suggestions were developed for solutions of existing and possible problems related to the area.

In determining the sample size, Arkin and Colton's minimum number of 400 subjects for a population over 100,000 with a 5% margin of error was taken into consideration (Pulido San Roman, 1972).

FINDINGS

400 people participated in the survey; 42% are women, 58 % are men. 30% are 18-25, 37% are 26-35, 13% are 36-40, 12% are between the ages of 41-55 and 8% are over 56 years old. 10% is primary school, 27 % is middle school, 51% is high school, 11 % is university and 1% is master.

The analysis of which recreation type is suitable for the people living in Şarköy is given in Table 1. In The Anova Analysis findings, the variables for which "Recreation' Type" is appropriate are "walking" ($p<0.05$), "running" ($p<0.05$), "sailing" ($p<0.05$) and "shopping" ($p<0.05$). The averages of walking, running, sailing and shopping variables show a significant difference according to gender.

Table 1: Which type of recreation is suitable for people living in Şarköy

Eligibility / Variables	Appropriate		Partially Appropriate		Not Appropriate			
	Avg.	N	Avg.	N	Avg.	N	F Value	Mean
Walking	1,5925	330	1,6364	38	1,8889	32	**4,737**	**,009 *p*<0,05**
Running	1,5422	230	1,6907	102	1,7895	68	**7,605**	**,001 *p*<0,05**
Bicycle	1,5814	263	1,6622	79	1,7447	58	2,649	,072 *p*>0,05

Swimming	1,5993	292	1,6825	68	1,6552	40	,849	,428 *p*>0,05
Sailing	1,6000	97	1,5438	165	1,7122	144	**4,609**	**,011 *p*<0,05**
Fishing	1,6345	254	1,5800	105	1,6000	41	,468	,627 *p*>0,05
Diving	1,6000	100	1,6389	155	1,6071	145	,231	,794 *p*>0,05
Sport	1,6158	208	1,5938	133	1,6875	29	,649	,523 *p*>0,05
Shopping	1,6622	85	1,5289	126	1,6576	189	**2,971**	**,052 *p*=0,05**
Landscape	1,6015	271	1,6383	105	1,7368	24	,800	,450 *p*>0,05
Picnic	1,5797	138	1,6364	121	1,6417	126	,654	,521 *p*>0,05
Eating	1,6000	36	1,6174	115	1,6197	234	,022	,979 *p*>0,05
Entertainment	1,6818	72	1,6122	147	1,5964	166	,740	,478 *p*>0,05

Age and education of the participants did not affect their

CONCLUSION AND EVALUATION

Urban quality of life can be defined as the full satisfaction of the urban needs of the city dwellers and the complete well-being of the city dwellers. Recreation and tourism activities are also activities that provide cultural ecosystem services (Şimşek Serbest, 2024).

Deryahanoğlu et al. (2024) present a broad analysis of the literature in this field by addressing the relationship between recreation and quality of life from an interdisciplinary perspective. The findings provide important clues to identify the potential of recreational activities in improving the quality of life of individuals and the research gaps in this field. It is concluded that future research should examine the effects of recreation in different cultural and socio-economic contexts in more depth.

As a result, the fulfilment of their wishes increases the quality of life. Both recreation and quality of life vary according to the factors of physical space, income level, psychological status, academic achievement, income level and place of residence, social space and age and income. Şarköy coastline is considered to be suitable for walking and jogging, partially suitable for sailing and not suitable for shopping. It was observed that education affects recreation preferences. It shows that recreational activities that will increase the quality of life in this area are limited. There is a significant difference between sailing and shopping between age and recreational activities. As a result, it is suggested that planning studies should be carried out to increase the quality of life in Şarköy, which has a high recreational potential.

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CHAPTER VII

The Role of Green Infrastructure in Sustainable Urban Development: Dimensions and Strategic Approaches

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Şükran ŞAHİN[2]

Introduction

In recent years, rapid population migration from rural to urban areas has been driven by increasing employment opportunities, the social and economic advantages offered by cities, and the pursuit of a higher quality of life. According to the United Nations' World Urbanization Prospects Report, by 2050, it is estimated that 66% of the global population will reside in urban areas (United Nations, 2014). Current projections suggest that the world population reached 8.2 billion by mid-2024 and is expected to peak at 10.3 billion in the 2080s (United Nations, 2024). This accelerated

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urbanization process has led to the spatial expansion of cities, a rising demand for housing, and increased pressure on natural environments.

The consequences of urbanization are not limited to the physical transformation of spaces but also severely impact the natural and cultural landscape resources of urban environments. The depletion of natural resources, ecosystem degradation, and the disappearance of cultural landscapes adversely affect the identity of cities. Sustainable urban development necessitates a holistic approach that ensures the preservation of ecological systems while safeguarding the identity and aesthetic values of urban landscapes (Karaaslan, 2010). Urban identity reflects the uniqueness of cities, shaped by their historical and cultural heritage, and is maintained through the preservation of local distinctions (Tekeli, 1991).

However, the growing population density associated with rapid urbanization poses significant threats to historical and cultural assets (Tunçer, 2009). In this context, green infrastructure emerges as a vital tool for sustainable urban development, enhancing the aesthetic, ecological, and social functions of urban spaces while also protecting the physical environment (Benedict & McMahon, 2006; The London Plan, 2016)

Green infrastructure provides multifaceted benefits to cities across ecological, social, economic, and aesthetic dimensions. Ecological benefits include flood control, biodiversity conservation, and climate change adaptation, while social advantages encompass the strengthening of social bonds and the provision of recreational spaces (Demuzere et al., 2014; Wang & Banzhaf, 2018). Benedict and McMahon (2002) emphasize that green infrastructure is one of the most effective tools for creating sustainable cities, enhancing the ecological, social, and economic resilience of urban areas to foster more livable environments.

The primary aim of this study is to evaluate the impacts of green infrastructure on sustainable urban development and to

explore its ecological, social, and economic dimensions. Global challenges such as rapid urbanization, climate change, and biodiversity loss necessitate the development of environmentally friendly and sustainable solutions (Chatzimentora et al., 2020). In this regard, green infrastructure stands out as a mechanism that supports environmental processes, protects natural and cultural resources, and improves urban life.

The importance of green infrastructure applications continues to grow in addressing issues such as the overconsumption of natural resources and declining social quality of life in rapidly expanding cities (Meerow & Newell, 2017). Beyond environmental benefits, green infrastructure also enhances recreational potential, boosts economic attractiveness, and improves public health in urban areas (Coutts & Hahn, 2015).

This study aims to provide a strategic framework for the conservation of existing open and green spaces, their connectivity, and the integration of natural processes into urban planning. In doing so, it seeks to contribute to the creation of more livable, resilient, and sustainable urban environments.

The overall framework of this study builds upon the literature foundation of Güneş's (2017) doctoral thesis, which comprehensively examines the role of green infrastructure in sustainable urban development and its impacts on urban identity.

Literature Review

Definition and historical development of green ınfrastructure

Green infrastructure is defined as a system composed of natural and semi-natural areas that support ecosystem services and enhance the quality of life for individuals (Benedict & McMahon, 2002). The concept began to take shape in the 19th century with Frederick Law Olmsted's projects, such as Central Park in New York and the Emerald Necklace in Boston. Olmsted aimed to create

multifunctional and interconnected green spaces that served various social groups (Benedict & McMahon, 2012).

As a critical element in achieving sustainability goals for modern cities, green infrastructure is strategically planned and managed to integrate natural habitats, green corridors, and open spaces into urban landscapes. This integration contributes to maintaining ecological balance (Yaralıoğlu & Asilsoy, 2021). Today, green infrastructure is recognized as a framework that preserves ecosystem values and optimizes their services, providing strategic solutions to environmental, social, and ecological challenges (European Commission, 2013; Wilker et al., 2016).

The importance of green infrastructure is further emphasized in the creation of resilient cities capable of addressing the impacts of climate change (Yaralıoğlu & Asilsoy, 2021). Over time, this concept has evolved into one of the foundational elements of sustainable urban development, focusing on the preservation of natural and cultural landscapes, the support of ecosystem services, and the enhancement of individual well-being.

Open and green space system models

The idea of planning urban open and green spaces within a systematic framework dates back nearly a century. In 1903, Frederick Law Olmsted highlighted the importance of connecting parks and green spaces, stating, "No single park, no matter how large or well-designed, can provide the beneficial effects of nature to the public unless it is related to other parks and surrounding areas" (Little, 1990). This perspective laid the groundwork for modern urban design models that treat open and green spaces as interconnected systems.

Yıldızcı and Aytaç (2016) provided a comprehensive review of the historical development of open and green spaces, citing examples such as the Hanging Gardens of Babylon, the academy gardens of Ancient Greece, the Tivoli Gardens of Rome, medieval monastery gardens, the Alhambra Palace from the Islamic garden

tradition, Renaissance-era Villa Borghese, and the Baroque Versailles Palace. Starting from the late 18th century, these spaces began to be systematically planned under various terminologies.

By the late 19th century, the "City Beautiful" movement in North America, pioneered by Olmsted, sought to enhance the aesthetic and functional aspects of the environment while strengthening social cohesion. Projects such as Central Park (1857), Prospect Park (1859), Emerald Necklace Park (1860), and Franklin Park (1878) exemplified this movement, offering recreational opportunities and ecological value (Austin, 2014). Olmsted's advocacy for interconnected parks became the cornerstone of the modern "greenway" movement.

Throughout the evolution of green infrastructure, concepts such as scenic routes, greenways, green belts, park systems, non-motorized paths, environmental corridors, and ecological networks have emerged. Ahern (1995) highlighted the significance of these concepts across different scales, identifying the Scenic Route introduced in the U.S. in 1868 as the genesis of green infrastructure. Since the early 2000s, the green infrastructure model has become a fundamental tool for creating livable cities.

Features and elements of green ınfrastructure

Green infrastructure can be defined as an ecological framework that forms a community's natural life-support system, ensuring environmental and economic sustainability (McMahon & Benedict, 2003). It provides benefits such as biodiversity conservation, climate change mitigation, support for sustainable living, and improved accessibility to recreational areas (Anonymous, 2013c). Its multifunctionality and connectivity play a critical role in addressing social, environmental, and economic challenges (Landscape Institute. 2009).

Benedict and McMahon (2002) described green infrastructure as a system of "hubs" and "links." Hubs serve as connection points for ecosystems, providing resources and

destinations for wildlife. These hubs can range from natural landscapes and agricultural areas to urban parks. Links, on the other hand, are linear elements that ensure the continuity of ecosystems. Examples include greenways, green belts, and ecological corridors. These structures enhance ecological connectivity while offering social and economic benefits.

The multifunctional nature of green infrastructure allows for the preservation of ecological values, the enhancement of social benefits, and the provision of solutions to environmental issues. In this context, green infrastructure is a critical tool for building sustainable cities and offers a resilient approach to current and future urban challenges.

Green infrastructure and fundamental principles

Green infrastructure is recognized as a multifaceted system that serves as the cornerstone of sustainable environmental management, grounded in two fundamental principles (Benedict & McMahon, 2002). The first principle emphasizes the connection of parks and other green spaces to enhance individuals' quality of life. The second principle highlights the importance of linking natural areas to support biodiversity and prevent habitat fragmentation. In this context, green infrastructure is defined as a multifunctional system designed to improve environmental quality and conserve natural resources. The system integrates parks, residential gardens, forests, canals, street trees, and other open spaces to connect people with nature while establishing an uninterrupted network at local and regional scales. By facilitating access to ecological, cultural, and recreational resources, green infrastructure contributes to sustainable resource management.

The fundamental characteristics of green infrastructure revolve around the principles of multifunctionality and connectivity, which are analyzed within the contexts of spatial scales and hierarchical structures.

Multifunctionality:

Ahern (2011) highlights multifunctionality as a key approach in green infrastructure planning. This concept involves combining various functions within a single area to maximize the efficiency of land use. Green infrastructure systems provide the following benefits:

- Environmental benefits: Preservation of biodiversity and climate change adaptation.
- Social benefits: Expansion of green spaces and improved drainage management.
- Economic benefits: Creation of new job opportunities and increased land and property values.

Green roofs serve as a prominent example of multifunctionality. These structures address multiple functions, such as mitigating the urban heat island effect, improving building insulation, providing habitats, and contributing to stormwater management. Similarly, river corridors exemplify this principle by supporting ecological processes, enhancing landscape character, and offering recreational and transportation benefits (European Commission, 2014) (Figure 1).

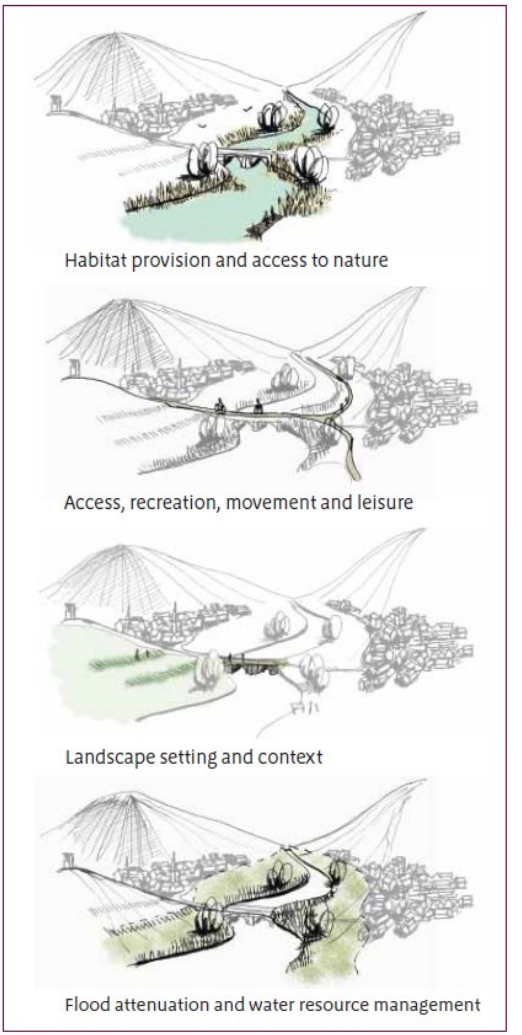

Figure 1: Multifunctionality in Green Infrastructure

Source: Natural England, 2014.

Connectivity:

Connectivity is the second fundamental characteristic of green infrastructure, aiming to enhance urban ecosystems by

physically linking green elements (Ely & Pitman, 2014) (Figure 2). Physical connections yield more tangible and effective results compared to visual or conceptual connections (Landscape Institute. 2009).

A connected green infrastructure system involves linking parks, coastal areas, wetlands, and other green spaces into a strategic network. Such a structure contributes to:

- Supporting ecological processes,
- Protecting wildlife populations,
- Enhancing environmental and social functions (Benedict & McMahon, 2002).

However, for an area to be integrated into the green infrastructure system, it must meet specific quality standards. These standards include ecological, recreational, and social functions. For instance, an urban park can be a critical component of green infrastructure with features such as providing a cool air corridor, optimizing water management, and offering habitat for wildlife (European Landscape Contractors Association, 2013).

Figure 2: Connectivity in Green Infrastructure

Source: Diamond Head Consulting, 2014.

In conclusion, green infrastructure plays a pivotal role in addressing both current and future urban challenges. This system provides multidimensional benefits across ecological, social, economic, and aesthetic dimensions, supporting cities in achieving their sustainability goals.

Applications of green infrastructure at different scales

Green infrastructure offers a flexible and multi-scalar planning approach, enabling its implementation across various spatial scales, from parcel-level interventions to national frameworks. This flexibility necessitates tailoring green infrastructure solutions to the specific dynamics and needs of each scale (Hansen & Pauleit, 2014). Ahern's (1995) scale definitions provide a valuable framework for understanding the applications of green infrastructure at different levels, serving as a guide for integrating this system into urban planning processes (Table 1).

Table 1: Scale Definitions

Area (km²)	**Political Units**
1–100	Local (Municipality)
00–10,000	Region (Country Province)
10,000–100,000	Country (States, Small Nations)
> 100,000	Continent / Large Nations

Source: Ahern 1995.

Spatial scales and hierarchy

Green infrastructure is applicable across a broad range of spatial scales, making it both a complex and highly effective concept (Hansen & Pauleit, 2014). According to Benedict and McMahon (2002), the implementation of green infrastructure at all scales is essential for achieving its full potential. These scales can be classified as follows:

- **Parcel Level:** Focuses on the efficient management of green spaces around individual residences and businesses.
- **Local Level:** Involves connecting existing parks and open spaces through greenways to enhance accessibility and ecological functionality.
- **Regional and National Levels:** Integrates large natural areas such as forests, wetlands, and grasslands into extensive landscape connections, providing critical habitats for wildlife.

These elements are summarized in the table below (Table 2):

Table 2: Green Infrastructure Components and Their Application Across Spatial Scales

Micro Scale (Local/Neighborhood Level)	**Meso Scale (City Level)**	**Macro Scale (Regional/National Level)**
Street trees, hedges; green roofs and green walls; pocket parks, private gardens; urban plazas, sports fields; town and village green spaces; pedestrian and bicycle lanes; cemeteries; public open spaces; pools and streams; small wooded areas, ditches; playgrounds, school gardens; vacant and abandoned lands.	City/district parks; canals and streams; forest parks; national parks; municipal squares; recreation areas; lakes, rivers, and basins; agricultural fields; wooded areas; mining extraction sites; solid waste sites.	Regional parks; rivers and basins; long-distance routes; forests and railway networks; green belts; agricultural lands; national parks; national landscapes; common lands; open and rural areas.

Source: Landscape Institute. 2009.

This multi-scalar approach necessitates an integrated planning framework that includes not only local solutions but also regional and national objectives. For instance, a park connection at the local level can form a crucial part of an ecological network at the regional scale. Botequilha Leitão and Ahern (2002) propose that green infrastructure be considered within the framework of hierarchy theory, which emphasizes alignment across multiple scales. This approach is critical for understanding the interrelationships between systems operating at different scales and achieving more effective outcomes.

Green infrastructure components and application areas

Green infrastructure components vary across scales, with each scale requiring specific planning and implementation strategies. While individual solutions at the parcel level contribute to the formation of an effective small-scale green infrastructure network, regional applications support the creation of extensive ecological networks (Landscape Institute. 2009). These components can be classified as follows:

- Green Roofs and Gardens: At the parcel level, they provide benefits such as water management, mitigation of the urban heat island effect, and support for biodiversity.
- Greenways and Corridors: At the local level, they connect parks and open spaces, creating ecological linkages within urban areas.
- Ecological Networks and Protected Areas: At the regional level, they ensure the continuity of wildlife habitats and support large-scale ecosystem functions.

The importance of green infrastructure in multi-scalar planning

The applicability of green infrastructure across various scales demonstrates its flexibility and adaptability. Adopting an integrated approach at all levels, from parcel to national scale, is critical for enhancing environmental benefits and supporting social dynamics. The preservation and improvement of natural areas, particularly in

urban settings, are made possible through the multi-scalar nature of green infrastructure.

Planning based on hierarchy theory enhances this process by facilitating the strategic use of green infrastructure as a tool for creating sustainable cities. Accurate planning of green infrastructure at each scale is essential to maximize ecological, social, and economic benefits. In this way, green infrastructure contributes to making cities more livable and resilient.

Benefits of green infrastructure: ecological, social, economic, and aesthetic dimensions

Green infrastructure is a multifaceted system that helps cities adapt to current conditions while building resilience against future challenges. This system provides comprehensive benefits across environmental, social, economic, and aesthetic dimensions, contributing significantly to sustainable urban development (McMahon, 2000; Benedict & McMahon, 2006; Ely & Pitman, 2014; Coutts & Hahn, 2015). These benefits are detailed below:

Ecological Benefits: As a system supporting environmental sustainability, green infrastructure addresses critical issues such as flood control, water resource management, and climate change adaptation. By managing stormwater effectively, it replenishes groundwater resources, improves water quality, and helps preserve the natural water cycle while preventing floods. Green infrastructure also mitigates the urban heat island effect, enhancing cities' resilience to climate change. Connecting natural and semi-natural areas prevents habitat fragmentation and increases biodiversity, protecting species' habitats and promoting local food security through urban agriculture. Additionally, by enhancing carbon sequestration, it mitigates the impacts of climate change and ensures the continuity of ecosystem services (Coutts & Hahn, 2015; Ely & Pitman, 2014).

Social Benefits: Green infrastructure delivers social benefits that enhance the quality of life for individuals and communities. Parks

and green spaces provide opportunities for physical activity and interaction with nature, improving psychological and physical well-being. Improved air and water quality supports healthier living conditions. By creating accessible and attractive spaces, green infrastructure fosters social equity and strengthens community bonds. In emergency situations, it provides safe gathering areas, enhancing community resilience. These attributes contribute directly to making cities more livable (Meerow & Newell, 2017; European Landscape Contractors Association, 2013).

Aesthetic Benefits: Green infrastructure serves as a vital tool for enhancing the aesthetic appeal of cities. By preserving local identity and landscape character, it increases the uniqueness of urban areas. Natural vegetation and landscape design elevate visual quality, offering a well-maintained and pleasant environment. These features strengthen the connection between residents and visitors with the city, boosting its aesthetic allure. By enhancing the landscape character, green infrastructure also promotes tourism, thereby contributing to economic benefits (Benedict & McMahon, 2002; Ely & Pitman, 2014).

Economic Benefits: Green infrastructure supports the economic sustainability of cities in several ways. It offers a cost-effective solution for flood and stormwater management, reducing the need for long-term infrastructure investments. By increasing property values in its vicinity, it contributes to the local economy. Green infrastructure initiatives also boost tourism potential, fostering economic development. Additionally, green environments improve worker morale and productivity, enhancing workplace efficiency. Urban agriculture promotes local production, supporting food security and the local economy. Furthermore, it increases energy efficiency, contributing to the creation of more sustainable cities (Coutts & Hahn, 2015; Chatzimentora et al., 2020).

The multifaceted benefits of green infrastructure clearly demonstrate why it is a critical tool in urban planning. With proper planning and implementation, this system can enhance urban ecological

resilience, support social welfare, and contribute to economic growth. In this context, addressing both theoretical and practical aspects of green infrastructure is essential for creating sustainable and livable cities.

Conclusion and Recommendations

This study has thoroughly examined the contributions of green infrastructure to sustainable urban development. The findings reveal the multifaceted benefits that green infrastructure provides to cities in ecological, social, economic, and aesthetic dimensions. By connecting natural and semi-natural areas, critical goals such as biodiversity conservation, prevention of habitat fragmentation, and the sustainability of ecological processes can be achieved (Wang & Banzhaf, 2018). Additionally, green infrastructure enhances urban quality of life through its social, economic, and aesthetic benefits.

In recent years, academic interest in green infrastructure has significantly increased. Research, particularly in Europe, emphasizes the multifunctionality of green infrastructure and its pivotal role in combating climate change (Chatzimentora et al., 2020; Wang & Banzhaf, 2018). Over the past 24 years, the number and diversity of academic studies in this field have grown substantially, with a notable surge in the last decade.

Analyses conducted using three major databases (Web of Science, Scopus, and Google Scholar) clearly show the distribution and growth trends of publications on green infrastructure over the years, as summarized in Table 3.

Table 3 illustrates a marked increase in the last decade, with 1,030 publications in Web of Science, 2,070 in Scopus, and 53,300 in Google Scholar. This trend is further detailed in Figure 3, which highlights the yearly distribution of publications on green infrastructure.

Table 3: Distribution of Publications on the Concept of Green Infrastructure by Year (1995–2024)

Databases	1995-2004	2005-2014	2015-2024
Web of Science	11	437	6905
Scopus	36	2070	35081
Google Scholar	1030	15800	53300
Total	**1077**	**18307**	**95430**

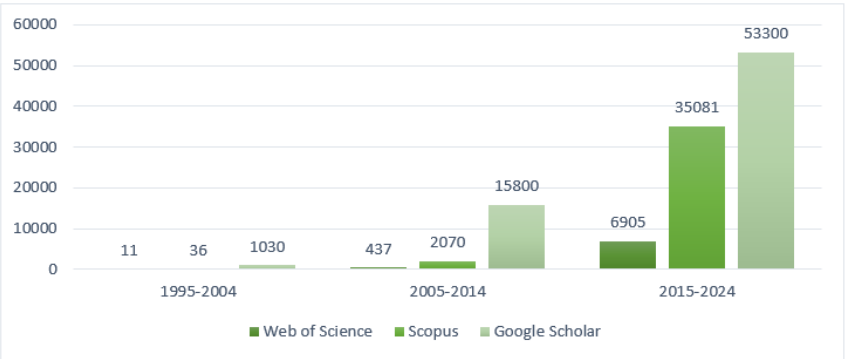

Figure 3: Yearly Distribution of Green Infrastructure Publications

Figure 4 shows the growth trends across three time periods (1995–2004, 2005–2014, and 2015–2024), highlighting a significant rise in publications between 2015 and 2024. This trend reflects the growing importance of topics such as sustainability and environmental management. Studies on green infrastructure showcase the scientific and practical potential of this field while opening new avenues for future research.

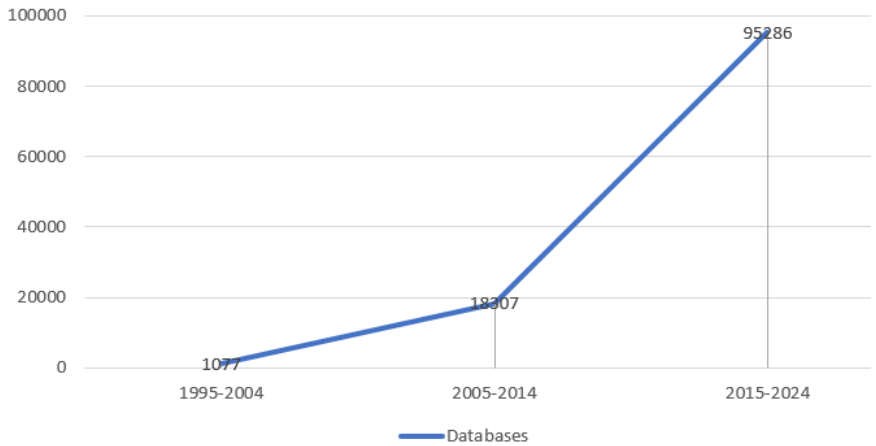

Figure 4: Growth Trend of Publications on Green Infrastructure

For effective implementation of green infrastructure in Turkey, comprehensive legal frameworks and strategic planning are essential. These efforts should include the following key steps:

- Prioritization of Green Infrastructure Plans: Establish a framework for green infrastructure plans to precede regional plans and ensure a multidisciplinary approach. These plans must align integratively with other regional plans.
- Identification of Ecological Areas: Planning processes should involve identifying vital ecological areas and connections before development. Collaboration among experts from various fields, such as urban planners, ecologists, landscape architects, and sociologists, is crucial.
- Education for Local Authorities: Raise awareness among local authorities, particularly regarding the economic benefits of green infrastructure.
- Promotion of Community Participation: Foster active participation from civil society organizations, public institutions, and the community to ensure plan adoption and sustainability.

Green infrastructure applications also offer numerous economic advantages, such as increasing property values, promoting energy efficiency, and supporting local economies. Effectively promoting these advantages to local governments and investors can facilitate implementation processes (Chatzimentora et al., 2020).

Innovative applications, such as green roof systems, urban agriculture projects, and similar initiatives, should be encouraged to increase the prevalence of green infrastructure in urban areas (Wise, 2008). Public awareness campaigns and educational programs should also be organized to highlight the benefits of green infrastructure and reach broader audiences (Coutts & Hahn, 2015).

In conclusion, green infrastructure is an indispensable tool for creating sustainable cities. In developing countries like Turkey, expanding the use of these systems holds great potential for achieving environmental, social, and economic sustainability goals. Future studies should focus on enhancing the benefits of green infrastructure and increasing its applicability on a larger scale. Through proper planning, interdisciplinary collaboration, and community engagement, cities can become more livable, resilient, and sustainable.

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CHAPTER VIII

An Integrated Approach For Sustainable Agriculture And Forest Management: Agroforestry

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Duygu KORKMAZ

INTRODUCTION

Agroforestry is the collective name given to land use systems and technologies with specific characteristics. In a wide variety of agroforestry production systems, woody tree species are grown in combinations that interact with agricultural crops and/or livestock in order to obtain a greater number of products or benefits from the same area. Agroforestry production systems include agrisilvicultural (production system in which agricultural crops and trees, shrubs and various woody plants are grown together), silvopastoral (production system in which meadow, pasture and forage crops and trees, shrubs and various woody plants are grown together) and agrosilvopastoral (agricultural crops; production system in which meadow, pasture and fodder crops are grown together with trees, shrubs and various

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woody plants) and agrosilvopastoral systems (Lundgren and Raintree, 1982).

The common denominator of a wide variety of agroforestry systems is the deliberate cultivation of woody tree species in such combinations that they interact with agricultural crops and/or animals in order to obtain a greater number of products or benefits from the same area. This is the essence of the agroforestry production technique (Tolunay et al., 2005) (Figure 1).

Figure 1. *A view from the Agroforestry production and sales unit (Url-1, 2024).*

Agroforestry is a multifaceted land use system that combines trees, agricultural crops and livestock. Critical to the sustainable management of ecosystems, agroforestry not only provides economic benefits, but also contributes to environmental protection, climate change adaptation, soil health and biodiversity enhancement. This system provides both direct (e.g. fruit and wood products) and indirect (e.g. erosion control and microclimate creation) benefits to landowners, thereby increasing the economic and social welfare of farmers and villagers (Filiz, 2002).

The main factors that emphasize the importance of agroforestry systems are (Nair, 2011; King, 1979; Combe. and Budowski, G. 1979; Bene et al., 1977):

- *Protection and Adaptation to Climate Change:* Trees and forest areas reduce greenhouse gas emissions by absorbing carbon from the atmosphere. Agroforestry systems are an effective tool to reduce carbon footprint by storing carbon in the atmosphere. Furthermore, these systems create microclimatic conditions to mitigate the negative impacts of climate change and ensure the sustainability of agricultural activities.
- *Soil Protection and Increased Productivity:* Trees reduce erosion by stabilizing the soil through their root systems. This improves soil fertility and supports farmers' crop production. Especially in areas with high erosion risk, soil loss can be greatly reduced through agroforestry practices.
- *Biodiversity:* Agroforestry increases biodiversity by allowing different plant and animal species to live together. When different plant species are grown together, it is possible to use fewer chemicals to control pests and this supports wildlife.
- *Economic Diversity and Income Security:* Agroforestry diversifies farmers' income sources with a variety of different crops. Providing many products such as fruit, wood, fodder and resin, these systems contribute to making farmers more resilient to economic fluctuations.

Agroforestry plays an important role in landscape architecture and sustainable land planning. Landscape studies aim to protect and improve natural resources by evaluating the environmental, aesthetic and functional elements of an area together. The place of agroforestry in landscape planning is the capacity of this system to maintain ecological balances, provide aesthetic contribution and

create multifunctional areas (Pelieninger et al., 2020). This study examined the concept of agroforestry as an integrated approach for sustainable agriculture and forest management, and evaluated the potential of agroforestry practices to contribute to sustainable resource management by focusing on environmental, economic and social dimensions. In addition, the role of agroforestry in combating climate change, conserving biodiversity, improving soil and water quality, and the opportunities offered by this practice in achieving sustainability goals at both local and global levels are discussed. In this context, the contributions of agroforestry to sustainable agriculture and forest management are presented and recommendations for the development of this integrated approach are presented.

HISTORICAL DEVELOPMENT OF AGROFORESTRY

The concept of agroforestry was introduced in 1977 as part of the first international research initiatives into integrated production systems involving crops and trees (Nair et al., 2021). During this early period there was much debate and various definitions were proposed to define and characterize agroforestry. This study examines the development of the concept and the different proposed definitions.

The basic element common to agroforestry practices is the cultivation or deliberate retention of trees in interaction with crops and/or livestock in order to obtain multiple products or benefits from the same management unit (King, 1979). Today, agroforestry represents a science-based, modern approach that seeks to capitalize on the sustainability attributes and production benefits of time-tested practices of integrating trees with agricultural systems for a variety of purposes. Its proven contributions in sustaining crop productivity, diversifying farm production, supporting ecosystem services and ensuring environmental integrity in land use make agroforestry an

increasing focus of attention in global development programs and paradigms.

In Third World countries, there is a growing concern that traditional forestry practices, i.e. long-term forestry activities oriented towards large-scale timber production for commercial or industrial purposes, exacerbate income inequality. Conventional forestry is believed to make the rural poor worse off while making a wealthy minority even wealthier (King, 1987).

In addition, there is growing evidence that despite the long-term nature of these forestry activities, their contribution to the socio-economic status of rural populations remains limited, and that the prosperity derived from forests is reflected to a very small extent in rural communities (Nair et al., 2021). This leaves rural residents with little motivation to support forestry-related conservation and restoration programs.

This aversion to forestry has resulted in farmers considering alternative uses of upland and hilly land, prioritizing intensive agriculture and the cultivation of annual food crops over forest land use as a low priority. The negative impacts of this decision on sensitive uplands are well documented and include serious consequences such as land degradation resulting in soil and nutrient loss, sedimentation, water pollution, adverse changes in hydrological structure and a reduction in overall productivity and sustainability (Combe and Budowski, 1979).

Many studies argue that it is both necessary and possible to change forestry practices in developing countries in the following ways (Sanga 1978, Filiz, 2002; Tolunay et al., 2005; Mayers, 1980):

- Making forest resources (land and vegetation) available to rural populations instead of monopolizing them for industrial firms;

- Downsize forestry from the industrial scale to the village scale,
- Integrate forestry practices more closely with agricultural activities to more actively involve farmers in forestry so that agricultural crops can be supported by the trees grown. In short, it is proposed to transform forestry practices from industrial forestry to village or community-based forestry.

Along with this transformation, another important consequence of the shift from classical forestry to community-based forestry will be the provision of a wider variety of products. Forestry will no longer remain exclusively pure forestry, but will range from pure forestry at one extreme to the integration of tree crops with annual food crops and livestock at the other (Zamer Linder, 1979). This implies the inclusion of agroforestry, a land-use technique that falls under community forestry.

Agroforestry systems have generally been defined as "trees plus any other product" or "combining trees with food crops". However, one of the most objective and comprehensive definitions of this concept is as follows: Agroforestry is a land management system in which woody perennial plants are used sequentially or concurrently with annual agricultural crops and/or livestock in the same land management unit, with the aim of achieving consistently higher yields (ICRAF, 1983).

This definition has brought about some controversy. At the center of the debate lies the nature of the perennial plant components in this system. The concept of "woody perennial plants" can include fruit trees and timber or forest trees, and the use of this general term under the heading "agroforestry" raises concerns among foresters that this system could be used as a way of converting forest areas into orchards. However, opponents argue that this cannot happen on all forest lands and that physical factors such as soil quality, topography, elevation and accessibility, combined with socio-

economic factors, will limit the conversion of forest lands to other uses (Turna et al., 2024).

AGROFORESTRY SYSTEMS

Agroforestry is a system of practices that integrates agriculture and forestry systems, aiming to increase agricultural productivity while ensuring environmental sustainability by managing these two areas together. It offers a form of land use in which trees, shrubs, grasses and other plants are grown alongside crops and livestock. Agroforestry practices are becoming increasingly important as they include many positive impacts such as agricultural productivity, biodiversity conservation, carbon storage, water quality enhancement, erosion control and adaptation to climate change (Nair et al., 2010).

Agroforestry consists of various systems and these systems differ according to the ecosystem and agricultural activities in which they are applied. Major agroforestry systems (Nair et al., 2010; Nair 2011; Nair et al., 2021; Pandey, 2007):

- **Agrosilvicultural Systems:** This system, in which trees are grown together with agricultural plants, reduces soil erosion and maintains the moisture balance of the soil through the shade-providing effect of trees (Figure 2). In this system, animal grazing areas and tree cultivation coexist. This approach not only increases the productivity of animal products but also protects soil and water quality through tree cover.

Figure 2. *An example of an Agrosilvicultural system where trees are grown together with agricultural crops (Url-2, 2024)*

- **Silvopastoral System:** It is based on growing trees together with meadow plants and grazing animals. In this system, trees provide shade and fodder for animals, while animal manure contributes to the growth of trees and plants. In this system, grazing areas and tree cultivation coexist. This approach not only increases the productivity of animal products but also protects soil and water quality through tree cover.
- **Forest Gardening:** This system is common in small-scale agricultural areas where fruit trees, vegetables and medicinal plants are grown together. It provides food security and contributes to ecosystem services. It is a type of agroforestry consisting of multi-layered vegetation, usually practiced in tropical regions. Fruit trees, vegetables and medicinal plants are grown together for food production. This model focuses on high productivity and effective use of resources.
- **Agrosilvopastoral Systems:** Growing trees on field borders protects crops by acting as natural windbreaks and also

provides additional products such as wood, fruit, etc. It is a mixed system where livestock, agricultural products and trees coexist. The presence of trees in the agricultural area increases both crop and animal yields and strengthens the ecosystem by establishing various food chains.

ECOLOGICAL AND ECONOMIC BENEFITS OF AGROFORESTRY

Agroforestry offers significant ecological and economic benefits as a sustainable system that combines agricultural production with the cultivation of forest plants. This system reduces the risk of erosion by increasing soil fertility and contributes to biodiversity conservation. It also creates additional sources of income for farmers by increasing the diversity of production and provides resilience to climate change.

The ecological and economic benefits of agroforestry are listed below (Kay et al., 2019; Jianbo 2006; Palma et al., 2007; Pandey, 2007):

1. **Erosion Control:** Trees prevent erosion by retaining the soil with their root systems and maintain soil fertility. Academic research on erosion control shows the effectiveness of agroforestry practices in soil conservation. According to research, the implementation of tree farming systems can reduce erosion rates by 30% to 80%. Especially on sloping land, tree rows significantly reduce soil loss and contribute to the preservation of the fertile soil layer (Young, 1989).

Agroforestry is a system of growing trees and shrubs in agricultural areas in combination with crops or livestock. This system provides many environmental and economic benefits, including erosion control. The main benefits of agroforestry in terms of erosion control are as follows (Young, 1989; Kay et al., 2019; Plieninger et al., 2020; Nair 2011):

- *Soil Conservation:* Trees and shrubs in agroforestry systems stabilize the soil through their root systems and prevent soil loss due to wind or water. Plant roots hold the soil firmly, preventing the surface soil from shifting as a result of rain or irrigation.
- *Water Infiltration and Retention:* The root systems of trees increase the infiltration of water in the soil, i.e. they facilitate the infiltration of water into the soil. This reduces surface runoff, resulting in less soil erosion. In addition, the vegetative cover retains soil moisture, thus reducing the risk of erosion from rainfall or irrigation.
- *Reducing Wind Erosion:* Tree rows and shrubs in agroforestry systems control wind-induced erosion by reducing wind speed. This is especially important for soil conservation in arid regions.
- *Improving Organic Matter and Soil Structure*: Leaves and other organic materials falling from trees increase the organic matter content of the soil. This organic material improves soil structure, increases water holding capacity and acts as a natural barrier against erosion by forming a protective cover on the soil surface.
- Increasing Biodiversity and Ecosystem Resilience: Agroforestry creates an ecosystem that supports biodiversity. The coexistence of more plant species increases the overall health of the ecosystem and soil resilience. The complex root structures formed by various plant species also strengthen soil stability.

2. Carbon Sequestration: Agroforestry reduces the carbon footprint by absorbing carbon from the atmosphere and plays an important role in combating climate change. Academic research shows that the carbon sequestration potential of agroforestry is quite high. Studies, especially in tropical regions, have found that agroforestry systems can absorb and store 2 to 9 tons of carbon per

hectare per year. This amount varies according to tree species, climatic conditions, soil structure and the agroforestry model applied. For example, carbon storage potential is higher in systems where shade trees are grown on field edges or among crops such as coffee and cocoa.

Agroforestry systems make significant contributions to carbon sequestration. Agroforestry, which involves growing trees in agricultural lands with crops or animals, offers an effective method to combat climate change by helping to reduce carbon dioxide (CO_2) in the atmosphere (Pandey, 2002).

In this context, the benefits of agroforestry on carbon sequestration and academic studies are as follows (Pandey, 2002; Pandey, 2007; Nair et al., 2021; Montagnini and Nair., 2001):

- *Carbon Capture and Storage from the Atmosphere:* In agroforestry systems, trees and shrubs take carbon dioxide from the atmosphere through photosynthesis and store it in their biomass (trunk, branches, leaves, roots). Woody plants in particular have the capacity for long-term carbon storage; that is, as trees grow, they store carbon in their structures and this carbon remains stored for many years unless the trees are cut down or burned.
- *Increasing Soil Carbon Storage:* The root systems of trees increase the accumulation of carbon in the soil. The growth of roots promotes the accumulation of organic matter and allows carbon to be stored as soil organic matter. This process increases the carbon capacity of the soil and raises soil organic carbon levels. Tree species, especially those with deep rooted and deep root systems, form an effective structure in terms of soil carbon storage.

- *Carbon Storage in Biomass:* Agroforestry systems produce more biomass than conventional agriculture. Producing more biomass through trees and other plants allows more carbon to be stored in biomass. When tree rows, shrubs and grasses come together, these systems have a higher carbon sequestration potential than agricultural monocultures.
- *Preventing Carbon Loss by Reducing Soil Erosion:* Reducing erosion prevents the loss of soil carbon. Protecting the soil surface ensures the preservation of soil organic matter and limits carbon loss. Agroforestry practices control erosion and prevent the release of soil carbon into the atmosphere.

3. Biodiversity Conservation: Agroforestry systems increase biodiversity by providing habitat for a variety of plant and animal species. Academic research shows that agroforestry systems provide higher biodiversity than monoculture farming systems. For example, studies in Latin America and Africa have found that systems where crops such as coffee and cocoa are grown under shady trees are rich in environmental biodiversity. Such systems can support 50-80% more plant and animal species than traditional agricultural areas. Biodiversity conservation is important not only for environmental sustainability but also for the resilience of agricultural systems to climate change (Jose, 2012; Montagnini, 2020). The coexistence of diverse species facilitates ecosystem adaptation to changing conditions and resilience to environmental stressors (Montagnini, 2004).

These contributions of agroforestry suggest that it can be used as an important tool in developing biodiversity conservation strategies in agricultural areas. In this context, it is promoted as part of sustainable agricultural development policies. Agroforestry provides an important ecosystem service for conserving and enhancing

biodiversity. This system, in which trees, shrubs, crops and/or animals are grown together, offers a solution to the loss of biodiversity caused by agricultural monocultures (Schroth, 2013).

The contributions of agroforestry in protecting and enhancing biodiversity can be listed as follows (Montagnini, 2020; Montagnini 2004; Schroth, 2013; McNeely and Schroth, 2006):

- *Increasing Habitat Diversity:* Different plant species grown together in agroforestry systems create a wide variety of habitats, providing suitable habitats for plant and animal species. Trees provide shelter, breeding and feeding areas for birds, insects, mammals and other species. In addition, as plant diversity increases, soil microorganisms and beneficial insects are supported.
- *Acting as Corridors for Wildlife:* Agroforestry systems create "ecological corridors" in agricultural landscapes, allowing the movement of wildlife and the conservation of genetic diversity. For example, rows of trees, vegetation or shrubs along field edges or in fields create safe passageways for many animal species. These corridors prevent the fragmentation of ecosystems and maintain the genetic diversity of animal populations.
- *Supporting Pollinators and Beneficial Insects:* Agroforestry provides a more favorable environment for pollinating insects and other beneficial insects. Plant diversity in this system supports populations of pollinators such as bees, butterflies and beetles. These insects are critical for agricultural production and play a fundamental role in biodiversity conservation.
- *Increasing Soil Biodiversity:* The diversity of root structures of different plant species and the organic matter they leave in the soil increases the diversity of organisms living in the soil. Agroforestry systems

provide a rich environment for microorganisms, earthworms and other soil organisms. These organisms maintain soil health, support nutrient cycling and positively affect agricultural productivity.

- *Ensuring the Sustainability of Plant and Animal Species:* Agroforestry contributes to the conservation of local plant and animal species. The use of fewer chemicals and greater diversity of vegetation compared to conventional agriculture supports the habitat of local species, creating a sustainable environment.

4. Economic Return: Farmers earn additional income from the products of the trees (fruit, resin, wood, etc.). This diversity reduces economic risks by reducing farmers' dependence on a single crop. Agroforestry is considered as a method to promote economic development, especially in rural areas. By increasing the income level of farmers, it contributes to the fight against poverty in rural areas and supports the strengthening of the local economy. However, recognizing agroforestry as sustainable agricultural practices is also advantageous in terms of public support and financial incentives.

The economic benefits of agroforestry extend not only to farmers but also to society, and it stands out with both its environmental and economic dimensions within the scope of sustainable agricultural development policies. Agroforestry stands out as an agricultural practice with a high potential to provide economic returns to farmers and society. Since trees, crops and/or animal production are carried out together in this system, farmers' income sources are diversified, financial risks are reduced and financial sustainability is ensured in the long term (Prokopenko et al., 2020).

The economic benefits of agroforestry and academic findings on this subject can be examined under the following headings (Hoekstra 1987; Mukhlis et al., 2022; Prokopenko et al., 2020; Keprate et al., 2024):

- *Offering Diverse Sources of Income:* Since both trees and agricultural products are grown together in agroforestry systems, farmers obtain different products from the same land. For example, trees can provide products such as wood, fruit, resin, but also agricultural crops or animal production. This diversity provides farmers with a year-round income stream and reduces risks from market fluctuations.
- *Increased Added Value of Products:* Crops grown in agroforestry systems can be high value-added products. For example, shade-grown crops such as coffee and cocoa can be marketed under the label of organic or sustainable agriculture and sold at higher prices. In addition, products from trees (e.g. fruit or medicinal plants) provide significant added value as an additional source of income.
- *Reducing Input Costs:* Agroforestry improves soil fertility and protects the soil by preventing erosion. This allows farmers to use less chemical fertilizers and pesticides, thus reducing input costs. In addition, the trees in the system can act as natural fertilizers and nutrient cycling can be achieved by integrating crop production and animal husbandry.
- *Long Term Investment and Financial Resilience*: Trees gain value as biomass as they grow over time, offering farmers high economic returns in the long term. For example, trees grown for timber can reach a high resale value over a 10-15 year period. This allows farmers to generate income from both short-term agricultural products and long-term wood products.
- *Carbon Monetization Potential:* Agroforestry systems can also provide economic benefits through carbon credits thanks to their carbon sequestration capacity. By participating in carbon markets, farmers can sell carbon credits in exchange for sequestering carbon from the atmosphere. This could be

an important source of income for farmers with access to global carbon markets.

CHALLENGES IN THE APPLICATION OF AGROFORESTRY AND SUGGESTIONS FOR SOLUTIONS

There are some difficulties that prevent the spread of agroforestry practices. Although agroforestry has many environmental and economic benefits, various difficulties are encountered during the implementation phase. These difficulties may arise in technical, financial, socio-cultural and administrative dimensions.

The main difficulties experienced in the implementation of agroforestry and suggestions for solutions in this regard (Jhariya et al., 2019; Nair et al., 2010; Nair, 2011; Garrity, 1997):

- **Financial Difficulties:** The initial costs of agroforestry can be a barrier, especially for small-scale farmers. Initial investments may be required for tree planting, maintenance and management. In addition, since trees take time to grow and produce in agroforestry systems, farmers may have difficulty generating income in the short term. This long waiting period makes it difficult for farmers with urgent income needs to implement this system. According to various academic studies, farmers who want to adopt agroforestry practices, especially in low- and middle-income countries, experience financial difficulties due to lack of capital, difficulties in accessing credit and long-term income expectations. For example, in studies conducted in India and Africa, high initial costs and difficulty in accessing credit have been identified as important factors restricting farmers' transition to agroforestry.
- **Lack of Technical Knowledge and Training:** Since agroforestry brings together agricultural and forestry techniques, it requires farmers to have certain knowledge and

skills. It is important to have sufficient knowledge on issues such as which tree species are compatible with which agricultural products, the frequency of planting trees, pruning, and disease and pest control. However, in many regions, farmers have limited opportunities to obtain this information. Studies conducted in Uganda and Kenya have found that farmers lack knowledge about agroforestry techniques and do not receive sufficient training. In addition, it has been observed that some farmers do not know how to implement agroforestry or reduce yields with incorrect practices. This emphasizes the importance of extension services and training programs for the successful implementation of agroforestry.

- **Legal and Political Obstacles:** Farmers who want to implement agroforestry may sometimes encounter legal obstacles regarding forest management, tree cutting or land use. In some countries, legal regulations regarding the protection of forest areas or the use of agricultural lands may limit farmers' tree planting or may involve complex legal procedures. According to studies conducted in Latin America, Africa and Asia, it has been determined that farmers have difficulty obtaining the necessary legal permits to implement agroforestry. In some countries, forest management laws restrict farmers' tree planting and cutting, hindering the development of agroforestry systems.
- **Social and Cultural Barriers:** In some communities, the idea of growing trees in agricultural areas may be seen as incompatible with traditional agricultural practices and may be met with social resistance. The society’s failure to adopt agroforestry or the false belief that growing trees will reduce yields may prevent this system from becoming widespread. Studies conducted in Africa and Asia have revealed that some farmers are reluctant to implement agroforestry due to

their belief that trees will reduce agricultural yields. These false beliefs are common in regions where traditional agricultural practices are strong. Social norms and cultural habits are important factors that affect farmers' adoption of innovative agricultural techniques.

- **Difficulties in Climate and Environmental Adaptation:** Agroforestry requires the adaptation of various tree and plant species in different climatic conditions. However, not every climate and soil structure is suitable for the development of every species. Farmers may have difficulty selecting species suitable for local conditions or may encounter yield problems if inappropriate species are planted. Studies conducted especially in tropical and subtropical regions emphasize that agroforestry species must adapt to regional climate and soil characteristics. If this harmony is not achieved, both yields decrease and the positive effects of agricultural systems on the ecosystem may decrease.
- **Market Access and Marketing Problems:** Products grown in agroforestry systems (e.g. fruit, wood, resin) sometimes cannot be adequately delivered to local markets or the products may not have a market value. The lack of marketing infrastructure makes it difficult for farmers to achieve economic returns, especially in rural areas. Studies conducted in Southeast Asia and Africa show that farmers have problems marketing and distributing the agroforestry products they produce. The lack of logistics and marketing networks required for the sale of products can prevent farmers from benefiting from their potential income.

5. CONCLUSION AND EVALUATION

Scientific and experimental researches show that agroforestry systems have higher stability and increased productivity compared to monoculture farming. Based on these scientific foundations,

agroforestry systems that are open to change and improvement can be designed and these systems can be popularized among traditional farmers in order to increase their acceptability. For example, traditional randomly planted home gardens can be improved by using contour fences, alternate rows or alley planting methods to increase area protection capacity and achieve more sustainable productivity. It is anticipated that when farmers are actively involved in conceptualizing, planning and developing agroforestry projects, they will be more inclined to adopt these systems and thus the goal of achieving ecological balance and sustainable yield in agroforestry will be closer. Agroforestry is an agricultural practice that involves the integration of agricultural and forest areas in natural ecosystems. This approach is a system in which trees, shrubs, vegetation and animals are used together with agricultural production (Nair, 2011). Agroforestry provides many benefits such as increasing the sustainability of agricultural production, preventing soil erosion, supporting biodiversity and improving ecosystem services.

Agroforestry can be applied in various ways. These include fields surrounded by trees, agricultural areas planted in rows of trees, agricultural products grown among trees, animal husbandry systems supported by trees and forest gardens (Kerate et al., 2024). These applications both increase agricultural production and increase income and contribute to the protection of natural resources by ensuring environmental sustainability.

Agroforestry offers a sustainable production model by combining agricultural activities and forest ecosystems. The spread of this system both contributes to the ecological balance and increases the economic power of farmers.

Agroforestry (agroforestry) emerges as an effective solution in sustainable agriculture and forest management (Lundgren and Raintree, 1997). This system, which integrates agriculture and

forestry, offers many advantages in environmental, economic and social terms. Its environmental benefits include preventing soil erosion, protecting biodiversity, increasing carbon storage capacity and improving microclimate. In addition, it increases farmers' economic resilience by diversifying their income sources and contributes to rural development. However, in order for agroforestry systems to be successfully implemented, various factors such as planning appropriate to local conditions, selection of the right plant species, information and education activities (Plieninger et al., 2020) need to be taken into account.

Raising awareness of policy makers and local authorities on this issue, providing incentives to farmers and increasing public awareness are of critical importance in this context. As a result, agroforestry, as an integrated solution for sustainable agriculture and forest management, should have an important place in future agricultural and forest policies. This approach, which promotes environmental and economic sustainability, has the potential to create a wide impact with appropriate strategies and supporting policies.

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CHAPTER IX

Transformation of Public Space and Urban Landscape

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Introduction

Cities in the world and in Turkey have entered into significant structural transformation processes after 1980. The changes and transformations observed dominantly in the spatial characteristics of the city cannot be perceived independently of the social, economic and political restructuring strategies adopted on a global scale. When the subject is evaluated from a political economy perspective, it is stated that the transformation is a process that took place in order to solve the crisis of capitalist production relations that entered a crisis in the 1970s (Harvey, 1996; Sassen, 2001). In order to cope with the economic crisis, efforts were made to revitalize

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capital markets, deregulation policies were adopted for this purpose and the fluidity of capital in the global environment was ensured.

In other words, cities that can be integrated into the global process have become more important than countries that can be integrated into the process (Newman &Thornley, 2005). Thus, some cities have entered into an effort to create areas of attraction for different investments depending on the harmony they provide to the whole of global relations (Sönmez et al, 2008). The competition environment between cities has made the transformation of the landscape of cities even more important because cities that can attract global investment and personnel need to come to the fore with their natural and cultural capital. For this reason, the articulation to global economic relations has caused significant transformations in the landscapes of many cities in the world and attempts have been made to create city images. (Sönmez et al,2008). These city images that have been attempted to be created have also caused changes in the form of urban public spaces and have created differences in usage in the general perspective. In this context, this study aims to define the concept of public space, to examine the concepts of public spaces included in urban landscape, to examine the changes in the historical process of public space and the transformation of urban landscape in this context under social, political and economic factors with the understanding of Modernism and Postmodernism, and to explain the effects of this on urban identity.

In line with this purpose;

In the first section, the concepts of public space and urban landscape will be discussed and the public spaces included in the urban landscape will be exemplified.

In the second section, the transformation that public space has experienced with modernism and post-modernism and the processes by which the urban landscape has been affected by this transformation will be explained.

In the third section, the search for forms in cities and the negative and positive changes in the social structure that have occurred as a result of this transformation will be discussed.

In the conclusion section, alternative interpretations will be presented by criticizing these new identities that have formed in cities as a result of this change in two different phenomena.

Urban Landscape and Public Space Concepts

Urban landscape is considered by most professional disciplines and city users only as natural, green areas within the city. We can describe this as the narrow meaning of urban landscape arising from the impression of the city dweller. Because urban landscape is actually a phenomenon that the city dweller can describe within the period of use and impression. If the city dweller sees this phenomenon as a perceptible physical environment including all the infrastructures that make up the city, this will be the broad and correct expression of his impression. However, if he sees this phenomenon only as green and nature and makes a 'naturalization' in the city, he will see its narrowest meaning. After this situation, the concern to bring back the nature lost to the city begins and it is thought that nature is lost as it moves away from the city.

This idea also destroys the pluralism and different disciplinary understanding that the urban landscape contains. The real danger begins when this pluralism disappears. Public space is an element within the urban landscape, and parks, squares, open green

areas, roads, markets, etc., which are elements that form the urban landscape, are places that form the public space and contain the concept of public space. In this context, if we were to define public space;

Cities are places where various activities, operations and views take place. Urban public spaces include urban behavior patterns, appearances, facades of buildings and all urban elements. In addition, they are open to the public and always usable, designed to respond to human demands and activities, and are generally functional spaces located between structured areas (Korkmaz, 2007). Public spaces have various roles, including physical, psychological, social, political and economic. In addition, their symbolic role should not be ignored. Urban public spaces may include elements that add high value; such as religious or symbolic meeting areas.Public spaces that reflect the cultural, historical, religious, social and political values of groups or societies become symbols for these groups and societies, and contribute to the creation of a sense of continuity with their symbolic meanings. It is possible for urban public spaces to convey meaning to the user and thus to keep the collective memory alive in the process of change (Korkmaz, 2007). Its functionality and meaning within the city increase as it fulfills these existing roles. Immediately after industrialization, the effects of modernism and post-modernism on urban landscape and indirectly on public space are quite high. These effects of change have changed the perception of space in both morphological, physical and social terms. So, what are the changes in these phenomena, how did they occur and how are these changes experienced today?

The Process of Change in Public Space and Urban Landscape

Urban public space is a show and performance area in the whole city, a place where reality is tested, a discovery of difference and identity, and areas that enable individuals to become aware of themselves and others and establish social relationships. In a sense, they are areas where multi-faceted truths exist and different ideas are adapted. In modern Asian cities, as in European cities, motor vehicle use, social and spatial diversity and complexity have increased. In parallel with the processes of Modernism and Postmodernism, developments in science and technology, and globalization, significant changes are observed in the formal and social structure of public and private spaces. With the increase in the use of automobiles in modern cities, urban public spaces have begun to fragment in the urban structure.

Figure1:İstanbul/Kentsel Dönüşüm

Figure 2: İstanbul/Kentsel Dönüşüm

This change is a change in the physical dimension of the public space. In addition, there have been changes/transformations in the morphological, functional, social, perceptual, visual and temporal dimensions. What we should consider as morphological change should be how the tools and equipment are used in public spaces. The alternatives that have increased with the development of technology and science have increased the tools. This has caused the public space to fragment and not be perceived as a whole. Industrialization, the modernization that came after the Fordist production approach, and the respect for science and doctrine have caused division in the space and, in a sense, a loss of spirit and identity in the space. The simplest example of this is the introduction of the car. In addition, the understanding of gigantic multi-storey buildings built in the urban landscape with the modernist approach, together with the grid planning approach adopted in transportation, have fragmented public spaces and caused them to lose their functionality.

Carr emphasized that "as a result of his studies on the use and design of urban public spaces, these spaces should be meaningful, democratic and responsive to needs". He stated that urban public spaces should respond to five important needs. These are; comfort, rest, passive interaction with the environment, active

interaction with the environment and discovery. (Carr et al,1992). Recently, the use of vehicle-based transportation or people going to the places they want to go by car does not make it possible for urban dwellers to question public spaces in terms of functionality. However, the person who uses the space as a pedestrian sees public spaces only as temporary places and does not see them as an area where social activities, cultures and views are shared within its boundaries. In addition, even if the public space is used as a temporary tool, if the elements created around the space are not positioned in accordance with certain principles, the user's communication with the environment decreases.

Another factor is the social dimension. Urban public spaces were moved to the outer edges of the city as the industrial revolution began to destroy the city center. This public space began to move away from the image of an area that offered equal use to all people and began to be perceived as spaces created for the use of certain classes. The most typical examples of this were seen very clearly in England and France during those periods. Parks, which were a part of the urban landscape, began to be isolated and became areas that only the nobles of the country could enter and benefit from. In America, however, this process was a little different. When the nobles began to settle in the suburbs, public space was divided into two poles and began to gain the concept of common space. Because separate public spaces were created for the nobles outside the city, and separate public spaces were created for the working and poor classes in the city center. This caused the public space to lose its main function of communication, cultural integration and social sharing.

Another factor that should be considered here is the perceptual dimension. Public spaces could not offer a strong

visuality with modernism. Visuality was attributed to large-scale structures in the city. With postmodernism, the city was thought of as continuous parts and parcels, each professional discipline designed and planned according to its own understanding, and as a result, the necessary imaginative powers could not be attributed to the space. This made it difficult for the city dweller to perceive and care about the space. The time dimension in urban public spaces; the maintenance of semantic integrity between the past and the future requires the control and management of the time dimension and spatial changes over time. Ensuring this continuity over time will ensure the survival of the collective memory.

The changes experienced in cities today are irreversible. In addition to causing physical negativities in cities, these changes also cause the process to be interrupted temporally, thus preventing the collective memory and semantic sustainability, and preventing the space from being adapted to contemporary uses (Korkmaz, 2007). The fragmented understanding that emerged with the rapid and irregular urbanization movements with the industrial revolution and later the development of information technologies initially caused the urban landscape to be divided and fragmented. In our cities where intense migrations are experienced with the desire to become urban and where continuous growth continues, the result of this fragmentation also brings about distortion. The economic difficulties of the population concentrated in cities pushes housing and social activities to the background and gives rise to the concept of ‘village city’. On the other hand, as every step of the city begins to transform into capital spaces, it has revealed the phenomenon of rent in cities. This distracts us from perceiving the value of the city's landscape. All of this brings about social problems.

Cities Shaped by Transformation/Change

Aesthetic and environmental problems resulting from rapid urbanization increase the importance of planned urban green areas. While the longing of urban people for nature is tried to be satisfied with these planned green areas, the negative characteristics of urban life are also masked (Özdemir, 2009).

With this planning approach, urban landscape, as mentioned at the beginning, is moving away from its pluralism and is reduced to just green areas. Especially in urban transformation applications, the fact that the capital value of the spaces gained is at high levels, the presence of private gardens, industrial facilities, historical places, restoration and renovation works according to the place also reveal our perspective on urban landscape.

This fragmentation that comes with capitalization often makes it impossible to create public areas on an urban scale. People try to meet their green areas and recreation needs within their own small parcels. Therefore, the concept of urban environment is reduced to the parcel scale rather than a superordinate identity.

This situation causes cities to appear as settlements that mostly do not have an identity and develop with approaches far removed from the concept of planning. However, these environments where we spend our lives have very important effects on both the physical and spiritual structures of people. In this context, there is no doubt that cities that are organized in line with people's needs and have an identity are more livable places. With the recent urban transformations, city centers and public areas have started to be offered to certain segments of society. Until recently, residences, workshops, factories, shopping areas and public spaces were located together in many cities. The liberal economic

understanding and the perception of urban lands as commodities caused all these facilities to be separated from each other and to lose their functions. This change has started to reveal new lifestyles and new definitions have been made for the perceived landscape in the city. In addition, the threat is growing even more with the construction of existing urban green areas. In order for local governments to mask all these negativities, the concept of urban design has been put forward and it has been said that the functions of cities will be organized within the framework of ecology and sustainability. However, many urban design projects that have been carried out so far have not been implemented by local governments because their financial returns are low or the lack of planning in cities and gaps in the laws have prevented the implementation of the project. While the approaches mentioned above construct ideal cities on the basis of stability and stagnation, in contemporary cities, the forms previously defined by designers will change over time; In this process of change, park plans, squares, open green areas, roads and markets, which are part of the urban landscape, will be reshaped.

Instead of park areas, densely populated settlements are preferred. As a result of the emergence of new consumption spaces, the lifestyle of urban people is being interfered with and recreational uses identified with open spaces are being moved to closed and private spaces.

As a result of the radical changes in the economic order in our country in the last 20 years, this communication and confusion have gained a new dimension and as a result, new consumption spaces and shopping activities have come under the control of the private. In this process, public outdoor spaces are also being privatized.

Now, the first places that come to mind for urban people to spend their free time are shopping malls that offer all the features of outdoor spaces except access to nature (Özdemir, 2009). Thus, new consumption landscapes are emerging.

Figure 3: Kızılay /Ankara Alışveriş Merkezi

Figure 4:Gaziemir/İzmir Alışveriş Merkezi

With the transformation and privatization of this public space and the forgetting of its real public functions, people have started to prefer the consumption spaces offered to them to parks and open public areas. With the new city typification, in order to encourage the rogues established outside the city, the urban landscape that was destroyed in the city is taken out of the city and positioned in areas with defined boundaries and offered to certain segments (Yılmaz, 2001).

Discussion and Conclusion

With all these transformations/changes experienced in cities, it should be asked how the ideal public space and ideal urban landscape should be.Will all these transformations created connect people socially or will they provide a completely isolated life and cause certain segments and groups to be visibly separated? Will the concept of sustainable city really take its place in the urban landscape that is being created or is being tried to be adopted? All these questions will actually guide how the urban landscape and urban public spaces, which are an element of it, should be perceived and created. The spaces created should include criteria that can respond to the demands of the city dweller. In the smallest example, in urban design applications, public logic should be more prominent than the social understanding of cities. Green areas created within cities should not be created only to create the concept of sustainability eco-city.

In the urban landscape to be created here, the contribution of the landscape to recreation, public space understanding, social activity and life should not be ignored. Because in cities created by ignoring these facts, only the concept of rent emerges, which spoils the fun of urban transformations that promise new lives implemented in cities and spoils the magic.

Frequently used approaches since the mid-20th century have aimed to position large green areas within the city in accordance with ecological principles and to integrate them with green masses located on the city periphery and in the immediate vicinity. However, at the final point reached today, it has not been possible to evaluate open spaces in cities as a part of ecological corridors with the fragmented planning approach of cities and the “Land Mosaics” approach defined by Forman (1995). In this respect, it is also obvious

that the concept of eco-city or sustainable city has not been fully fulfilled.

Today, the goal of planners and designers is to create spaces where spatial communication and socialization can be controlled. We see this in special area examples such as shopping malls, satellite cities, protected settlements and thematic city parks (Boyer, 1994). However, according to Lefebvre's (1991) definition, this is not an ordinary and coincidental change. Planners and administrators, for the purpose of control, distribute people in various groups to certain parts of the city by making class distinctions and design different public spaces for each class (Özdemir, 2009). These planning approaches that will continue in the future will cause the concept of public space to disappear in people's minds and after a certain period of time, people will not worry much about the urban landscape being as it should be. For this, urban public plans should be created that will ensure that urban spaces unite with nature, that the dynamic structures of nature constantly flow into the city and that this cycle is continuous. The parks and squares that constitute the urban landscape should play the biggest role here.

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