

AN EVALUATION OF URBAN-NATURE ENCOUNTERS IN LANDSCAPES OF
ISTANBUL



by
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AN EVALUATION OF URBAN-NATURE ENCOUNTERS IN LANDSCAPES OF
ISTANBUL

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ABSTRACT

AN EVALUATION OF URBAN-NATURE ENCOUNTERS IN LANDSCAPES OF ISTANBUL

Changing world conditions lead human beings' relationship with the nature, and thus, the landscape architecture approaches to continuously adjust to changes and to be updated. In the historical process, cultural landscape features have become dominant in the city, and there have been problems in establishing a connection between man and nature, where there is no trace of nature. The inadequacy and reality of green spaces in our cities has emerged. If the balance of nature cannot be ensured and ecosystems cannot be protected, the continuity of biodiversity and landscapes will not be ensured. A new design approach has become a necessity now. The thesis evaluates the potentials, obstacles and suggestions regarding the city-nature relationship in Istanbul. It aims to place the landscape approaches that need to be updated in the changing world conditions on a common philosophical landscape base. First of all, a literature review was made on the need and perception between human and nature. Examples of landscape architecture productions in historical processes have been researched. The perception of the city and nature, its relationship has been examined. The issues of urban biodiversity and climate change have been researched. The potentials, values and types of urban vacant spaces in the city were investigated. Four Natures Approach, which is one of the current approaches, has been examined. In the projects exemplified in various scales, the contributions of the restoration or protection of nature in the city have been examined. The second part of the methodology includes personal interviews with the experts. One expert was chosen from the representatives of different institutions who can take joint decisions and direct them on Istanbul. In order to create a healthy environment where long-term economic, social, cultural, biodiversity and ecosystem services can be met, it is necessary to start from a point. The process is a management job. It requires holistic behavior. It is possible to meet with nature again in the city with a positive attitude as a result of taking action with policies supported by.

Keywords: Vacant Spaces, Ecosystem services, Four Natures Approach, Biodiversity, Climate Change

ÖZET

KENT-DOĞA İLİŞKİLERİNDE İSTANBUL PEYZAJLARINA YÖNELİK BİR DEĞERLENDİRME

Değişen dünya koşulları gereği insanın doğayla kurduğu ilişki ve peyzaj mimarlığı yaklaşımlarında sürekli değişime ayak uydurma, güncellenme hali vardır.Tarihsel süreçte kent içerisinde kültürel peyzaj özellikleri baskın hale gelmiş, doğanın izinin olmadığı insan ve doğa arasında bağ kurmada sorunlar yaşanır bir boyuta gelmiştir. Kentlerimizde yeşil alanların yetersizliği ve gerçeği ortaya çıkmıştır. Doğanın dengesi sağlanamaz, ekosistemleri korunamazsa, biyoçeşitliliğin ve peyzajların devamlılığı da sağlanamayacaktır.Şuan yeni bir tasarım yaklaşımı ihtiyaç haline gelmiştir.Tez, İstanbul’da kent doğa ilişkisine ilişkin potansiyeller, engeller ve öneriler üzerinden değerlendirme yapmaktadır.Kent içerisindeki doğayı korumak ve artırmak için öneriler geliştirilmesini amaçlayarak, değişen dünya koşullarında güncellenmesi gereken peyzaj yaklaşımlarını ortak bir felsefik peyzaj althığına oturtmayı hedeflemektedir.İlk olarak insan ve doğa arasındaki ihtiyaç ve algı üzerine literatür taraması yapılmıştır. Peyzaj mimarlığı üretimlerinin tarihsel süreçlerdeki örnekleri araştırılmıştır. Kent ve doğa algısı, ilişkisi incelenmiştir. Kentsel biyoçeşitlilik ve iklim değişikliği konuları araştırılmıştır. Atıl alanlar kent içerisine doğayı geri kazandırmak için insan algısına hızlı etki edebilecek alanlardır. Kentsel Atıl Alanların kent içerisindeki potansiyelleri,değerleri ve türleri araştırılmıştır. Güncel yaklaşımlardan olan 4.Doğa yaklaşımı incelenmiştir. Çeşitli ölçekte örneklenen projelerde kent içerisine doğanın geri kazandırılması yada korunmasının sağlayacağı katkılar incelenmiştir. Metodolojinin ikinci kısmı ise, uzmanlar ile kişisel görüşmeleri içermektedir. İstanbul üzerinde ortak kararlar alabilecek, yönlendirebilecek farklı kurumların temsilcilerinden birer uzman seçilmiştir. Uzun vadeli ekonomik, sosyal, kültürel, biyoçeşitlilik ve ekosistem hizmetlerinin karşılanabildiği sağlıklı bir çevre oluşturulması için bir noktadan başlanması gerekmektedir. Süreç bir yönetim işidir. Bütünsel davranmayı gerektirir. Önce meslek disiplinleri,halk, yerel yönetimler, kullanıcılar tarafında algı geliştirilmesinin sağlanması, devamında kural koyucular tarafından desteklenen politikalarla eyleme geçirilmesi sonucunda pozitif bir tavırla kent içerisinde doğayla tekrar buluşulması mümkündür.

Anahtar Kelimeler: Kent boşlukları, Ekosistem hizmetleri, 4.Doğa Yaklaşımı,Biyoçeşitlilik, İklim Değişikliği

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LIST OF SYMBOLS/ABBREVIATIONS

BC	Before christ
Db	Decibel
CO ₂	Carbon dioxide
MIT	Massachusetts Institute of Technology
USA	United States of America
Km	Kilometer
ITU	Istanbul Technical University
IBB	The Istanbul Metropolitan Municipality
NGO	Non-governmental organizations

1. INTRODUCTION

Changing world conditions lead human beings' relationship with the nature, and thus, the landscape architecture approaches to continuously adjust to changes and to be updated. In the prehistoric period, human beings began their relationship with nature by simply feeding as a gatherer without touching nature. With the Anthropocene effect, a geographical period began, in which humans consciously or unconsciously thought that they dominated the world's entire ecosystem. Landscape architecture and garden art productions gave magnificent examples like baroque and topiary during such periods. Humankind had the desire to disproportionately emphasize 'I have made it' to nature and plants.

After such periods, the needs changed and productions of returning to nature such as English Natura began. With the rapid global changes in our period and the power of consumption, the landscape perception of cultured areas have become controversial. How to return to nature, what changes to be made have come into question. Urban people have been unable to establish a relationship with nature due to shrinking green spaces and design approaches. This has led to a disconnection between human and nature in rapidly developing cities and over time, the need for nature has become a deprivation in urban people. Climate change, psychological and health-related needs and the decrease in natural resources have made it necessary to reestablish the balance between the city, landscape and people. And consequently, it has become inevitable to create new perspectives and to update the design and business development processes.

1.1. AIM AND IMPORTANCE OF THE STUDY

Until today, people have desired to leave their traces in the choice of plants and materials in their production in the built environment. Cultural landscape features have become dominant in the city. However, it is no longer possible to progress with the approaches that do not contain the traces and the characteristics of nature. It is possible to list the related reasons under 3 items.

First; the reality of climate change is being experienced. Because of that, if the system does not change, it will no longer be possible to create livable areas in cities.

Secondly, nature has various inputs to the cities for ecosystem services. Since aesthetic concerns, not these inputs, are taken into consideration, nature cannot be utilized sufficiently in the cities. But, if the balance of nature cannot be maintained and ecosystems cannot be protected, the continuity of biodiversity and landscapes cannot be ensured.

And thirdly, in addition to the contribution of nature to the city, in some areas it should be left alone. When nature is suppressed in every part of the city, its negative effects appear. Currently, a new design approach has become a necessity and there are examples that improve the relationship between the city and the nature in international implementations and projects. Concerns have developed so as to leave nature as it is in the free areas in the city, other than the custom-built structures, while preserving their natural features or making small interventions.

The aims of this thesis study are to;

- Evaluate the reactions to these concerns, potentials and obstacles in Turkey.
- Search answers to the question of what the situation of natural areas, vacant space potentials and nature-human landscape relationship are in Istanbul.
- Search answers to the questions of what our philosophical situation is in order to protect and increase the nature in the city as it is and how far we can go with our current resources.
- Place the landscape approaches that need to be updated in the changing world conditions on a common philosophical landscape.

1.2. SCOPE OF THE STUDY

In the first chapter, there is an introduction, in which the aim and scope of the thesis are mentioned. In the second part of the literature research;

First, a literature review has been conducted on the needs and the perceptions between humanity and nature separately. The historical examples of landscape architecture productions, which were sometimes based on perception and sometimes on needs, have been researched. Through the evaluation of the disconnection between urban people and the nature, the perception and relationship of the city and nature have been examined. The issues of biodiversity and climate change, which are among the arguments of nature in the city, as

well as the potentials, values and types of Urban Vacant Spaces in the city have been examined. While talking about nature in the city, it was seen that a new nature, a 4th type of nature, was actually mentioned. This has led to a research of 4th nature approach through literature review. Considered from various aspects, cities are unique. However, they have similar aspects in terms of functions and formations. This leads to the fact that an experience obtained from one city shall support the studies on the others. Therefore, different vacant space project models with different contents in the cities from around the world have been under examination.

- Germany, Emsher Park Project:

It is an old river reclamation project and is one of the largest ecological projects planned in the city in the West. It is chosen as it provides benefits to the city in terms of ecosystem services and ecological aspects.

- Israel, Ariel Sharon Park Project:

It is a transformation project that took place after the old Hiriya garbage plant lost its function. It is the world's largest rehabilitation project in scale, where the recycling samples were used. It is chosen for the mentioned reasons.

- New York, High Line:

It is a transformation project of a railroad in New York that lost its function. The road was redesigned by following various disciplines including urban design and ecology. The project has become an icon of the American contemporary landscape architecture. After the construction of the park, the real estate value of the region increased. It is chosen for these reasons.

- Germany, Berlin, Südgelände Park Project:

The Südgeländ Nature Park in Berlin is one of the first accessible examples of industrial area transformations in Germany. The spontaneous vegetation on the railways that had lost their function created a natural urban landscape in Berlin. Urban spaces are defined as nature and wildlife areas. It is chosen for these reasons.

As a research method, opinions of experts with different experiences in the landscape architecture industry were asked for regarding these approaches.

According to the findings obtained as a result of the research, a common perception was developed from the eyes of planners, designers, suppliers, legislators and users, and a landscape evaluation was made for 'Istanbul', which is under the pressure of urbanization.



2. LITERATURE REVIEW

2.1. HUMAN AND NATURE

Human being is a living creature who can survive only in nature and whose relationship with nature consists of being an inseparable part of it [1]. Balance is an important element in this essential relationship model. Therefore, building superiority in their relationship will make them lose their ability to be intertwined and inseparable. But it is interesting that human is always the one who disturbs the balance. In fact, a balanced relationship will mostly enhance the comfort of the human beings, as both the problem creator and the solver.

2.1.1. Humans Needs and Relationship with Nature

Humans' need for and tendency towards nature is an impulse that arises from being a part of it. The term 'Biophilia' was first mentioned in the book "The Anatomy of Human Destructiveness", published by the psychoanalyst Fromm in 1973 [2]. Fromm refers to the aspect of the relationship between human and nature as a need and an innate feeling from the human perspective. If the experience and contact with nature at the spatial level can be balanced in urban areas, it will both meet the biophilic need and keep balance. The human-nature relationship is perhaps the most primary relationship because of being the basis of existence. When we consider the interaction between human and nature from the perspective of relationship the following questions appear: Does nature exist for humans? Or humans for the nature? In Pollan's book "Botany of Desire", in which he deals with the positioning between human and nature from a different perspective, this questioning is examined through the plant-human relationship [3]. He tries to make people realize that the activities that they think or aim to do for themselves in nature are actually a coincidental situation for nature. While he defends the idea that the relationship between human beings and nature involves a mutual game, he makes his sampling on a bee and flower. It shows the potential of the bee as the subject of the relation because of collecting pollen and nectar to make honey, and the flower as the object for providing its extract. In this scenario, human exists for eating the honey, bee exists for making the honey and flower exists for the honey itself. When we observe the process from a different perspective, the visible reality is that the

flower uses the bee to have its pollen distributed to the other flowers. Here the idea Pollan advocates is that the plants organize human beings just as they encourage the bees to make honey. But when the humans disturb the balance in their relationship with the nature by establishing superiority on it, they prepare their own demise. As an inference from Pollan's book, it is possible to comment that at the point where humans think they are the subject, they place themselves in the position of being a speck in nature. It shows that nature will renew and put its system in the long run in an order with or without human.

Kellert, on the other hand, describes the ways of relating to nature as follows [4]: Direct contact with nature, indirect contact with nature; places and the experience of places. With this approach, bringing green and blue to horizontal and vertical planes will increase people's contact with nature and regulate the health and efficiency of the environment. At the same time, it will create a living space for plants and animals, repair the ecosystem, and create a livable environment in the city. With the use of suitable, natural and edible plants, the design will increase ecological values and direct contact with nature. Indirect contact, on the other hand, is considered as a combination of controlled and directed organic factors that require intervention in buildings and open spaces within certain planning. Developing spatial experiences in landscape planning will increase the power of the relationship established with nature. As can be seen, the situation in landscape productions is a direct reflection of the relationship with nature.

2.1.2. Landscape Productions Relating to Human-Nature in the Historical Process

Humans' relationship with nature has created changes between being a constant subject and an object. Human beings have tried different ways to establish a relationship with nature in the transition from rural to urban life. Rather than being a subject or an object, they actually pursued a mutually balanced relationship with nature. The relationship between human and nature started with cultural influence. In the historical process, landscape production and planning have been shaped by the influences and stimulations established for different reasons in the titles of nature-human-city. The vital, cultural and economic conditions of societies and the climatic data and topographical features of the place include determining characteristics on the state of being a subject and an object.

Humans begin their first relationship with nature in the prehistoric period in the framework where they were foragers and did not have a changing effect on their environment. In that period, when there was no landscape architecture, it is highly probable that primitive people showed emotional loyalty to interesting forms in nature with different perception. With the Neolithic period, the question comes to mind: Is 'Agriculture' an example of landscape?

If cultivating means planning by hand, since 'Agriculture' is an attempt to culture the rural field by human hands, it shall be considered the beginning of Rural Landscape. At the end of the day, nature is encouraged to produce through planning. It is seen that the way human intervened in nature, which started with agricultural purposes, led to the emergence of a landscape around the first settlements that could not be called cities at that time, and led them to establish a balance in unity with it. The Hanging Gardens of Babylon is considered to be the most influential ancient work of urban landscape. King Nebuchadnezzar had the gardens built for his wife Semiramis, who yearned for the city and nature in the arid and hot desert climate of Mesopotamia. The historian Herodotus said, "Babylon surpasses any other city on earth in splendor [5]. According to Geographer Strabo's definition in the 1st century B.C., "Gardens consisted of cubic pillars rising one above the other. They were hollow inside and filled with earth so that large plants and trees could grow". That landscape production displays a magnificent planning in order to regain nature for people and the city. It is a masterpiece in terms of using climate data, topography, human well-being and culture, mirroring subject and object.

If we follow the traces of civilization throughout history; it is striking that the Andalusian Umayyad Dynasty, which was established in the Iberian Peninsula, made important contributions in the field of landscape as well as architecture.

Besides reflecting the climate, religious and social traditions, Granada Gardens, with the courtyard spaces, use of water, arches, geometric decorations and plant uses in its planning, are among the important examples of landscape approaches that complement with the architectural space. As a matter of fact, the Italian Renaissance gardens also found expression with the influence of the Andalusian gardens. Following the period of epidemics and wars in the Middle Ages, the Renaissance initiates the transition to re-establishing a relationship with nature also in landscape productions.

The Florence 'Villa Gardens' period emerged due to the deterioration of the city's health conditions. There is a period of change when the effect of economic power is clearly seen, with the wealthy families moving their villas and living spaces to rural areas and supporting the production of parks and gardens in the public spaces of the city. In this relationship formation, the depictions of writers such as Dante, Boccaccio and Petrarch in their works, their rural life stories and their handling of nature are also effective. This is because, literature and art always play a dominant role in human sensibility. Garden planning in Renaissance Italy was for human dignity and well-being. In landscaping, the need for an intuitive, proportional planning, climate data and conformity with nature is felt. Terrace plans suitable for the slope of the land and the use of evergreen plants with formal pruning are the characteristics of this period. The continuity of human-based period approach was determined by the welfare level of that period. As in industry, the search for efficiency in agriculture resulted in the Enclosures [6]. The right to cultivate agricultural land, which had been open to the peasants before, was abolished, the agricultural lands were consolidated and the landless peasants were forced to migrate to the city. In the industrial cities of the 19th century, vital and spatial problems that were not felt before began intensively. When the rapid consumption of resources created vital problems; the process of developing ideas on how to reclaim the urban ecosystem started and the concepts of balanced planning of open green spaces in the city and green infrastructure developed.

In the 19th century, landscape architect Olmsted had approaches to ecosystem services and well-being, environmental restoration, and comprehensive planning. By stepping into contemporary green infrastructure theory and practice, he developed a successful model in establishing the relationship of the city with the landscape. Olmsted emphasized that only size and good design are not enough for park planning in the city. He also mentioned the importance of interconnection of the residential areas and the parks around them. What he aims to propose here is a green corridor.

The "Emerald Necklace" project in Boston designed by Olmsted is a good example of nature conservation, environmental awareness and green infrastructure theory. The Emerald Necklace project connected the natural areas with the green corridor it formed, and resulted in a landscape created with ecological knowledge, designed for water management in the form of corridors (Figure 2.1).

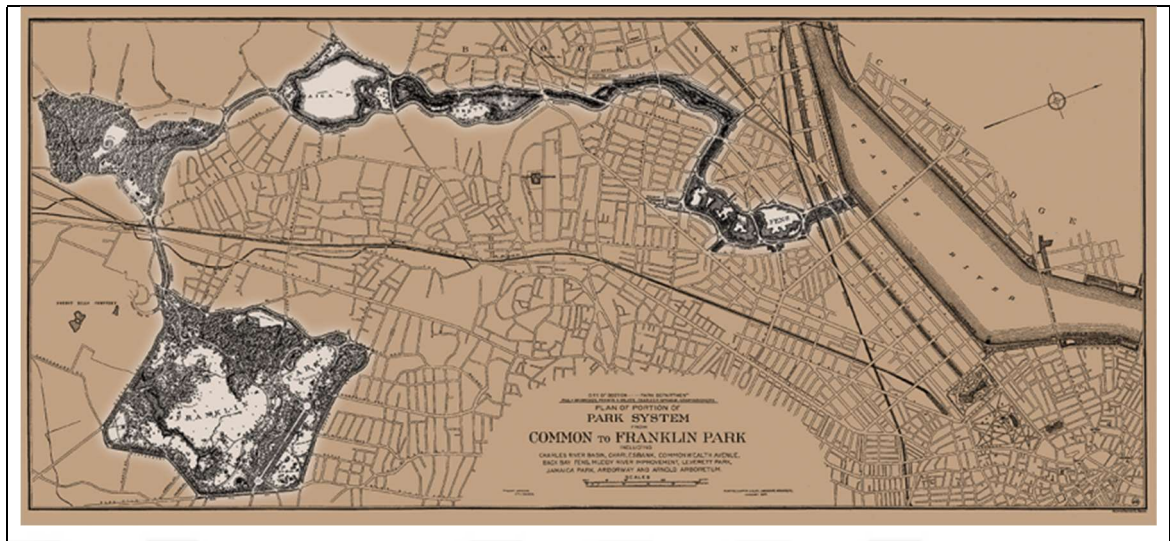


Figure 2.1. Frederick Law Olmsted and the Boston Park system (1992) [7].

In the 20th century, Howard was the one who brought the most realistic solution to the crisis of his time in England [8]. He wanted to change the social environment of the workers living in the cities and the peasants living at the countryside. Howard, with the idea of 'Garden City' (Figure 2.2) that he proposed, built a model for the society to regain their health. He once again reminds us the healing feature of nature.

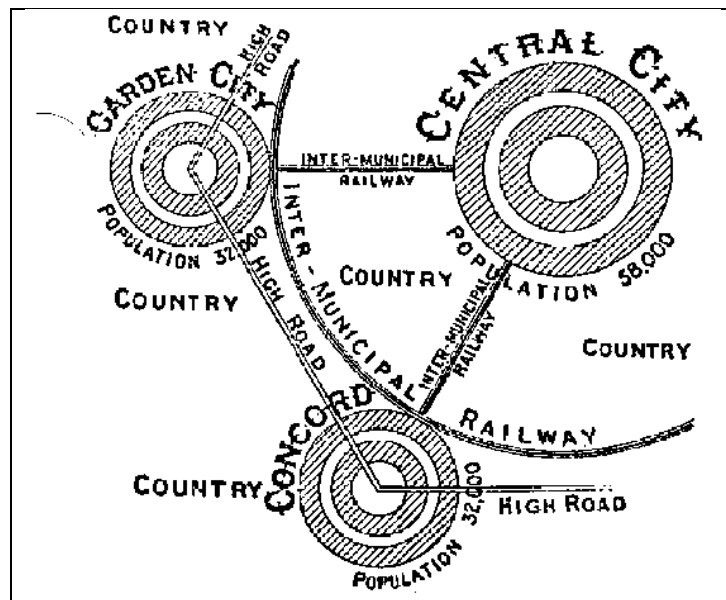


Figure 2.2. Concept sketch of Ebenezer Howard's garden city [9]

While creating the Garden City model, Howard was influenced by the political movements of the period, and socialism and anarchism intellectuals. Kropotkin and Marx's approaches

to urbanization and the countryside are influential in his planning. The biggest problem Howard tried to address was the rural-urban opposition. He explains this under the triple magnet diagram. Each of the magnets exemplifies different life options.

In the first, the Victorian town has both vitally negative and economically advantageous features. In the second, the negative aspects of country life due to the economic depression and social deformation, as well as the positive features such as natural beauties, clean air and healthy conditions are discussed. The third magnet is called town-country and covers the positive features of both the countryside and the city (Figure 2.3).

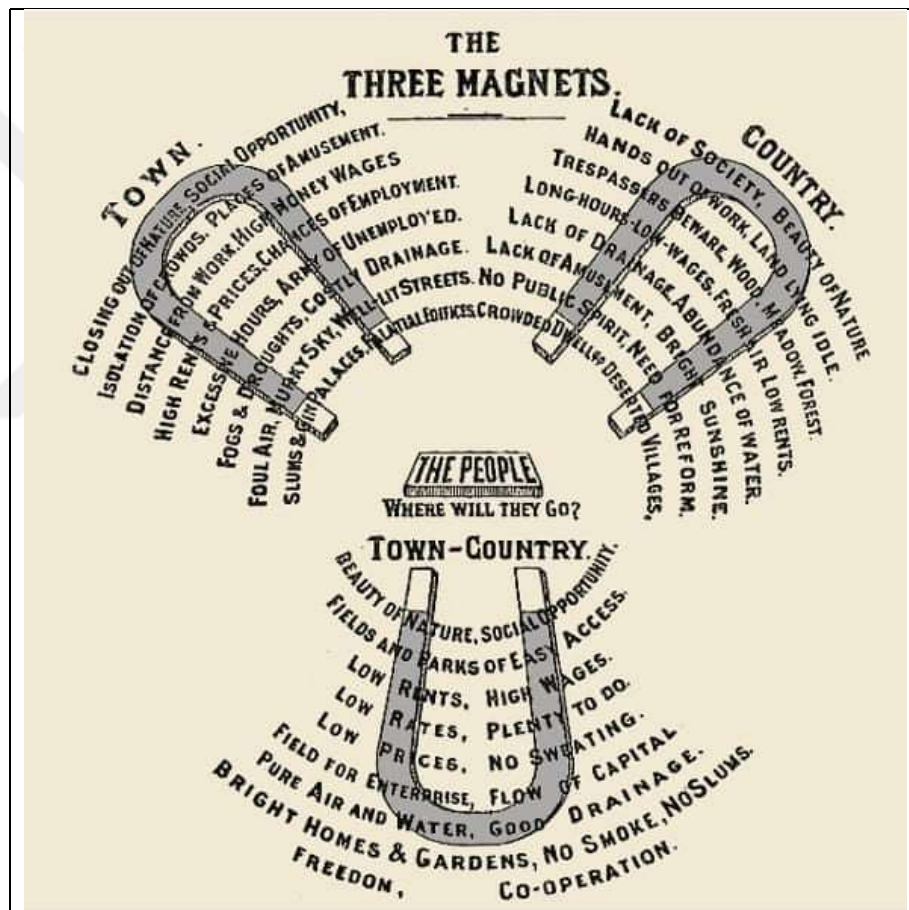


Figure 2.3. Howard's "Garden Cities of Tomorrow", 1902 [8]

Howard's goals include isolating technology from within the city, making the soil abundantly productive, and properly routing buildings for sunlight and heat. The concept of green belt first emerged with Howard's garden city example for haphazardly built environments in industrialized cities. He proposed a green belt around the town in order to limit the development of the city, to meet the recreational needs and to include agricultural areas.

In the 21st century, ecological-sociological transformation and sustainability-sensitive planning are encountered. Productions were made in order to change the function and eliminate urban congestion with small and systemic constructs.

The High Line [10] train viaduct project in New York is a public space project created by transforming the unused, elevated industrial railway line into a park, with the conversion design criteria. (Figure 2.4).



Figure 2.4. High Line example transformed to urban landscape [11]

The High Line was formed by converting the old elevated industrial rail line on the west side of Manhattan into a sightseeing park. It was reintroduced to urban life as a public park and urban promenade with its landscape elements. It is a project with urban memory value. It also makes one feel the awareness that the preserved iron piles are an important part of the city's history.

The effects of economic level differences are observed both in the Renaissance 'Florence Villa Period' and in the England of the Industrial period. While the masses whose economic situation was weak due to class differences in the society were stuck in the city, it is seen that other individuals who were in economic comfort had the luxury of breathing in nature.

When we reach the 21st century, unfortunately, while establishing a relationship with the urban-rural landscape, the economic class difference continues to be decisive.

Changing conditions and triggers in all historical processes disrupt the balance of urban/rural landscape and human relationship. Rehabilitation, renewal and recovery were also maintained by updating the relationship established with nature.

In today's metropolises, it is observed that people move away from nature and begin to destroy it. In this process, human has ceased to be a subject and has become an object of life. With the mental awareness created by the pandemic, people want to return to nature again. This process caused them to question what human did for what, where and how human wanted to live. This situation can be a new opportunity both in terms of professional disciplines that give people a way of life and in terms of the nature with which they interact. Today, sustainable urban designs have started to give many examples. The most important point here is that the city and its surroundings are the scene of productions in which the balance of nature and urban identity will not be disturbed in new developments and interactions.

As Foster stated, the most appropriate designs to achieve a balance between human and nature are those that can integrate social, technological, aesthetic, economic and environmental sensitivities [12].

While urban life is updated day by day; Questions such as “What do we have?” and “What do we need?” come to the fore. It is important for cities to determine their own values and conditions. The continuity of urban memory, green and agricultural production depends on the protection of ecosystems consisting of interacting disciplines. Since ecosystems cannot be established overnight, their protection and sustainability are also very valuable. The longing for ecological life, the disappearance of the natural landscape among high-rise buildings, the migration of agriculture from the city have led to the need to develop different landscape parameters in cities in order to establish sustainable lives. The question “What can we do in the city?” has found an answer by green roofs, terrace gardens, permaculture

gardens and edible landscape areas. Rural-urban concepts have begun to be re-interpreted with a holistic view and productions to meet the needs of today's people have been put forward with examples of urban landscapes. In the last 2 years, our living and socializing spaces have changed with the reality of Pandemic, and our urban planning criteria have been updated. In this process, people who miss the nature as well as their own nature continued to seek new methods to establish relationships.

The mentioned productions bring a new landscape architecture approach with each new definition of "nature" in the 19th century and later in the discipline of landscape architecture.

2.2. URBAN AND NATURE

Urban areas are living spaces where residents spend most of their time. The life quality of the people living in the city is directly related to the urbanization activity and the quality of the urban area [13]. Urban areas are living places where anthropogenic effects such as natural resource use, fossil fuel consumption, waste population and transportation are intense depending on population density [14]. The perspective that cities host 56% of the world's population and that this rate may reach 70% by the middle of the century [15] creates concerns for the sustainability of natural areas and resources. Urbanization and human activities create pollution on natural areas where people meet their vital needs such as food, water and clean air [13]. Over time, ecosystems in the city begin to disappear with the pressure of urbanization [16]. Individuals who are estranged from nature and who are not aware of ongoing activities that harm nature lose their environmental awareness over time. As both the source and the affected person of urbanization, the relationship that people establish with their environment gains importance. It is suggested that due to this situation of the human being, who is the source element, deformation occurs in their relationship with nature [17].

The policies implemented by the city administrations for social welfare, the awareness of non-governmental organizations, the planning approaches of the professional disciplines (Architect, Landscape Architect, City planning, etc.) that design living spaces should be supportive on the urban nature, ecosystem problems and their negative effects on human health [18]. Many approaches can be adopted to reduce the damage caused to the urban ecosystem due to urbanization such as:

Smart growth approaches where natural resources are used effectively;

Regenerative design approaches that integrate the cultural and ecological environment [18];
Biomorphic design approaches formed to reduce the pressure of urbanization on the ecosystem [19];

The biomimicry approach that exemplifies the natural system efficiency [4];

Biophilic design approaches [20] for restoring damaged natural areas in the city.

It is important to reconsider urban design and planning approaches and update productions in order for people to restructure their relationship with nature in the city they live in. When human defines their place in nature and ecosystem correctly, unhealthy blockages between environment and human will be resolved. In addition to many benefits that increase the physical quality of the urban space, such as maintaining biological diversity and natural cycles like water and carbon in the urban system, reducing the effects of hard ground, regulating microclimate, reducing pollution and reducing the urban heat island effect, green and blue infrastructure is also important in terms of meeting recreational needs of the citizens, creation of livable and walkable environments and supporting a more active lifestyle. In line with this importance, green spaces have become an important research area that many environmental sciences such as environmental engineering, landscape architecture, urban planning, urban design and architecture have been dealing with for the solution of urban problems from past to present [21].

Urban areas have a great impact on human health and productivity. Cities need to offer an efficiency that will not result in breaking away from nature while urbanizing. In this respect, it is important that green and blue are brought back to the cities in their nature, with healthy infrastructures.

2.2.1. Urban and Biodiversity

Biodiversity is a huge capital potential globally. The diversity and variability of ecosystems and species are considered as sustainable benefits. The concept was first discussed at the conference in Rio de Janeiro in 1992. Subsequently, it has been treated as a target or purpose in conservation strategies [22]. According to Çepel, biodiversity is; “The diversity among

living things in an ecosystem, the richness of an ecosystem in terms of living species, the diversity of both species and genetics in the habitat” [23]. Biodiversity is an evolutionary legacy. Human actions negatively affect ecological heritage and loss of species losses is a proof of it. The number of extinct species in the last 200 years is more than the figure 65 million years ago [24].

Because cities have high biodiversity, agricultural areas, coastal and wetland landscapes, their ecosystem productivity is high [25][26]. But today, anthropogenic effects have progressed faster than the self-renewal power of natural environments. This progress and pressure negatively affected biodiversity and suppressed the number of species. As human activities change use of land, biodiversity is at risk globally [27]. As the sprawl of urban areas increases, biodiversity in urban peripheries is indirectly endangered [28]. Urban areas have a very complex structure [29]. Cultural areas that people need and the open and green areas that allow wildlife form the natural and cultural structures of cities. Urban areas are not yet devoid of biological richness [30]. Many researchers state that there are many species that have adapted to urban life and become part of the urban landscape [31]. It has been stated that some urban areas are richer in biodiversity than rural areas [32].

In 2011, Kowarik expresses the richness of urban biodiversity as;

- Heterogeneous nature of the urban habitat,
- Excess of exotic species,
- Socioeconomic factors’ strengthening biodiversity [33].

Studies conducted in Germany have shown that urban biodiversity is richer than in rural areas. It has been concluded that urban areas are also richer in terms of endangered species [34]. The urban environment is ecologically highly dynamic. It provides opportunities for the development and maintenance of biodiversity. At the same time, the presence of biodiversity in the city positively affects the quality of urban life [35]. As cities become denser, urban green spaces can become small and fragmented areas. According to recent studies, it has been determined that urban nature increases the livability of the city. It has an integrative effect on ecosystem services, health, psychological well-being, and social sharing [36]. It is the provider of many ecological services such as biodiversity, microclimate and pollution control in the city. Vegetated areas provide shade, reduce heating costs, provide

wind control, reduce its impact and provide flood control. At the same time, they absorb noise and pollutants emitted from motor vehicles. They block 30 db of noise per 100 meters. Road trees, on the other hand, reduce more than 75% of particulates and sulfur dioxide [37]. Green areas where biodiversity is supported in the city also meet the need for community health and social unity. They provides- an economic contribution by increasing the value of the region they are located at.

They also offer sustainable landscaping with low maintenance cost. Supporting plans that increase urban biodiversity causes the citizens to meet their nature needs and increase the ecological quality of the city. Besides the purpose of recreation, biodiversity in urban areas should be the main aim of the administrations for a sustainable future. In a study conducted in England in 2003, it was determined that approximately 24.3 million adults use city parks in the spring and summer months [36]. Areas that support biodiversity such as canals and creeks in the city are perceived as neglected and unsafe areas.

The concept of parks and green areas in the city is known as areas that are regularly cared for and decorated mostly with cultured plants. Changing this perception is the revision of management plans and their implementation as areas where diversity of species is supported.

Cities that are successful in urban landscape planning are those that provide the relationship of individuals with nature through qualified natural areas at different scales. In this respect, the Helsinki 'Viikki District' master plan is successful. In order to protect biodiversity and to bring urban people closer to nature, green areas are allocated in 7 zones. Protected areas as nature reserve areas are defined by agricultural landscape areas, green corridors between residences and ecological planting [38]. The Netherlands also has a city plan that preserves its green infrastructure and supports biodiversity. There is an ecological green infrastructure habitat network plan at the sub-region scale. The Biotop strategy that supports ecological services is also important for Berlin [39]. Landscape character analysis provides an understanding of the conditions and qualities of the region for habitat creation [40]. Caring for local features and ecology creates opportunities for biodiversity. To give an example from Florida, landscape architects make planning in public areas with the local plant guides.

Richmond Park, London's largest open public space, is internationally recognized for its scientific and preservative content. The presence of many old trees in the park also shelters many special fungi species and invertebrates. The source of all environmental problems is

the city. Biodiversity and the city have not yet been fully addressed together. Many opportunities can be provided if biodiversity can be improved in cities. Addressing urban development and area planning together with biodiversity is among the objectives of the European Union Biodiversity Action Plan [41]. If well planned, even small green spaces in the city can offer ecosystem benefits for people.

2.2.2. Urban and Climate Change

Climate Change is described in the United Nations Framework Convention on Climate Change as the change in climate observed as a result of the deterioration of the composition of the global atmosphere, which develops because of indirect or direct human effects within a comparable time period [42]. Cities have begun to change in the 21st century due to urbanization, rapid population growth and people's need for more energy [43]. And the rapid change in cities resulted in improper land use, which eventually led to resource deformation due to the intensive use of soil, water and land resources. Deterioration has begun to negatively affect the quality of life in the cities in the long run [44]. Climate change in cities; urban heat island and extreme weather events affect the health of the urban population. Coastal cities are being damaged by rising sea levels. Disasters such as floods due to irregular rains threaten water availability and lead to food crisis [45]. Although climate change is a global problem, its impact is felt mostly in the cities.

In order to identify the problems and propose solutions, the two concepts should be considered together. While designing cities that are resistant to climate change, it should be examined in two ways [46]. The Turkish equivalent of the concept of “resilience” is to be flexible, durable and resilient. Resilience in ecology is to show resistance to rapid recovery in response to a damage[47]. In cities that are resistant to climate change, 41 negative effects on ecology caused by excessive and misuse of basic natural resources (land, water, energy, oil, raw materials) are minimized. It also improves and contributes to concepts such as health, environment, society and work to increase the quality of urban life. The capacity of the city thus becomes compatible with the regional, local ecosystem [48, 49]. Green areas in the city are natural carbon converters. Founding green infrastructure and increasing the surface area will reduce carbon emissions, prevent the urban heat island effect and air pollution.

Permeable surfaces and green infrastructure applications that allow more water to reach the soil should be increased. Thus, water management shall be ensured and existing water resources shall be evaluated correctly (8). Copenhagen, the capital and most populous city of Denmark, has been working on adapting to climate change for many years. Past occasions in the city required them to take measures in the context of climate change. Today the city is considered one of the most sustainable and greenest cities in the world [50].

Mitigation and adaptation phases are required in the fight against climate change. Green spaces are one of the processes of the struggle. In the mitigation process, urban green spaces use the power of plants. During the growth phase, plants remove CO₂ and other gases out to the atmosphere by keeping them in their leaves, stems and roots. While the leaves have a shadow effect during summer period, they reduce the cold effect as well as the greenhouse gas emissions emerging from fuel and energy during winter. If urban green spaces are in the adaptation phase, urban heat reduces the island effect. It affects the conservation and continuity of biodiversity [51].

The city in Richard Register's "Ecocity Berkeley: Building Cities for a Healthy Future" aims to create places for wetlands, natural areas, animal and plant communities as a part of natural life for people. It is stated in the book that the cities which are not planned in this way shall experience environmental problems.

The main goal in ecological cities is to provide natural life with green corridors and generations, and to combat climate change by increasing green areas [52]. Plants that are existent in the urban environment or that developed adaptation have been called urban plants since the 19th century. Urban plants are plants with developed ability to adapt to urban climate and urban pressures. Some plants on the other hand were negatively affected and removed from the environment. Adapted native plant species are the strongest factor that enhances the richness of the urban flora.

2.2.3. Urban Vacant Spaces

The concepts of vacant space and urban void are generally discussed with negative interpretations and connotations such as undefined, lost, derelict, uncertain. Because the concept has very broad meanings, it has been expressed differently in different disciplines

and countries, and there is no certain global definition for it. The reason for it is that, throughout history, the processes and identity of each city have been different. Reasons such as property status, location in the city, scale, borders, environmental relation, planning effects should be considered as factors that change the conceptual meaning [53]. Still, the vacant space can be defined as a piece of land or a building that has not been used for two years or more [54].

The American Planning Association has examined vacant space as two concepts in the Planner's Dictionary. According to the California Planning Roundtable, vacant spaces are areas that are not actively used for any purpose. According to Leesburg, VA., they are pieces of land on which there is no development [55]. In the second half of the 20th century, the subject of examining the relationship between cultured areas and spontaneous natural areas came into the agenda of urban designs. Generally, post-infrastructure and post-industrial areas were considered as urban vacancies and urban vacant spaces. Defining these vacancies has gained importance for spatial continuity in cities [56]. These spaces, which did not have any function, attraction or production, were expressed as spaces that created disconnection because they were not included in or associated with urban planning. Vacant spaces, which rapidly increase due to economic and political decisions, create unsafe spaces and these empty spaces result in accumulation of garbage [57]. They also cause many negative and uncontrolled urban problems such as vandalism, crime and illegal dumping places [54].

The fact that they are undefined, abandoned and derelict allows people to use them uncontrollably and thus they are perceived as spaces that cause environmental pollution. For this reason, they do not appear to be attractive areas for investment projects, but rather as problem areas that need to be dealt with.

2.2.4. Values of Urban Vacant Spaces

The value of void and vacant spaces has started to find a place as a solution proposal in landscape design plans with the influence of land art. Although vacant spaces can have negative features in the city - considering the potential value they contain, they offer important opportunities for the sustainability of the city.

They meet the need for spaces in the cities where there is lack of space as result of rapid growth. Vacant spaces provide extraordinary opportunities for the remodeling of the deteriorated and improperly used city centers [56] because they are very diverse, spread all over the city and can be both a problem and a resource for city administrators [57]. In order to use vacant spaces, which are strategic places, it is essential to first understand the problems and potentials they have [53]. Understanding and re-evaluating vacant spaces is important for the preservation of the urban environment and the quality of life. For this reason, city authorities, designers and planners should look for more alternative ways to reuse the vacant spaces in the city [58]. When the situation of vacant spaces in the city is evaluated, these areas are considered as a resource by reclaiming, reshaping, revitalizing, providing opportunities for people from different cultures to come together [59] and providing opportunities for social and ecological transformation [60].

Vacant spaces provide most of the ecosystem services associated with the existence of green field cover, such as recreation, runoff reduction and food production [61]. Therefore, it plays an important role in both the structure and function of the city. It is important for landscape architects to explore, discover and experience the increasing number of these areas, to find solutions to the urban problems they cause, and to upgrade urban life [62]. Planning and re-transferring urban void and vacant spaces to urban green life will awaken the desire and confidence of people to use them more actively.

Bowman and Pagano introduced the 'elastic concept' explanation for vacant spaces. According to Bowman and Pagano, although conditions and demands vary, every city has unused, abandoned and vacant lands. While these spaces contain growth potential in one city, they may symbolize hopelessness or the change of glorious days in another one. Stories of cities somehow emerge from these spaces because they convey different feelings and experiences to us. While for the cities with growth potential, vacant and empty spaces can be evaluated as a potential to expand the vision of the city, they include degraded environment for small or shrinking cities.

In fact, in both city models, the management of the vacant spaces shows the necessity of an effective intervention [57]. Contrary to the confusion in the literature, the spontaneous and untouched aesthetics of post-industrial and post-infrastructure spaces have been noticed in other branches of art and the artists have exhibited the value of these areas through their productions.

American artist Robert Smithson's "Monuments of Passaic" (1967) photographed vacant pipelines, pumping facilities and production areas that lost their function in the old industrial campus in New Jersey. Smithson strikingly emphasizes these areas as the impermanence of what people think they own [63]. Landscape and Nature are both material and medium in land art. In her article, Funda Baş Bütüner mentions about artists' questioning on 'absence' in their productions that focuses on their local history and the process in nature with examples [64].



Figure 2.5. Double negative (1969-1970) [65]

Double Negative” (1969-1970) is described as a sculpture created by emptiness [66]. The value created by the gap created by the cuts on the surface, which was realized by nearly 240,000 tons of excavation near Nevada, is exhibited with a sculptural emphasis. In addition to the works carried out in areas far from the residential areas, there are also productions in the urban environment. “Time Landscape” (1978) by Alan Sonfist in New York is one of them. It is a piece of work that aims to remind of the nature lost in the city and to emphasize that nature has a history. He planned a 14x61-meter space at a highly urbanized area in New York City, using local plant species. His aim was to represent the times of the region before the foundation of city and to remind what the local was.

Time Landscape has become a natural shelter for both migratory birds and other creatures in time. It is an example of a successful urban landscape on a small scale, where urban people experience their true nature in the city [67].

2.2.5. Types of Urban Vacant Spaces

Vacant spaces can emerge in different areas. The places where they mostly appear are transportation lines, suburbs of the city and transition zones between morphological textures. In the city center, even if rarely, they are seen in adjacent and individual areas [60]. Different types of vacant spaces have different physical properties [58]. In order to understand the vacant spaces, it is important to reveal their potential and benefit for city people as well as identifying their role and seeing if they support the integrity of the city.

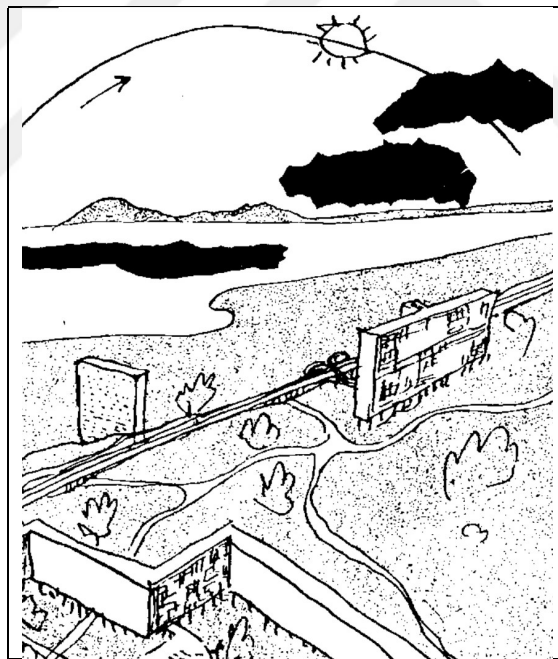


Figure 2.6. Le Corbusier's City Governed by the Course of the Sun Drawing [56]

We can list the types of vacant spaces under 8 headings;

2.2.5.1. *Dead Space*

Dead Spaces are temporary construction sites such as degraded, abandoned, bare areas, vegetated wastelands, abandoned buildings, and excavation sites. They consist of multifaceted problems in the city [68]. About 'Dead Space', Coleman talks about the need to

move away from the concept of problem or bottleneck and recreate the function. He mentions that innovative niches can be found for monoculture deficiencies and urban ecosystem stability. He argues that the liberty between entrepreneurs and local governments shall offer positive opportunities for production.

2.2.5.2. *Lost Space*

Trancik questions the following in his book “Finding Lost Space”: What exactly is lost space? And how is it different? Is it taken out of the positive urban area or from the area where it is found? In fact, the lost space is unstructured landscape.

In his theories, Trancik argues that if integration is achieved, our chances of success in urban designs will increase and mentions the importance of integrating new elements with old elements in order to express the time concept. He exemplifies the integrated urban design between the old and the new as the introduction of cars into the urban landscape is resolved without compromising the outdoor quality for pedestrians. Although the automobile-pedestrian separation might be appropriate in some cases, in most modern cities work and living spaces are widely separated, creating enormous transportation problems and abandoned urban centers. He argues that if integration could be achieved, lost space would revitalize the city with a mixed functional and cultural use of life and workplaces. Thus, lost outdoor spaces have the potential to transform into social arenas for social and physical interaction [69].

2.2.5.3. *Toads*

Every city has temporarily abandoned toads areas. These are random, scattered parcels of unused land of varying sizes and shapes. Some consist of abandoned structures and some of them are vacant lots. They were either used efficiently in the city for a long time or they were not used at all. They are mostly damaged areas by industrial and commercial use. Abandoned warehouses, factory facilities, houses, large housing projects, playgrounds, railway and canal lines, mines and dumps can be exemplified [70].

2.2.5.4. *Derelict Land*

They are areas that have been heavily damaged by industrial and other use functions where efficient reuse is impossible without improvement [70]. Industrial globalization had profound effects on the world over the past decades. Traditional industrial zones and numerous industrial facilities were produced all over the world. Over time, they lost their

functions and could not meet the original productions. However, each problem bears an opportunity. Transformation of post-industrial facilities into multifunctional landscapes should also be considered as an opportunity [57].

2.2.5.5. *Idle Land*

Vacant lands that had been designated for residential, commercial or other use within urban growth boundaries. Idle land is land that was cultivated but is now in a state of disuse; abandoned land; fallow land [71].

2.2.5.6. *Drosscape*

It is a design pedagogy developed for the reuse of industrial areas that lost their function in the old city centers with horizontal planning [72].

Drosscape is an urban design framework that looks at urbanized regions as the waste product of defunct economic and industrial processes. The concept was realized by Alan Berger, professor of urban design at MIT, and is part of a new vocabulary and aesthetic that could be useful for the redesign and adaptive reuse of 'waste landscapes' within urbanized regions [72].

According to Berger, the drosscape refers as a concept that the decay or waste can be "drained" or reboused and reprogramd for adaptive reuse. Berger continues to explain that this phenomenon has emerged from two fundamental processes. First, Drosscape is a byproduct of rapid urbanization and horizontal urban expansion. Secondly, these areas are the result of dissolved economic and production systems for city planners, architects and other design professionals, drosscape can offer another creative way to imagine the design of space and landscaping in a city. According to Berger, "reusing this wasteland as adaptive is considered one of the biggest infrastructure design challenges of the twenty-first century."

In addition to industrial growth, these wastes were born without industrialization, and the second replaced the old technologies with new ones... "creative destruction" or the obsolete has been eliminated. This concept also forgives the spread, explaining that industrial growth and success in urban centers have led to this inevitable horizontal movement and that it is not at its core bad. Again, because we are trained to fear the spread and to despise the landscape of the people, it will require a new way of thinking. Once the wastewater landscapes are determined, it will be the work of entrepreneurial design professionals to integrate and reuse these areas into the urban world [73].

2.2.5.7. *Brownfield*

Brown areas are defined as unused or abandoned industrial areas in the USA that affect urban growth, development and sprawl [74]. With this point of view, America has started to create isolated areas within cities with the development and spread of cities. Their economic recycling to the city was considered by planning new landscape designs in abandoned, unused areas such as storage areas, military facilities, old airports. [72].

In England on the other hand, these areas are defined as previously developed lands occupied by buildings or groups of buildings. Today, the brown areas that were abandoned for some reason have changed their functions and are being used to respond to the different demands of the city [75].

In each country, interpretations and definitions are made according to their own needs. The greatest potential of brown areas is the possibility of their transformation into green areas. If their transformation into urban open green areas can be planned, they will produce many positive results such as urban health and increasing the quality of life.

2.2.5.8. *Spontaneous Green Spaces*

Spontaneous green areas are areas that reproduce spontaneously in the city, without any design and by the spontaneous combination of plant species that best adapt to the environment. Many wildlife populations have declined during the urbanization process. In the process, there has been a disconnection between the lives of the inhabitants of the city and the wild life. As people try to relate to nature in the city, their interest in spontaneous areas is increasing.

A field survey in Beijing parks was transferred to a web-based survey. In the survey, the perceptions of 1,015 city inhabitants towards spontaneous vegetation in city parks were questioned. As a result, the relationship between the perceptions of the participants and their sociocultural patterns was investigated. It has been concluded that professionals give more value to areas consisting of spontaneous plant species compared to non-professionals.

Traditional flower beds and lawns are still favored by the public. Professionals prefer spontaneous plant communities, medium flower density and delicate textured areas [76].

Today, where natural resources are consumed excessively and the ecological functions of urban green areas are in danger of disappearing, interest in spontaneous areas is increasing.

As the current designs include sustainable and low operating cost maintenance, spontaneous approach designs can be beneficial [77].

2.3. NEW APPROACHES TO URBAN NATURE IN VACANT SPACES

In landscape architecture projects, productions need to be updated in terms of historical aspects, spaces and needs. Evaluation of vacant spaces in the urban landscape creates an opportunity in this sense. The nature, which is lost in the city with cultured landscape productions, finds the opportunity to be redefined with the discovery of urban vacant spaces.

This way of rediscovering and relating to nature has also changed the beautification and aestheticizing of landscape designs. The use of the spontaneity of the landscape has created positive approaches at the level of contact and relationship with nature.

2.3.1. Four Natures Approach and Examples from the World

Ecologist Ingo Kowarik said that 'Nature of the Fourth Kind' is an art that emerges spontaneously in urban areas, vacant and empty spaces [78]. Landscape architect Gilles Clement, on the other hand, developed a broader view of areas such as abandoned lands, roadsides, forest edges, which he described as marginal areas. He described them as sacred spaces. He argued that these areas, when captured with pioneer species, would become privileged areas for urban biological intelligence. He mentioned that the urban green space texture will be potential areas for self-renewal and development of the ability to explore [79].

As a result of all these innovative discussions, urban vacant spaces and vacancies were considered as areas that emerged due to the cyclical relationship between human and nature. These areas, such as derelict lands, industrial areas, transportation networks, which were initially cultured by humans and seized by nature, were named as 4th Type Nature. Today, more than half of the world's population lives in cities. Rethinking the relationship between nature and cities is an important necessity for the protection of urban nature and wildlife [80]. All these approaches will increase the willingness to develop and support conservation approaches beyond the cities, and will affect the perspectives and attitudes towards nature in general [81].

Kowarik deals with four types of nature. These four species differ in terms of human interventions, landscape heritage and environmental characteristics. The nature of the first type includes pristine ecosystem remnants found in the urban environment, which are often not included in the urban matrix, such as old forests and wetlands. The second type of nature represents pristine, rural cultural landscapes, such as farmlands that result from transformation of land uses by humans. The third type of nature includes urban green spaces such as cultivated gardens, parks or tombs. The fourth type of nature emerges spontaneously as a new urban green space in vacant lots or urban industrial areas despite severe transformations. It can be shaped by chance by human power, but it can also evolve into wild urban woodlands [78].

Kowarik mentions that naturalness can be defined quite differently with the 4th Type Nature approaches. For this, it follows one of two perspectives [82]. In the first, it refers to historical criteria that have hardly been touched by humans. In the second, he highly relies on nature ecosystems that can recover even after undergoing irreversible changes as a result of their self-organization ability. Although the conceptual differences are clear in the two perspectives of naturalness, they must be accepted by the society and communicated to large masses.

Many conservationists rely on historical ecosystem measures to describe wildlife as well as naturalness. That's because historical ecosystems often contain more rare and endangered species than urban habitats.

However, despite being different, urban ecosystems can provide a high level of self-organization. Ingo Kowarik thus mentions that urban people can experience natural processes in their habitats [83]. These spaces, which are thought to be the areas where people can have the least contact with nature, are actually the wildlife fields in the city with the original plant and living species they host. The only nature today's urban people know is the urban nature they see in urban green spaces. As stated in the report prepared by Deutsche Umwelthilfe, the cultural landscape is dominant in the city in Europe and therefore the people experience nature through the urban landscape and do not know much about the real wildlife [84].

Human experience on wildlife and nature, which will be restored by the use of empty spaces in the city, is very important. But their existence in the city has a meaning and value beyond

that. They have potential for stormwater management, heat island reduction and urban biodiversity. Empty and vacant spaces should be prioritized in order to be brought into the city as diverse spatial descriptions and plans [85]. 4th Type Nature designs do not only focus on how ecosystems will change. At the same time, designs are made for human use and changes in populations, laying the groundwork for new understandings of heritage.

Landscapes designed with four natures approach are based on ecological values. In order to facilitate dynamic and process-oriented design in 4th nature landscape design, it is necessary to be open to unpredictability and surprises, new forms and processes that shall emerge. Design practices that embrace the ecosystems and vegetation that develops spontaneously within the 4th nature understandings also create spaces that meet cultural and social needs. As a result of these approaches, landscapes could be made more accessible and suitable for human use. Emerging practices shall also advance the practice of landscape architecture, as they will provide social uses that are more committed to cultural significance and more reconciled [85].

Although it may seem contradictory, access to the wilderness through cultural interventions has helped the concept to gain acceptance, [78]. In this context, the value of the fields in any scale and context should not be underestimated. In other words, the target is beyond adding new green areas to the city or increasing the quantity of the green spaces. The important issue to be addressed here is the creation of common grounds that will support the improve urban development and landscape together. At this point, the definitions of "urban nature" and "wildlife area" are quite inspiring.

The critical issue in the reflection, acceptance and maintenance of both definitions in practice is the establishment of collaborations from different fields. Although the discovery of nature and wildlife in the vacancies emerged as a society-oriented process, it is documented by scientific studies, politically supported, and continues with education and activities to raise public awareness. In the light of these discussions, an issue that should be emphasized as a final word is that guiding strategies can be developed through "urban nature" and "urban wild life" in the return of voids or architectural / urban design practices that have been incomplete in the cities of our country, which are under intense construction pressure [82].

2.3.1.1. Germany Emscher Park

The Emscher River is located in western Germany. Emscher Park is one of the largest ecological urban projects planned in the West. It was formed by the transformation of Germany's most dense industrial region [86]. The park encompasses 17 cities. It was planned with "Garden City" concept as it covers industrial buildings and residential areas. The area, which used to be operated as a steel and coal factory, lost its function in the 70s. The natural environment there was greatly damaged [87].

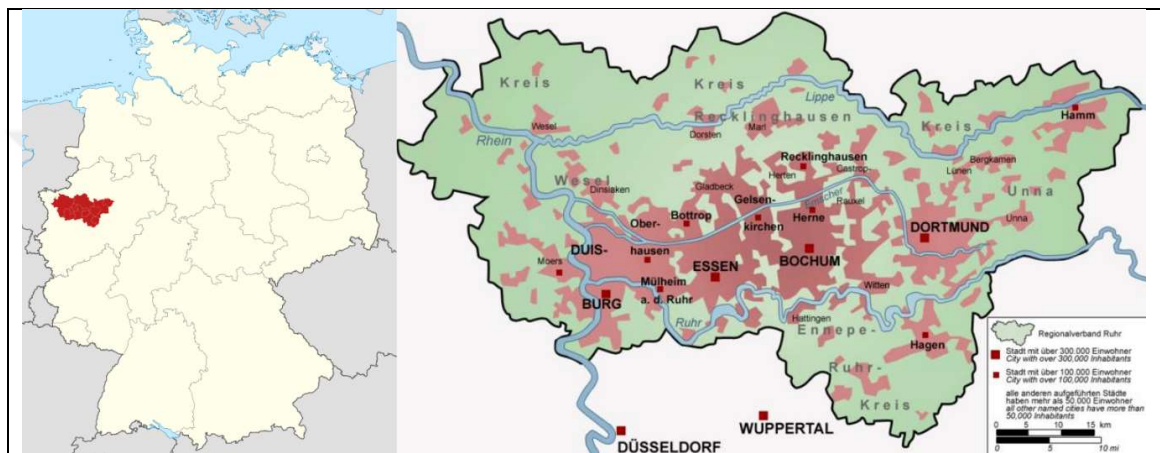


Figure 2.7. Geographical location (left) and 17 cities in the region (right) [88]

The river was a sewer before the regeneration process. Afterwards, it was used as a basin for industrial wastes. Following the rehabilitation process, the river was reintroduced to the city by revealing its ecological potentials and using local landscape features [89]. During the rehabilitation works of the river, leak control and flood issues were discussed, and renewal plans were realized by using geographic information systems. Additionally, ground surveys were made, the existing dams were raised and drainage systems were added [89]. The park is designed by Peter Latz. The project to be implemented was selected by an international competition and public involvement was cared.

All of the plans were proposed under 3 strategies.

1. Regional open space systems,
2. Single (independent) projects,
3. Exhibition parks. [90]

While creating open space systems for users, corridors were formed for the north and south axis. This allows people to visit the structures with cultural and historical texture. In the

exhibition parks, triangulation points have been created. These areas have been chosen both for visual harmony and for the users to rest. It consists of 24 independent projects, involves natural habitat planning, housing production, pedestrian and bicycle path planning, lighting and landscape designs (Figure 2.8).



Figure 2.8. Landscaping and regional transition areas of the Emscher Park project [91]

The Emscher Park Project strategic development plan has 5 objectives

- Protection of unused and abandoned landscape areas,
- Constructing fragmented and divided areas as a whole,
- Defining the reserved areas as parks by zoning,
- Providing benefits on a local and regional scale by proposing sustainable, long-term plans,
- Conservation of open green spaces within the regional park system. [92]

In addition, 5 strategies have been adopted in order to achieve the targets;

- Research and discovery,
- Spreading and scattering,
- Profile planning,
- Creating a network system,
- Unifying quality. [92]

As a result of the planning; the green network created in the project has been combined with the regions, The Emscher river has been rehabilitated, industrial buildings and landscape that lost their function have been evaluated together and functioned, existing

residences have been rehabilitated and the industrial heritage has been preserved. As an ecosystem service, a sustainable stormwater management model has been introduced for the city. [93]. River rehabilitation and flood protection are planned [89].

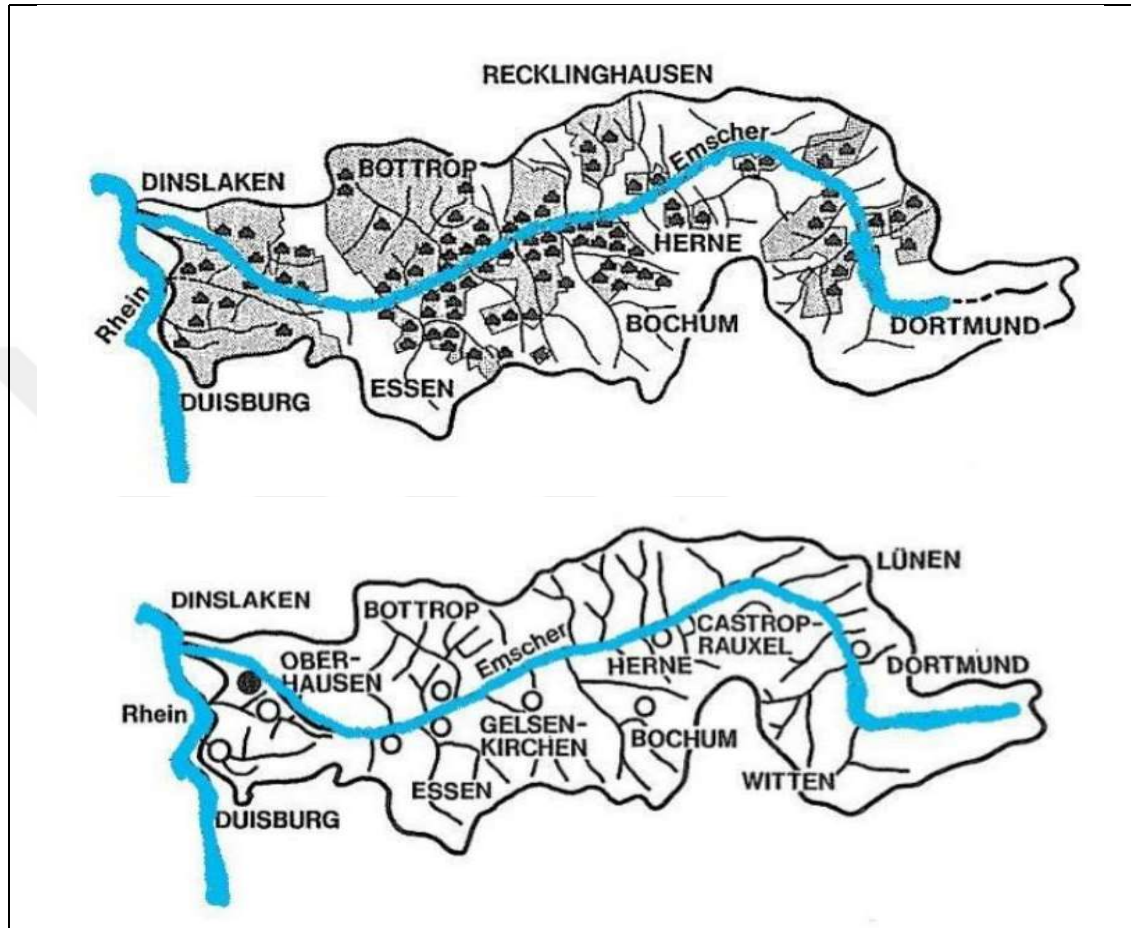


Figure 2.9. Pollution degree of cities in Emscher river (above) and pumping stations for rehabilitation (below) [89]

Within the project, “Blue-green infrastructure strategy” has been implemented and an “integrated water management” has been developed to provide an integrated water cycle [94].

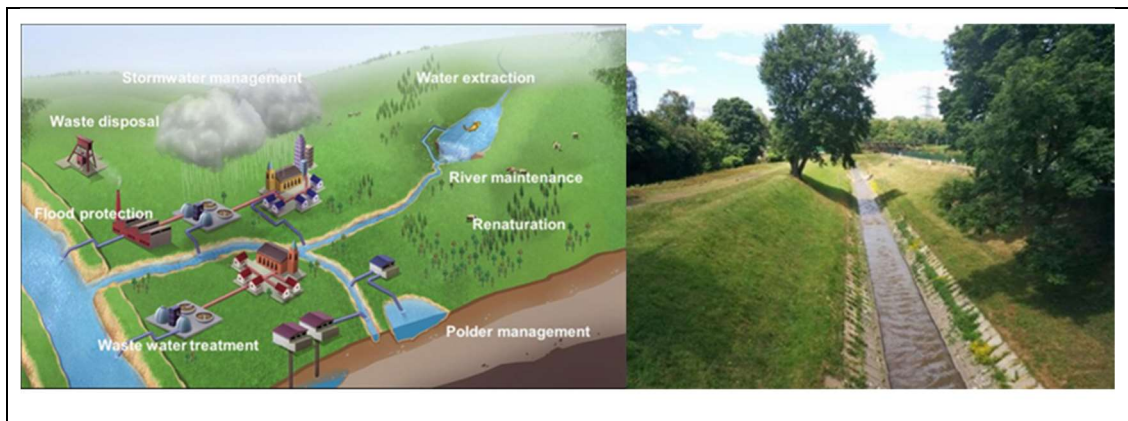


Figure 2.10. Diagram of the integrated water method provided in the Emscher river (left) and a tributary converted into a waste channel (right) [89]

In the Emscher Park project, 7 green corridors on the north-south axis connecting 17 cities were proposed by using the existing waterways and open green spaces at the same time (Figure 2.11).



Figure 2.11. Green corridors connecting cities [95]

Within the scope of the Emscher Park project, a “biotope network system” has been established (Figure 2.13) [96]. The elements that make up the urban biotope system have been strengthened by determining the “ecological hotspots” [93].

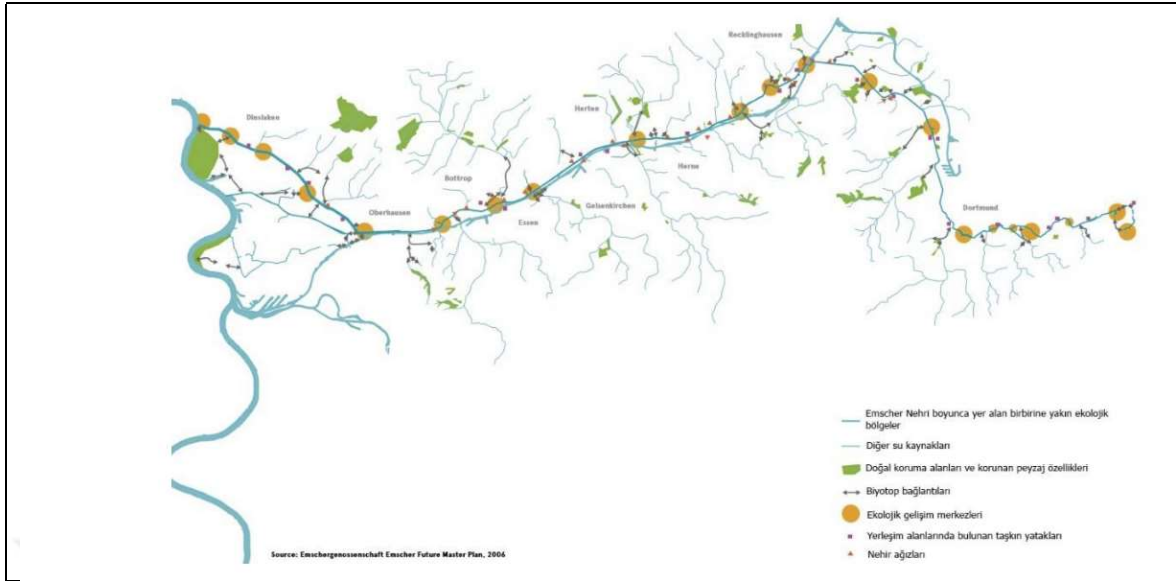


Figure 2.12. Habitat mesh system along Emscher [89]

Another ecological approach of the project is “the production of living spaces” [93]. Biologically destructed areas have been recycled through vegetative design and special species brought from different countries have been reintroduced to the field (Figure 2.13).



Figure 2.13. Examples of plant design for the Duisburg-Nord landscape park [97]

Ecological design has also been emphasized in Nord Landscape Park, designed by Peter Latz. Particular attention was paid to the use of sustainable and recyclable materials. The “Piazza Metallica” square has become the symbol and a focal point that hosts many events in the park. It was aimed to create an industrial form with 49 recyclable iron square plates used in the square [98]. Before the renovation process, some iron plates were used to cover the casting molds located in the center of the park. These iron plates corroded over time as

a part of the natural process and the corrosion still continues. This connects users with the past and also allows them to see “blast furnaces and wind heaters” [99].

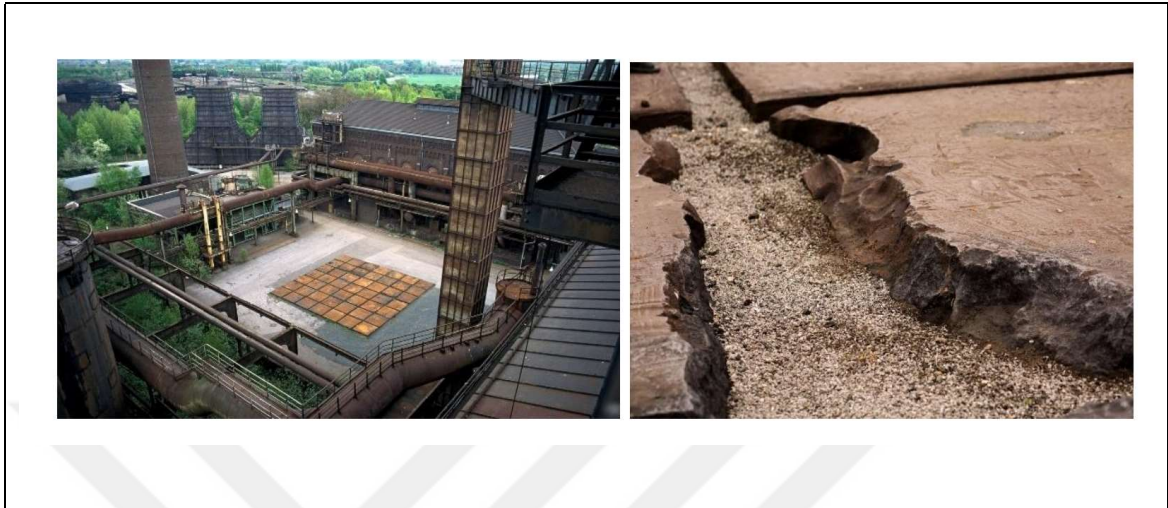


Figure 2.14. Recycled "**Piazza Metallica**" square in Duisburg Nord Park by Latz + Partner [89]

2.3.1.2. Israel Ariel Sharon Park

Ariel Sharon Park is the largest scale rehabilitation project in the world. It is located in the wide plain of Ayalon. Park is located between Ben Gurion Airport in Tel Aviv, Israel and the Ayalon Highway, on the old Hiriya dump located along the river Ayalon. The Hiriya garbage facility was closed in August 1998 after collecting 25 million tons of waste.

Three types of recycling facilities have been established on the mountain foothills.

- Green waste facility producing mulch,
- Waste separation center,
- Construction materials recycling facility

Its designer is German landscape architect and urban planner Peter Latz. He planned every detail, down to the plant selection, himself.



Figure 2.15. Park Ariel Sharon, Tel Aviv [100]

The project intends to protect the town against flooding in winter. It is a public park close to nature. The heart of the park was formed by excavating 7 million cubic meters of soil. The desire was to develop a 'Wide Wild Valley', reminiscent of a primeval forest within the huge basin. At the planning stage, terraces were created with agricultural patterns built from excavation material. This constitutes the second element of the landscape character.

The lakes, resting areas and promenades created between the valley and the terraces constitute the human corridor element of the park. With the new view of Mount Hiriya, a multi-storey park has emerged [100].



Figure 2.16. 8 Incredible parks created from landfills [101]

The wetland garden on the visitor center side is no ordinary. Papyrus, water lily and other plant species form a self-contained system which provides purification thanks to the bacteria that develop in their roots. It breaks down the toxins in the siphoned water and daily waste from the Hiriya mound. This system purifies the water to be used for irrigation.

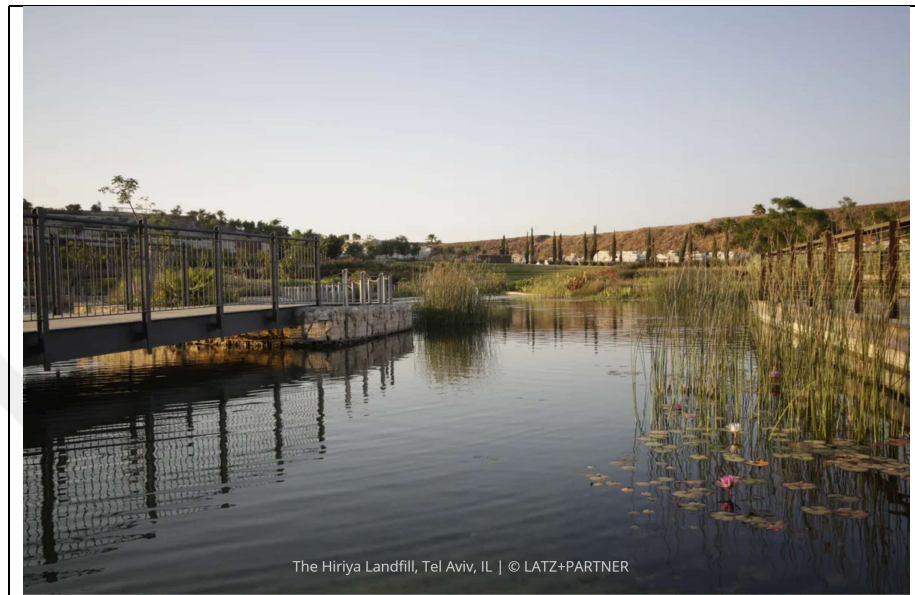


Figure 2.17. The Hiriyan landfill [102]

All production at the visitor center, including the building itself is recycled. Furniture and accessories have been designed through recycling of tires, boxes and bottles. In addition, the park functions as an educational area with its activities and workshops. It aims to create awareness in order to change behavior patterns in the name of environmental protection and revitalization [102].

2.3.1.3. New York High Line Park

The High Line Park is in New York, on the west side of Manhattan. It is a 1.45-mile long (2.33km), elevated linear park and a greenway on the Central Railroad ledge, which was a former railroad track.

The project is designed by James Corner Field Operations, Diller Scofidio + Renfro and Piet Oudolf Consortium. The abandoned station area has been redesigned as a "living system" with the foresight of many disciplines including urban design and ecology. The High Line project was inspired by the 2.9-mile-long Promenade plantée (tree-lined walkway) completed in Paris in 1993.

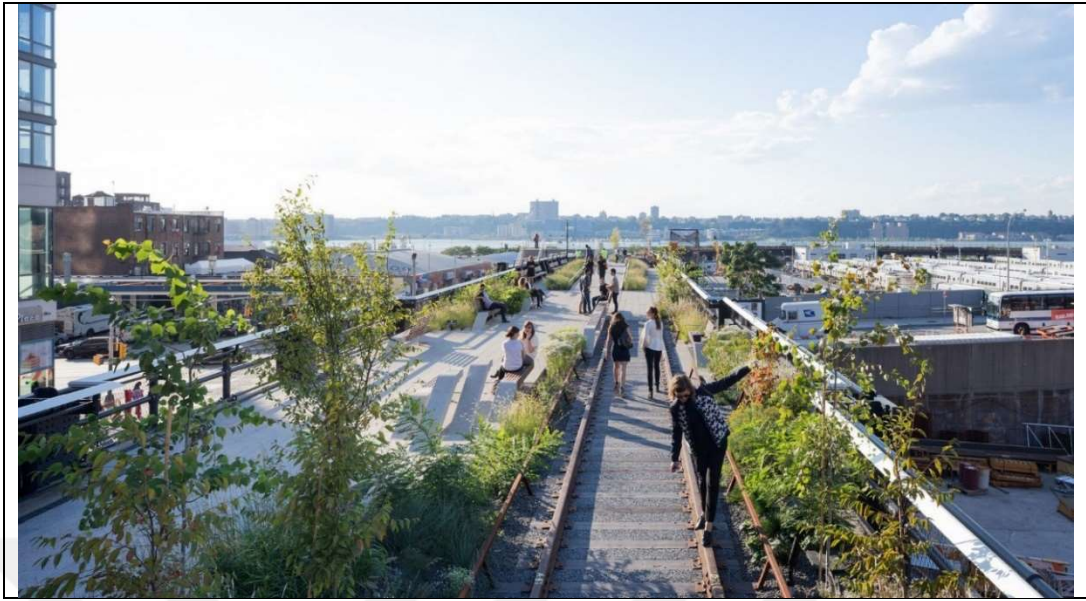


Figure 2.18. New York High Line protected railroad tracks [11]

The park is built on the viaduct portion of the Central Railroad on the unused West side line. The initiative was launched in 1999 by Robert Hammond and Joshua David by establishing a social responsibility organization called 'Friends of the High Line'. New Yorkers made donations and spent efforts to support the concept. In 2006, the works to transform the railway into an urban park began. It was gradually opened in 2009, 2011 and 2014.

The final section of the park opened on June 4, 2019 as the Morgan General Mail Facility at 10th and 30th Streets. It has been an icon of the American contemporary landscape architecture since it first opened in 2009. The success of the High Line has set an example for and inspired other cities in the United States. After the construction of the park, the touristic feature of the region advanced and the real estate values have increased.

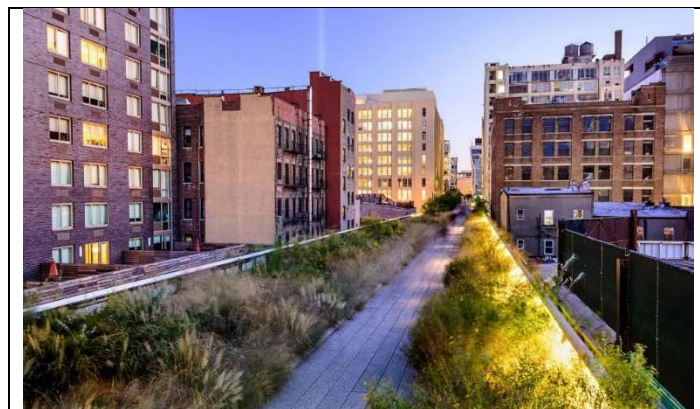


Figure 2.19. New York High Line walkway [11]

The most interesting feature of the park is the use of natural plants that grow spontaneously [103]. James Corner has brought a different perspective to landscape design in his project. Corner said, "By opening the pavement, we let the plants seep in. The intention is to create an outlook of colonizing asphalt areas with plants through a kind of seam and blend [104]. Rail extensions and connections are planned like traces from the High Line's initial use purpose and are intended to remind of old usage [105].

The plant curator of the park is the Dutch Landscape Architect, Piet Oudolf. He created a palette of 120 species of coneflowers (*Echinacea spp.*), Blazing Star or Gay Feather (*Liatris sp.*), clumps of grasses, meadow herbs, scattered sumac, incense herbs and native herbs. A grove of birch species is planned at the end of Gansevoort Street for shade planting. The Ipe wood timber (*Tabebuia sp.*) used for the benches was brought from a managed forest approved by the Forest Stewardship Council to ensure biodiversity, water resources, sustainability and protection of ecosystems [106]. According to James Corner, the design of the High Line project can be characterized by a sincere movement choreography.



Figure 2.20. New York High Line circulation area [103]



Figure 2.21. New York High Line converted old rails and integrated into the design [103]

2.3.1.4. *Germany Südgelände Park*

The destruction, reunification and transformations that Berlin has experienced throughout history have radically affected the landscape, texture and infrastructure of the city and activated its vacancies. Urban vacancy is a unique city that has been adopted in the planning of nature and wildlife areas, adopted in daily life and has become specific in urban development strategies [107].

As a result of the division of East and West Berlin between 1961-1989, the border wall zone created vacant spaces in the urban borders (river edges, railway, etc.).

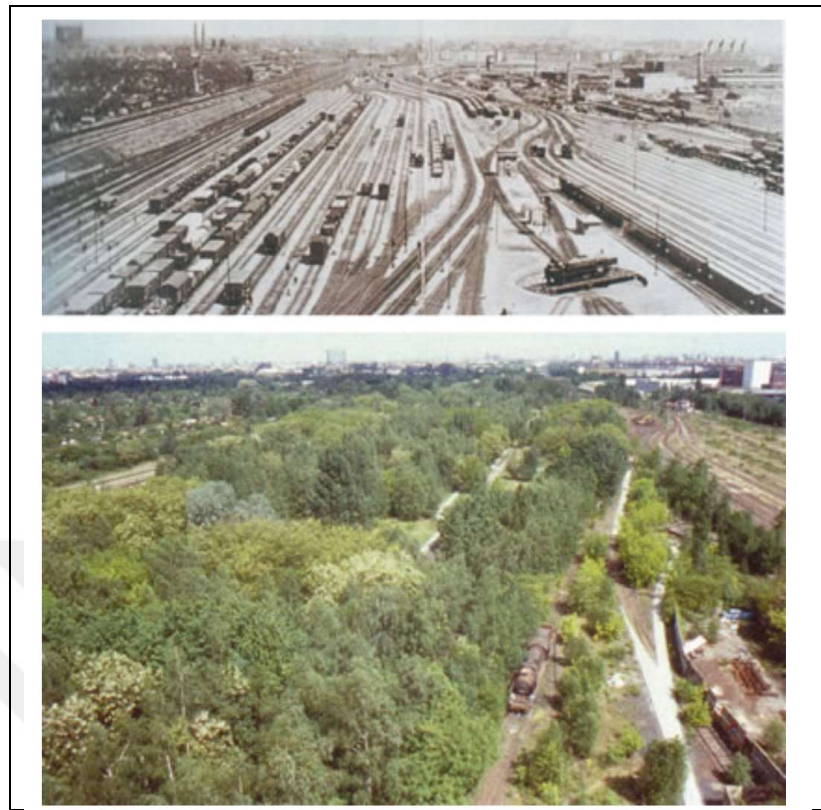


Figure 2.22. Developing green texture along the Sudgeland railway, 1935 [108]

The reunification and the removal of the wall created a city with large natural areas in the center [109].

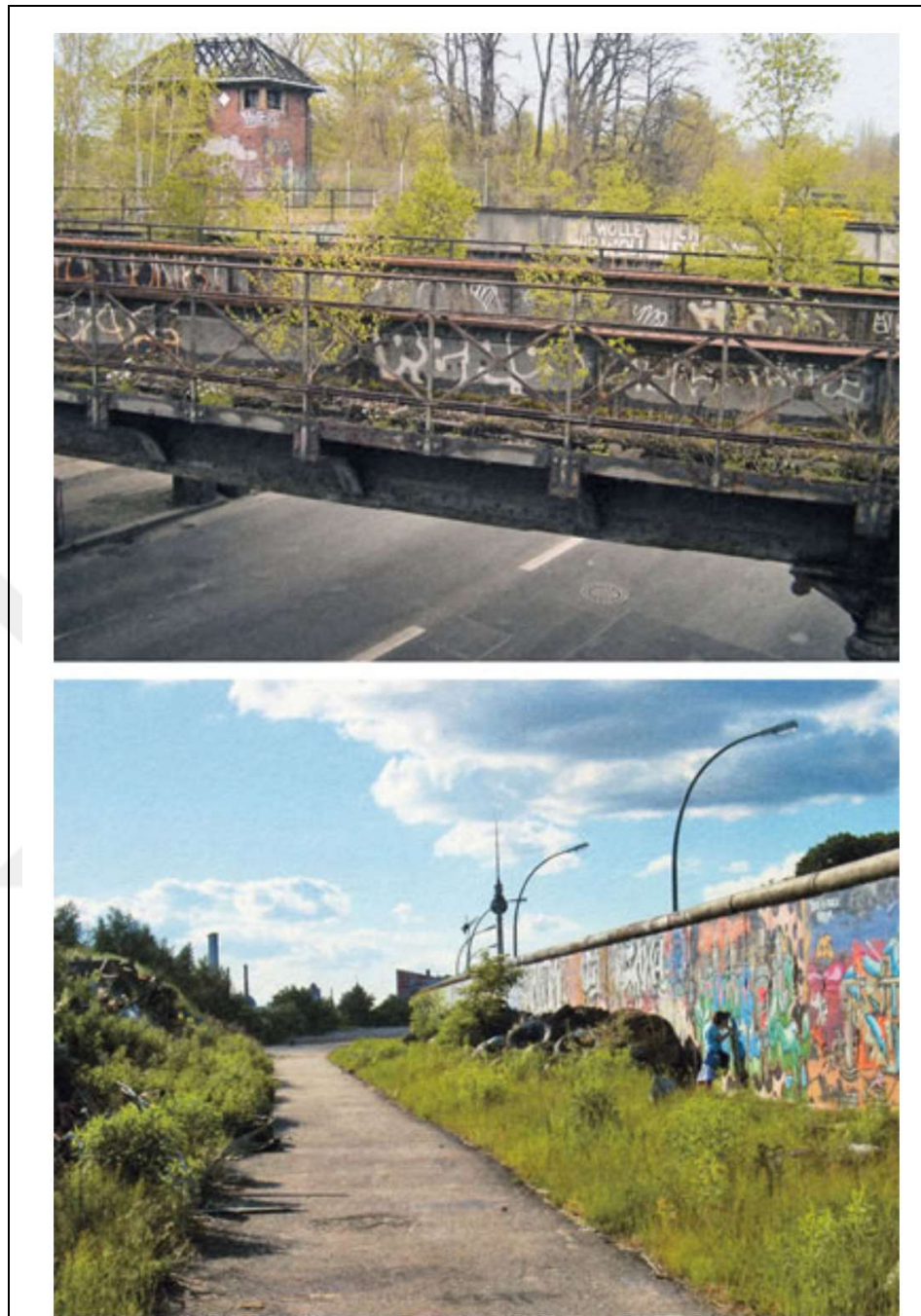


Figure 2.23. Sudgeland inactive railway bridge in the city (above), spontaneous landscape along the Berlin wall (below) [110]

The railway zones within the city are the most prominent areas of the urban nature. Between 1945 and 1989, the use of railways belonged to East Berlin due to the political situation. Limited West Berlin expeditions left the railways as vacant spaces [111]. The vegetation that developed spontaneously on the railways that lost their function created a natural urban landscape unique to Berlin.



Figure 2.24. Sudgeland nature park [64]

Südgeländ Nature Park in the south is one of the first accessible examples in Germany where the industrial area has been transformed into the city as a natural recovery. It covers an area of 18 hectares. It is defined as an 'urban wildlife area' park where railway tracks, art and nature coexist [112].



Figure 2.25. Sudgerland nature park rail infrastructure [64]

The park is designed by Kowarik and Langer. According to the designers, it includes many cultural layers, as it is an area maximum affected by human activities [111]. Spontaneous nature also has a cultural layer. The designers have set up their general approach in the planning of the park in a way that allows the relationship between culture and wildlife to develop partly under control and partly spontaneously. Different zones have been proposed in the park. In some areas, the wild vegetation has not been interfered with, and in some areas, maintenance works have been carried out to provide control. A unique design concept has been developed to protect the plant and animal species that prefer to live and live in the old railway area [64]. Circulation is provided by a raised metal floor approximately 600 meters long for circulation in the nature protection area.



Figure 2.26. Elevated pedestrian circulation platform within the nature reserve [64]

The park, which is located between the lines where train services continue in its current state, is an example of an 'urban nature' experience. Art objects were included throughout the circulation (Figure 2.23).



Figure 2.27. Works of art symbolize a shift of values [78]

The park, which can be easily accessed from the suburban line, offers programs that include activities in the fields of ecology, environmental protection and nature. It diversifies the urban landscape infrastructure of Berlin by creating an experience and learning environment on the perception of nature in the city [84].

Table 2.1. Examples of scaled urban natural landscapes

PICTURE	EXAMPLE PROJECT NAME	SCALE	THE SERVICES IT PROVIDES
	EMSCHER PARK / GERMANY	REGIONAL SCALE	Natural preserves Habitat mesh system River rehabilitation Blue-green infrastructure strategy Green corridors connecting Biotope network system Ecological design
	ARIEL SHARON PARK/ISRAEL	CITY SCALE	Urban Parks Parkways and Boulevards Natural preserves Blue-green infrastructure strategy Waste separation Green waste facility
	HIGH LINE PARK /NEW YORK	SITE / BUILDING SCALE	Linear Parks Green Streets Tree Canopy
	SUDGELANDE PARK / GERMANY-BERLIN	AREA SCALE	Natural preserves Green corridors connecting Urban Parks Urban Forest Urban Wildlife Area

2.3.2. Evaluation of Urban Nature Relationship

In the historical process, people's relationship with nature has passed through many phases. It is healthy at first. Over time, the human-nature relationship, which deteriorated in cities due to the Anthropocene and its effects, had negative effects. The loss of biodiversity, inadequacy of ecosystem services and the negative psychological effects of the perception of not being able to relate to nature have rendered cities inadequate for being a livable place for people. It has become necessary to update the landscape productions in the cultivated areas. The way for cities to become resilient is to re-establish a healthy relationship with nature.

In the historical process; The balance of need and relationship between nature and human has been emerged and Landscape productions related to human-nature relationship have been changed. In the 19th century, Olmsted drew attention to the ecosystem services and environmental restoration issues for the city and introduced a green infrastructure and green corridor proposal. In the 20th century, Howard proposed the idea of 'Garden City' for the regeneration of an unhealthy society. In the 21st century we live in, planning has started for the need for ecological-sociological transformation and sustainability. Different transformation projects have been produced in various scales that have lost their function. The projects started to be embellished with new approaches such as the four natures approach. It was observed that the productions were always based on the necessity of protecting and revealing nature again in periods when the balance in the nature-human relationship was disturbed.

In the continuation of the historical development, the relationship between city and nature was altered through. The necessity of protecting and restructuring nature in the city for cities. The results of cities whose biodiversity is supported with protected nature become resistant to climate change and anthropocene effects have been investigated. The vacant spaces were investigated. The reason why we examine vacant spaces is the potential to offer a practical perception of nature to urban people at various scales. Structured projects in these areas have the potential to reintegrate nature into the city.

Projects of different scales were designed .The vacant spaces potential of each region and the services offered different approaches to the cities. It is important in this respect to examine empty spaces. Since there will be areas that will attract the least attention of the urban people and where they can react the least, starting from the empty areas will be effective in every city scale and area use.



3. MATERIAL AND METHOD

A literature review was conducted on human and nature needs, interactions and landscape productions in the historical process, the city, the need for nature, new approaches to urban nature and examples from different regions of the world.

Professional and academic experts from different positions in the landscape architecture sector were selected.

Personal meetings were held with selected experts and their opinions were taken.

The findings were synthesized.

3.1. METHOD DEVELOPMENT

3.1.1. Expert Opinions

The second part of the methodology included one-to-one interviews with experts.

These interviews had five goals:

1. Getting their opinions on updating the productions regarding the changing nature ,
2. Obtaining the problem data that the experts think for Istanbul according to their own expertise,
3. Collecting suggestions for Istanbul regarding the changing nature,
4. Obtaining vacant space evaluation suggestions by the experts according to their own expertise,
5. Having a word to say to the future for natural landscape productions in the city of Istanbul.

3.1.2. Selection Criteria for Experts

A single figure was selected from the representatives of different institutions who could take and direct joint decisions on Istanbul.

Opinions were received from representatives of universities, public institutions, non-governmental organizations and metropolitan municipality on this subject. The specialists that the author decided to consult are:

Table 3.1. Table of stakeholdes

STAKEHOLDERS	NON GOVERNMENTAL ORGANIZATION	ACTIVIST	PROJECT OFFICE	ACADEMICIAN	FOUNDATION OFFICIAL	LOCAL GOVERNMENT OFFICIAL
	Union of Chambers of Turkish Engineers and Architects Chamber of Landscape Architects 2.President	Nature Educator	Co-Founder Ds Architects	Professor Istanbul Technical University	General Manager Tekfen Foundation	Urban Ecosystems Manager Istanbul Metropolitan Municipality
Yasin Otuzoğlu	√					
Cihan Erdönmez		√				
Deniz Aslan			√			
Hayriye Eşbah Tuncay				√		
Dori Kiss Kalafat					√	
İbrahim Dedeoğlu						√

Yasin Otuzoglu was interviewed because he is President of the Chamber of Landscape Architects. Different perspectives were taken on both legal regulations, bottlenecks, potentials and industrial evaluations.

Cihan Erdönmez was interviewed because he is a natural educator and a street weed activist of Istanbul. His opinions on the advantages and acquisition suggestions of nature-based approaches for Istanbul, based on the need for nature, the perception of the city and people were questioned.

Deniz Aslan was interviewed because he is an office partner who designs large-scale landscape projects. Their approach to the natural and local in their special projects was questioned. At the same time, his opinions on the concerns of the protection of natural materials in designs were received, since he is a jury member in competition projects.

There are four universities that have Landscape Architecture departments in Istanbul, two of them are state and the other two are foundation universities.

Istanbul Technical University has the most students, has the highest acceptance score and runs an active program. Mrs. Eşbah Tuncay is Professor at Istanbul University. At the same time, he specializes in rainwater and wetland management. Her professional approach to

perception management and changing nature from the educational perspective was evaluated.

Dori Kiss Kalafat was interviewed because she is a foundation representative and she is also a foundation manager who attaches importance to the relationship with nature in her productions.

The reason of interviewing İbrahim Dedeoğlu is that; local governments are institutions that will carry out first-degree practices in the protection of urban nature and green spaces in a metropolis like Istanbul and raise public awareness. They will contribute the most to the approaches to raise awareness and spread it first. In this sense, Istanbul Municipality has initiated a restructuring under the titles of Green Istanbul, Wild Istanbul, Play Istanbul and Ecosystem Services against climate change and current problems. Ecosystem services is the unit that will generate the most data for the holistic approach with nature among these approaches. For this reason, a meeting was held with the representative of the unit.

4. FINDINGS & DISCUSSION

4.1. INTERVIEW WITH EXPERTS

Yasin Otuzoğlu, Istanbul

Union of Chambers of Turkish Engineers and Architects Chamber of Landscape Architects 2.President;

At the very beginning of his statement, Yasin Otuzoğlu points out that recently the livability of cities is being questioned all over the world. He thinks that the most important feature for the cities is to be able to survive during the period and conditions they go through without wear, and that they have flexible systems.

Mr. Otuzoğlu does not see Istanbul as a successful example in this respect. Istanbul is an ancient city that has seen several empires and the city's historical identity dates back to ancient times. As being the capital of the Eastern Roman Empire as well as the largest metropolis of the region then, Istanbul's urban infrastructure was quite strong compared to its period.

According to him, today Istanbul is an unhealthy city because of its increasing population due to immigration, the out-of-scale construction habits and congested traffic as well as the disadvantages as a result of unplanned urbanization. The reason for this negative outcome in cities around the world, in his opinion, is that human beings think themselves to be the sole owner of nature and the earth. Extraordinary periods such as political imbalances, migrations, wars, epidemics, climate change, etc. experienced in the world have many negative effects on people. In order to survive these changes, cities must have the ability to transform and transformation requires reforms. And the reforms can be made by establishing a cause-effect relationship and by revealing obstacles and potentials.

Mr. Yasin Otuzoğlu says, update of Istanbul's ability to be a city has some obstacles. The biggest obstacle is the legislation and vision and no progress is possible without legal regulations. The European Green Deal has been published and decisions have been taken to achieve zero carbon emission values by 2033. Likewise, the methods of combating climate change for the city of Istanbul should be regulated. During the construction phase, it should

be mandatory to get the approval of landscape projects in parallel to the architectural and static project approvals.

Mr. Otuzoğlu tells that he has been to a lot of countries for many years due to his international business descriptions and during those trips he has frequently observed examples of the 4th nature that supports the local and the ecosystem integrity in the city. As a first step of being able to do this, the local government decisions and legislations in those countries started many years ago. Likewise, the professional awareness and sensitivity is observed to have started earlier in such countries. The reason for the lack of such awareness-based planning in Turkey according to him is that the administrations do not have a long-term planning approach. The high rate of illegal construction due to legislation and systemic blockages creates building stock in cities.

The other major obstacle to regaining the nature in the city is reported by Mr. Otuzoğlu to be the lack of awareness about the landscape architecture and professional disciplines. The meaning of the profession of landscape architecture, which is to design the new and to culture nature, should change. Today, he thinks, the landscape architecture profession has to be redefined in order to erase the human intervention in nature, to preserve and to develop the existing and to reclaim the lost features. In free market economy, the preferences are determined by those who determine the supply and the demand, the planners determine the type and content of plant and material suppliers and therefore the awareness of professional disciplines are important.

Not employing landscape architects in the public sector is mentioned as a big problem by Yasin Otuzoğlu. It is not good that there is no professional discipline of landscape architecture on platforms where landscape-based urbanism, design and infrastructure are discussed.

Another important issue that he brings forward is that rainwater cannot be preserved through impermeable surfaces that result from hard floor and construction population in cities. This is a major hurdle in tackling the climate change. Along with the cultured landscape areas, the use of exotic species that are not suitable for the nature in the plans also harm the urban nature.

While there are such obstacles, green washing period, on the other hand, is experienced in the projects and titles. Pretending that nonexistent things happened is the biggest obstacle and slows down the system, claims the Expert.

Despite all these obstacles, Mr. Otuzoğlu conveys the potentials he sees in Istanbul in particular and in general. According to him; every problem actually comprises a potential. The changes in the world and the unhealthiness in the cities have a potential for updating the production of professional disciplines. Landscape architecture can also see the changes as a potential and get updated as a profession that can offer positive solutions. The concepts of landscape and nature should be placed properly not only for human beings but for all living things. When the landscape is accepted as an ecosystem management that covers the built environment, an important intersection will be noticed. And additionally, when nature and ecology are perceived as common ground, determined as a source of inspiration and returned to the built environment, landscape applications will be successful in terms of improving the city. The planning of plant, animal, material and resource types in ecosystem integrity should be handled with a sustainable planning. Replacing the diminishing biodiversity and ecosystem services in the city should be a common manifesto and promise in planning.

The Expert sees the rich biodiversity of Istanbul as the city's greatest potential. In his opinion, a city like Istanbul with high ecosystem and green belt value and natural forests should be approached with a more protective approach in planning. Urban landscape examples can be differentiated with the approach of protecting and supporting the existing in planning. In Istanbul, the greatest potential for updating the urban landscape are the transformation projects of industrial areas that have lost their function. He reminds, Beykoz, which was an industrial production area for a period, is an example for it. The region hosts many industrial production areas such as Beykoz Kundura Factory, Paşabahçe, Şişecam, that lost their functions and it remains as a region within the city close to the Bosphorus. Those districts are also said to have a great potential as an ecosystem value.

Transformation projects such as factories, coal mines and train stations are common in the world as stated by Mr. Otuzoğlu. The important thing is that the transformation projects are landscape-oriented. He has seen a lot of such projects during his jury membership in the European Green Cities competition. He considers transformation projects in Turkey such as the old Istanbul Atatürk Airport area to be transformed into a city park and the Izmir Buca

Prison, which has been turned into a green area, as positive approaches. The coastal areas are also stated to have potential for Istanbul.

15-minute city rule developed globally for urban life is not valid for Istanbul, as informed by Mr. Otuzoğlu, because the city is disconnected from the transportation network. If green corridors are supported and connected with each other with the right planning approach, renewals in terms of urban transportation system and regulations that will increase the quality of life will emerge.

The expert states that new approaches need to be developed as cities can no longer be demolished and rebuilt. Nature-based solutions should be developed. It is necessary to reveal how the existing productions can be harmonized with nature and how the new ones can be planned according to those approaches. Introduction of landscape-based urbanism and landscape-based development concepts are also crucial. Sponge cities and blue-green infrastructure systems should be developed to combat climate change. Water permeability on urban grounds, especially in Istanbul, has decreased and it will be an important step to take green infrastructure measures and to do long-term planning of water delivery and recycling methods, according to him.

Other important issues about the city of Istanbul according to Yasin Otuzoğlu are; the common green space planning throughout the city requires revision. The surface of grass area is very large and green areas with high maintenance costs are planned. Evaluating urban green areas holistically and planning them with natural and local species will be important for the city's economic savings and increasing biodiversity and ecosystem value. Landscape is a public need and it is a concept that brings democracy to cities by letting everyone in the public sphere to be equal and to benefit from the same space.

Mr. Oğuzoğlu mentions that the Chamber of Landscape Architects started joint studies with the Ministry of Environment Urbanization and Climate Change of Turkish Republic on landscape based urbanism. While planning any kind of urban structural production, it should be considered to be landscape-based. The consideration and planning of how to reclaim the damage and footprint of the new projects to be developed to the city is very important. Also the landscape character analysis, which includes the development of cities and inventories of housing, transportation and natural resources, should be made. Such analyzes are claimed to create a roadmap for planners and designers as a base. A solution cannot be reached with

was involved in. Five years ago, his awareness of herbaceous and local species started to improve and he has tended to urban grasses together with fungi, natural plants, herbaceous plants, wild animals and microorganisms in natural areas.

He develops his expert opinions on the basis of nature human perception of. To his observation, the general perception of the urban citizen is that, nature is not in the city, but in the forest. He criticizes the lack of use of local and natural species in the arrangements made in urban green areas by stating that since human beings are the most developed organisms, they can establish relationships with all living things and must have an ethical responsibility when making decisions. Unless the use of natural plants increases, they cannot survive. In the landscape planning comprising ornamental plants, air conditioning, chemical and fertilizer support is required and they harm the environment. Some concepts create wrong perceptions according to Mr. Erdönmez and ornamental plants are among them. Just as the impossibility of an ornamental animal or an ornamental person, there cannot be such a thing as an ornamental plant. Among other living things, human does not provide equal rights to the plants. Plants can be used for aesthetic purposes but cannot be reduced to an ornament.

The Expert observes that many countries abroad are compelled to turn to this type of planning due to climate change and the decrease in the use of resources. Turkey still has a chance in this respect, and cities that are more resilient to future climatic changes can be planned with precautionary measures. Development of awareness is a matter of process and methods for awareness and planning can be developed through potentials, obstacles and to do lists. The biggest obstacle to protect and develop the nature in the city and to take precautions is the disconnection of perception.

From the human perspective, argues Mr. Cihan Erdönmez, the utilizers, members of professional disciplines and local administrations or even children do not have positive approach to the use of natural plant species in the city. Public opinion on the use of local species in new plans tend to define it as neglected, derelict and dangerous. There are some green space usage habits settled in the society such as use of grass and the habit of stepping on the it. The Expert conveys the perception of nature by children that he has observed during some forest walks made with them. In one of those tours, the children saw natural cyclamen in the forest and they thought those natural cyclamens were planted by human. The reason for this reaction is that, the plant perception of a child who has grown up in the city is limited

with what people grow in the pots. In another anecdote from another tour, he cites that children describe the sounds they hear while walking in the forest such as the sound of the rustling of leaves, the wind or the birds as sound effects or as movie sounds. His opinion is that, the common perception in all of those examples is that human dominates everything.

He mentions that there is another perception disconnection from the viewpoint of professional disciplines. It is commented wrong for planners to prefer cultured plant stocks formed over the years in nursery stocks. The use of natural and local species in planning by professional disciplines instead of opting for the ready-made ones will positively affect the industry from the supply chain to the nurseries. It is also important that the professional disciplines should be sensitive about making more protection-oriented planning instead of continual new production. Another obstacle in Istanbul is the building and concrete stock and the vacant spaces in the city are preferred for rent, but not as green space.

According to the Expert, the greatest potential of Istanbul is the diversity of plant species. This diversity shall create an extraordinary content for green space designs. Around 2,800 natural plant species have been identified in the Noah's Ark plant species diversity inventory of the Ministry of Agriculture and Forestry. Accordingly, the use of natural species should be increased in the arrangements made in urban green areas. As there is a potential for expropriation of empty and vacant parcels in the city, he proposes that priority is given to preserving biodiversity rather than building roads on those parcels. Roadsides and junctions are claimed to be other important potential areas for Istanbul. Natural design experiments in such areas shall change the perception in the short term while contributing to biodiversity.

Mr. Erdönmez considers seed reserves important for Istanbul. The species found in Istanbul are active and thus they have potential. Although the fertility of natural species and seeds may vary according to the climate data and the seeds might not grow in some years, he believes nature design requires support, foresight, planning and approach. The most important step is to observe what nature and the natural one wants and to plan accordingly. It is wrong to insist on an area where the use of grass is not suitable due to climate data, geography and usage purposes. The signals given by nature should be taken into account and it should always be remembered that forcing the nature shall lead to unnecessary insistence resulting in labor force, resource, species and economic losses. Green space designs should be updated with self-sufficient plants that are adaptive to climate data and that do not require conditioning, irrigation or chemical support. As collective consciousness and work is

important, professional disciplines, local governments and users should approach the topic with the same awareness.

He believes it is important to decide on the answer to the question of selecting the plant species for fighting the climate change based on the past or future biodiversity. In his opinion, it is essential to plan according to the changing climate data and to go beyond memorized knowledge in order to create the nature of the future. It is necessary to assess plant migrations and diseases that have not revealed yet. The plans made today are already responsible for the formation of the nature in the next 50 to 60 years and the planning should be foreseen by considering the next 20 years. When recommending plants or materials, the planners have a responsibility further than just aesthetic concerns. And he adds that aesthetic awareness and perception harmony is important in the concept of awareness and that when real aesthetics is captured, it will come along with other types of awareness.

Mr. Erdönmez argues that – even if they are owned – areas of certain sizes can be expropriated by public authorities and let alone. Such areas can be defined as urban ecosystem and biodiversity support spaces.

He believes the negative reaction of the citizens towards the use of natural species stems from ignorance and lack of experience. In order to improve public perception it is possible to start experiments in living parks by selecting pilot areas.

On the other hand, Mr. Erdönmez highlights that it is not correct to completely avoid using new species in the urban planning. He exemplifies the rose and reminds that the rose is actually a Far Eastern plant which needs watering. He has observed that thousands of roses were planted in the landscape planning on the sides of the Kurbağalıdere Stream. However, it was possible to see that there were about 20 natural species around the place. In his opinion, an optimum balance of species and resource use can be maintained through natural and cultured species in urban plant planning. The approach should first be the analysis of the local vegetation in the area and then planning in accordance with the nature, considering the purpose, employer needs and the scope. Grass is the only type of planning that cannot be supported in the city. The perception of grass use should not be supported in consideration with excessive water use, maintenance need, economic consumption and lack of contribution to biodiversity. Mr. Cihan Erdönmes concludes by saying that the perception of urban landscape planning should change and while doing that, inspiring countries could be

examined. A landscape model that is intertwined with forestry, such as the English and German schools, can be adopted. Puzzles should be avoided in urban landscape applications. Long-term plans in order to protect the destruction of nature and to reduce the consumption of resources are supported by the Expert.

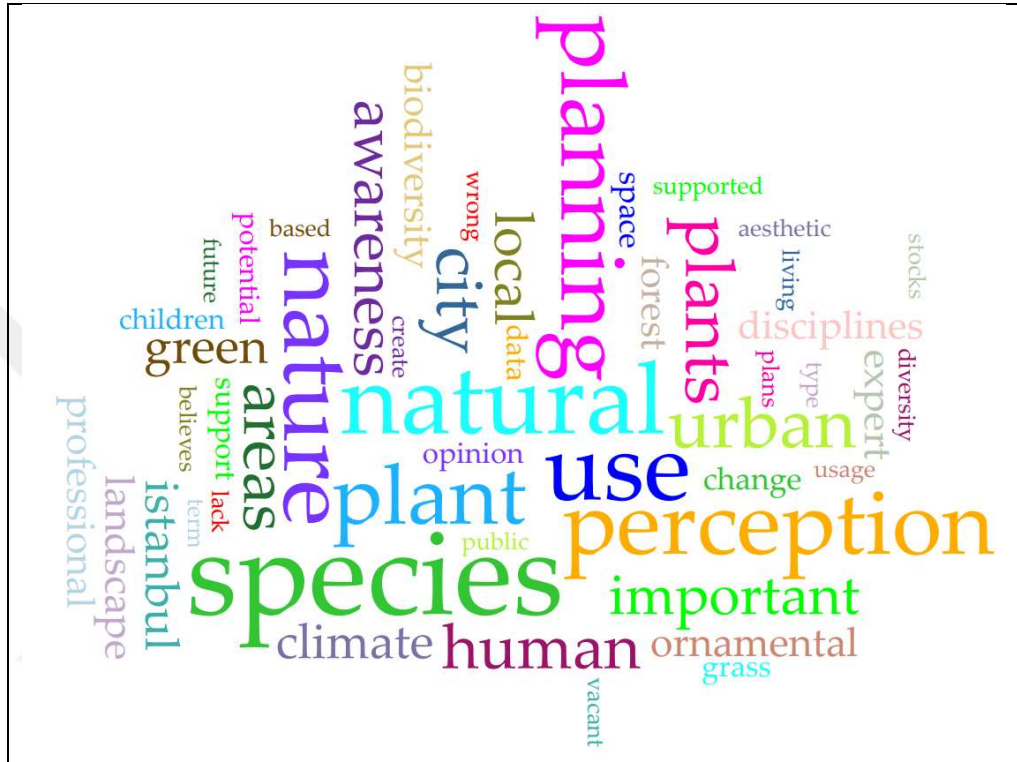


Figure 4.2. Cihan Erdönmez interview text analysis

Deniz Aslan, Istanbul

Co-founder, DS Architects

Mr. Deniz Aslan mostly conveys his opinions based on the perceptions and wordings related to what local is, what natural is and what urban nature is. According to him, it's harmful to name the local, not to use it. The concept of neither natural nor nature is bound to systems or regulations. The issue can be resolved through discussions, raising awareness and refreshing perceptions. Nature and natural design consist of seeing and letting them be there. Furthermore, it is necessary to consider the subject not only as plants, but also flora and fauna all together.

He questions and comments on the following: What is nature? How should the perception of nature be handled? What should be the approaches while making ecological productions?

The reason for the deterioration of human-nature, urban-nature relations within the city is exaggerating the scale. And impairment of health due to inadequate urban ecosystem services leads to such questionings.

The expert states that the reason why such examples have not yet been seen in Turkey is the disruptions in the bidding and outsourcing culture. In some cases it is necessary to examine the area to be planned and decide not to do anything. This is a human reflex rather than being a matter of tender and system builders should consider the whole. As long as the definitions are made through planning and design concerned approaches, there will be no solution. It is essential to develop professional sensitivity and awareness.

According to Mr. Aslan, the biggest problem is the perception of the human, city and the nature. In fact there is a cycle and the reality of death in nature and accordingly people should not isolate themselves from this cycle and see themselves as divine creatures.

From the perspective of their project office, he explains their approaches to handle the subject under free market and economic conditions as follows: They approach the works coming to the project office by offering two different packages. In the first package, Mr. Deniz Aslan gets personally involved in the projects that he considers responsible for the universe. The other package consists of the works serving to the consumer world in order to provide employment. While defining the projects where he can transfer his individual awareness as potential-bearing, he considers having to create employment and the economic burdens of the system as obstacles for production.

The Expert sees the greatest potential as the nature's power to transform and destroy itself. The productions with a deep look will be ecological by considering nature and natural as a frequency. Recycling is not obligatory for being ecological. An ecological thing is unique and it can gain a landscape value if realized.

Mr. Aslan believes that Istanbul's chance of contact with nature is hidden within the niches that have not been lost in the city yet. Application recommendations for the city require careful attention because the content of those applications that are made in scarce areas are crucial. Some spaces that could be considered as potential in the city have deviated from their purpose due to wrong practices. Vertical garden applications are one of the urban suggestions he has. He thinks, the feeling of a vertical garden application planned from scratch and a pattern that automatically covers the wall is different. It is vitality; a pattern of

proportion that causes the vitality. Patrick Blanc has set an example for such kind of an application. Blanc discovered the life in the Amazon jungle and getting inspired by it, proposed to plan this pattern as a green wall in the city. However, he states the stone in the Amazon forest is a system that works and affects because it creates a ratio in the pattern that allows life inside the wall without having roots, thanks to the humidity in the air. It is all about this ratio, which requires awareness. If the ration comprises the mentioned titles, it comes out of a crack and if that crack is vital, it is valuable. There are reasons why the vitals are there and that they need to be investigated. It is a value to examine how much it spreads or to leave it alone. If necessary, it should not be reproduced, but should be preserved there. Instead of cultured vertical garden examples in the city, he sees the protection and support of areas where such vitality can be evaluated as a potential for the city.

The most important attempt to be made for Istanbul as an extremely worn example, Mr. Aslan says, is mapping and detection of the existent ecosystem. This determination should include the hierarchical structure or the remains of the ecosystem. It is necessary to observe and read on how nature reacts in such areas despite wear and to understand what lies behind the way nature reacts. It will lead to 2 ways. He argues that the first one is cybernetics. A chain of processes can be produced that simulates that process like seeding.

The second is the holistic consideration of those that simulate the process. The reality in that area - only what is valid for that area needs to be determined.

Finally, the Expert attracts attention to the effects of the disappearance of the frozen part of the north with the tropics, where the world is restricted. Surviving in this new system shall involve methods such as building moving decks because of water rise. Everything in nature will hybridize and perspectives should change accordingly. Stopping scale and consumption gluttony will be the most important approach when establishing a cause-effect relationship.

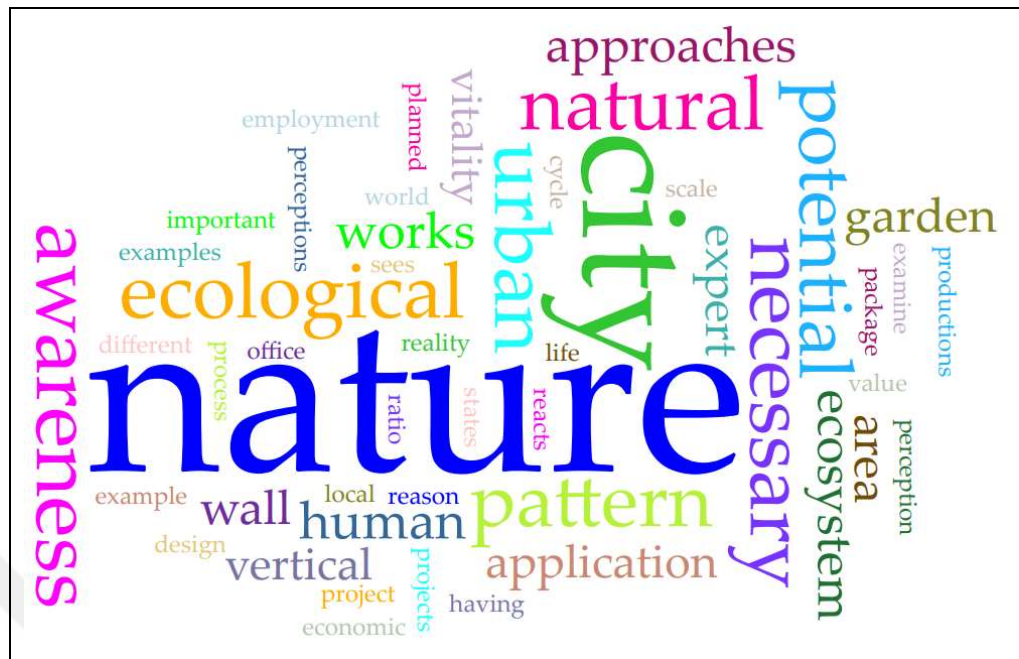


Figure 4.3. Deniz Aslan interview text analysis

Hayriye Eşbah Tuncay, Istanbul

Professor, Istanbul Technical University;

Ms. Hayriye Eşbah Tuncay defines the current state of the world as a cycle that the world has been inside since the 1980s. The reasons for the rapid growth of Turkish cities in the 1980s were the transition to industry thanks to funding and immigration. Since the 1990s, Turkey has experienced the last wave of global and regional urbanization. The conditions in today's cities have become tougher mainly because of the fact that the negative trend could not be noticed and prevented in the 1990s.

Ms. Tuncay explains that their office is mostly preferred for water harvesting projects due to their expertise. They often encounter shortage of approach in such projects. Getting out of the current system becomes challenging for the disciplines, as the projects are carried out by memorized information and the purpose of the water harvest is unknown. In the educational institution where she works as an academic, attention is paid to curriculum updates and they apply a studio-based education model, as explained by Ms. Tuncay.

The Expert thinks that landscape productions should be updated in line with the changing living conditions and that insufficient planning content is an obstacle. There are various reasons for that inadequacy. The way of recruiting project offices and placing demands is

also a source of the problem. Developing fast work dynamics in order to survive in a period when office costs and employment conditions are difficult reduces the quality of production. While there are problems such as global climate change, environmental pollution, disasters and heat island, it is a vicious circle that the solution designs for the problems are under time and economic pressure. She finds it necessary to create a mathematics in order to bring a 4th Nature proposal into the city but points out that this mathematics and system setup take time. Clear and long-term employer requests are essential for project production that requires analytical infrastructure.

Another obstacle, according to Ms. Tuncay is legislation and planning. It is a problem that the legislation does not prefer to define vacant spaces as nature, but foresees them as the social reinforcement of the city. Use of inactive areas in the name of the 4th nature definition in Istanbul creates a potential.

The Expert provides valuable information on water harvesting. The delivery and recovery of water is important among the urban ecosystem services. The first thing to do in places where water is scarce is rain harvesting, but it is necessary to consider that there may be different needs in different regions. For example, while the water should be slowed down in the Black Sea Region, it should be leaked in a different climate region and filtered in another one.

She suggests the following actions in the light of all the mentioned obstacles and potentials: A holistic evaluation of topics such as the need for technical disciplines to update themselves, the need to be more familiar with new systems on the employer's side, and the elimination of legislative inadequacies is important. Professional practices should familiarize themselves with life-time learning system while the employers and the implementation teams get used to the new systems, get trained and informed. Every city should have an ecosystem constitution and local governments should administer the offices of their colleagues working in the private sector in line with their constitution. Nature should set the rules and the administrators should pass it on to the implementers. The Expert mentions that such projects abroad are funded. The cycle of process management, transformation into employment, creating an economy within itself and influencing other economies are all important for the creation of funding value. Such projects require calmness and enough time.

culture. The traces of having walked in the shade of trees, climbing them since childhood contributed in setting right relationship with nature. According to her, the right relationship and contact with nature in private and public spaces in the city meets the social needs of people and provides a healthy ecosystem service. For these reasons, she describes her approach to the perception about the relationship between human and nature is not a pot of flower in the house, but a house in the greenery.

The Expert sees the rapid urbanization and the fact that the cities are composed of buildings so densely, allowing no street culture and almost no empty spaces, as the biggest obstacle to the inability to establish the relationship between nature and people. Another obstacle is the perception pollution of the generation that has grown up among the tight planning in the cities, regarding the lack of their relationship with nature. Locality is a potential for cities to protect ecosystems and not to increase costs. The strongest argument for Istanbul is the use of vacant spaces and the transformation of industrial areas that have lost their function.

Ms. Kalafat states that Turkey's current natural forest capacity is higher than in countries like England that lost their forests during the industrial revolution. The ecosystem and biodiversity value of these natural forests can support the city via connections. The most important argument in the fight against climate change in cities is the trees that will provide shade and it is also crucial to use plants with the right species and descriptions.

According to the Expert, education is important for the development of human perception of nature in cities at a young age. The most effective education is planning that will create experience and contact areas within the city. As Tekfen Foundation, she explains, they have learned to establish and protect the right relationship with nature in the way they do business, over time.

Ms. Kalafat mentions about their 509-km. Eskişehir-İpsala Pipeline project and explains that for the pipeline foundation, they worked together with many professional disciplines such as archaeologists, environmental engineers, ecologists and zoologists in a holistic conservation planning approach. Ms. Dori Kiss Kalafat believes awareness of collective work is essential. Learning is a choice, it takes time, but it is important to have intention. The most important step to take is to choose to learn.

department is planning urban solutions as well as the ecosystem and sustainability designs. The Directorate of Parks and Gardens has a history of 70 years, since the 1950s under the Istanbul Metropolitan Municipality and has now shifts to a different expansion with the recently added unit.

The expert observes that the natural areas of Istanbul are in danger due to uncontrolled growth. The scenarios for Istanbul should be planned according to the worst cases. He says they are aware that the losses are at a very high level and that the effects of global happenings such as climate change are obvious.

4th nature proposal is useful in order to experience nature and protect biodiversity in the city, according to Mr. Dedeoğlu. However, transformation of the perception of grass will also take time. The departments have started planning that prioritize trees, shrubs and groundcovers instead of grass. The use of shrubs has the advantages of preventing erosion, visualizing the natural landscape, holding water as well as keeping birds with fruits and seeds, allowing wildlife and indicating ecological transformation. From the outlook of the professional discipline, he sees the obligation of working for supply and demand from the graduation on blocks the system and it creates an obstacle. Another major obstacle to updating the plans is the lack of legislation.

On the other hand, he believes, the vital needs emerging during the pandemic can create an advantage. The biggest positive effect in process management will be due to the changes trigger by needs . When the needs arise, they force the systems to change and the world is going through such a period. If ecology is in balance, dependent changes and the positive effect of green spaces on people will be obvious.

Istanbul's geographical structure is declared to be another potential for the city. He reminds that Istanbul is located in a region which is described as a corridor for important bird migrations. There are also similar outstanding parts in city's water and marine ecosystems. When the landscape of Istanbul is evaluated in this sense, the existence of forests and habitat areas intertwined with the city are crucial. There are habitat areas and habitat transition areas. The living places that we are stuck in Istanbul now are transitional areas rather than being habitat. On the other hand, there are large forests in the northern part of the city, in Şile and in Çatalca. Ecosystem repair and the fight against climate change can be achieved by evaluating and planning the works at the border between the habitat in these forest

ecosystems and the urban periphery. In his opinion, this is a kind of urban transformation and this transformation is not only the renewal of buildings or the concept of healthy buildings, green space transformations in the city should be planned in parallel. During these green space transformations, vacant, empty, changing and transforming areas are potential for nature to be defined or protected in the city. Mr. Dedeoğlu believes that it is not possible to bring a solution to ecosystem planning with a single discipline approach. Some certain concepts should be adopted in institutions. Unless legislation and sanctions are introduced targets cannot be achieved. He thinks that a person who dries and kills a tree should be punished and if there is no punishment or sanction, it will have no binding.

He explains that they organize awareness programs and workshops in their own units through education and public opinion works. All elements of the urban ecosystem are discussed by know-how exchanges with institutions and NGOs. Furthermore, efforts have been initiated to mobilize other units in the public sector. The Expert tells that they are in preparation for the detection and mapping of Istanbul's biodiversity as well as examination of soil, ecology and the potential areas. In 2023 the Directorate will start a work beginning with the historical groves, where the ecosystem is highly protected and biodiversity is fully preserved, and then they plan to continue the work until 2024 with other parks and active - passive green areas in Istanbul. They have shared information with Istanbul Metropolitan Municipality and the Ministry of Environment and Urbanization to get opinions from their units related with planning and infrastructure. They have also advised opinions on the zoning plan studies of 1/1000 to 1/5000 scales about the natural structure of the related regions, forests, monumental trees, streams, environment, flora, fauna and immigrant birds. The works on preparing opinions for the rehabilitation of the mining areas are ongoing.

The most important issue according to Mr. Dedeoğlu is the 'Perception and Mind Revolution'. The purpose of the establishment of their Directorate is to initiate this change. Their main goal is described to prepare ecological reports for major projects, investments and road planning. He says, once this system starts to work and settles down, there will be no need for 4th nature or any other new definition as the city will embrace its own nature. The essential thing is to correct the perception and make the productions in that direction. It is necessary not to intervene to change the ecosystem, but to add science to nature. Urban people's reaction to the use of natural plants and the areas where wildlife is protected is due to their lack of experience, according to the Expert. The responsibility of this change belongs

to the professional disciplines who create the perception. At first, it is more important to change the perception of landscape, agriculture and forestry engineers and architects as professional disciplines and turn them to nature. Both supply chain and user perception will return to nature over time, if the professional disciplines have an approach towards natural - local plant use and ecosystem repair and biodiversity conservation.

He also considers the decision of the central government important for the use of domestic products and underlines that local administrations cannot make decisions on their own; NGOs, chambers, local administrations, professional organizations, activists, university opinions and academics should support the move by their demands and warnings.



Figure 4.6. İbrahim Dedeoğlu interview text analysis

4.2. RESULTS DERIVED FROM INTERVIEWS

As a result of the thesis research, expert opinion and individual readings, which are evaluated on the potentials, prevention and assumptions related to their encounter with the urban nature in Istanbul, some goals are aimed.

Table 4.1. Obstacles

OBSTACLES	A	B	C	D	E	F
Lack of Vision as Professional Disciplines for Climate Change and Biodiversity Conservation	●	●	●	●		●
Legislative Shortcomings in Combating Climate Change	●			●		●
No Landscape Project Approval Obligation Under Construction	●					
Lack of long-term planning understanding of general/local administrations	●			●		●
Formation of building stock due to illegal urbanization	●		●	●		●
Same plant species between project offices and supplier nurseries	●	●				●
Insufficient employment of Landscape Architects in the public sector	●					
The occurrence of rainwater control/harvesting problem with increasing impermeable surfaces in cities	●			●		
Damage to the nature in the city due to the widespread use of exotic plant species in the city	●	●	●			●
Making “greenwashing” productions with no content and no action				●		
Too much m2 of urban lawn, green areas with high maintenance costs, widespread design	●	●		●		
The public's perception of local and natural plant-use plans as neglected, derelict, dangerous		●				●
Preferring empty parcels in the city not as green areas but for rent		●	●	●	●	●
In the city, the deterioration of human-nature and city-nature relations		●			●	●
Defects in tender and outsource culture			●	●	●	
Defects in the perception of human, city and nature		●	●			●
Time and economic limitation of the ways of recruiting and requesting work in project offices			●	●		
Legislation does not prefer to define idle areas as nature, but foresees them as the social reinforcement of the city				●		●
Perception pollution about the relationship that the generation growing up among the tight planning in cities could not establish with nature		●			●	
The development of the perception of professional disciplines towards acculturation rather than natural		●	●	●		●

● Yasin OTUZOĞLU

● Deniz ASLAN

● Dori K. KALAFAT

● Cihan ERDÖNMEZ

● Hayriye E. TUNCAY

● İbrahim DEDEOĞLU

It has been found that the biggest obstacle to nature-based production in the city of Istanbul is the lack of legislation that supports the view of urban spaces as areas where they are preferred for rent and the lack of awareness of professional disciplines towards nature-based design. It has been determined as a common opinion that the plant species preferred due to the cultured landscape design in the city reduce the ecosystem value of the city and harm the urban nature.

Table 4.2. Potentials

POTENTIALS	A	B	C	D	E	F
Changes in the world and post-pandemic outdoor/nature demands have the potential to update the production of professional disciplines	●			●		●
Istanbul has a rich biodiversity and natural forests with high green belt value	●	●		●	●	●
Consideration of defunct industrial areas in Istanbul as potential transformation projects	●		●	●	●	
Seeing the positive effects of the city with a balanced ecology		●	●			●
The opinion that roadsides and intersection areas can create a perception for the 4th nature proposal in the short term for Istanbul		●				
Production advantage of active Istanbul seed species		●				
The power of nature to transform and destroy itself				●	●	●
Finding natural niches that have not been lost in Istanbul			●			
Positive ecosystem and economic returns of local plant species use		●	●		●	●
Turkey's current forest capacity is high		●	●	●		●
Istanbul's location in the region considered as the corridor of important bird migrations		●				●
Having a geographic potential with important areas within water areas and marine ecosystems		●		●		●
Inclusion of urban green spaces in urban transformation plans	●			●		●
The habitat in the forest ecosystems of Istanbul, the planning to be made at the border with the city wall, has the potential to repair the ecosystem and combat climate change			●			●
During the transformation of green areas, idle, empty, changing and transforming areas in the city create a potential for the nature to be defined or protected in the city	●			●		●

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Despite many obstacles, Istanbul's greatest potential is seen as having a rich biodiversity and natural forests with high green belt value. Experts see industrial area transformations that have lost their function in the city of Istanbul as a potential. It is thought that the use of local plant species in the city will have both ecosystem and economic benefits. Experts have expressed a consensus on the potential for ecosystem repair and combating climate change in the plans to be made at the border between the habitat in the forest ecosystems of Istanbul and the city periphery.

Table 4.3. Suggestions (continued on next page)

SUGGESTIONS	A	B	C	D	E	F
Designing the urban transportation network and green corridors together, adopting the transportation-oriented planning approach	●					
Introducing new approaches and how things can be harmonized with nature and developing nature-based solutions	●	●	●	●		●
Introducing and discussing the concepts of landscape-based urbanism, Landscape-Based Development	●					●
Developing sponge cities and blue green infrastructure systems to combat climate change	●			●		
Taking green infrastructure measures to increase water permeability on urban grounds for Istanbul	●			●		●
Long-term planning of water harvesting and recovery methods	●			●		
In order to increase the ecosystem value of the city, the urban green areas should be evaluated holistically and planned with local species	●	●				●
Dissemination of the concept of landscape democracy	●					
Determining the landscape performance values of the developed projects	●			●		
Landscape Character Analysis, which includes the development of cities and inventories of housing, transportation and natural resources	●			●		
Encouraging the production sector for research and production on natural species and resistant species as well as demand	●	●				●
Observing what nature and the natural want and planning accordingly		●	●			●
Creating collective awareness and working platforms where professional disciplines, local governments and users approach with the same awareness	●		●	●	●	●
To the old biodiversity of the plant species to be selected in the fight against climate change? according to future biodiversity? making decisions about		●			●	●
Planning according to changing climate data, plant migrations and future disease predictions		●				●
In the formation of the nature of the future 50-60 years, the planning made today is foreseen with the sensitivity of responsibility, and the plans are foreseen 20 years later			●		●	

SUGGESTIONS	A	B	C	D	E	F
The planners have a responsibility other than aesthetics when suggesting plants or materials. Considering the harmony of aesthetic awareness and perception.	●	●		●		●
Expropriation of certain sized areas in the city by the authorized public authority and defining them as urban ecosystem and biodiversity support areas	●	●		●		
Initiating trials by selecting pilot areas in living park areas in order to improve the perception of the citizens against the use of natural species		●				●
Supporting the perception of the reduction of grass usage areas in the city	●	●		●	●	●
Developing suggestions for changing the perception of landscape planning in the city, taking a landscape prediction intertwined with forestry as a model		●				●
Mapping and determining the existing ecosystem of the city and its surroundings			●			●
Stopping scale and consumption gluttony			●			
Bringing a system proposal for professional disciplines to update themselves and to switch to a 'life time learning' system	●	●	●	●		●
Developing projects that will create funding value for the follow-up and acceptance of international funding				●		
When creating an academic curriculum; Considering it as a studio subject instead of opening a separate course in studio-based courses				●		
Abandoning palliative solutions, the fact that the business is in a cycle that creates employment and transforms into the economy	●			●		
Planning areas that will create educational experience and contact areas for the development of nature-human perception in cities at childhood		●			●	●
Legislation and sanction regulations, establishing legal sanctions	●	●	●		●	●
Preparation and legal publication of ecological reports that will form a basis for major projects and investments, road planning						●
Providing support by making requests and warnings as NGOs, chambers, local administrations, professional organizations, activists, university opinions, academics, for areas where local governments cannot make decisions on their own	●				●	●

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There have been joint proposals for developing nature-based solutions in new productions, making things compatible with nature, creating collective awareness and working platforms where professional disciplines, local governments and users approach with the same awareness, supporting the perception of the reduction of grass usage areas in the city, professional disciplines to update themselves while introducing a system proposal to switch to a 'life time learning' system, introducing legislation and enforcement regulations by establishing legal sanctions.

5. CONCLUSION AND RECOMMENTATIONS

Urban people can no longer establish relationship with nature because of the shrinking green spaces and design approaches. Climate change, psychological and health needs and the decrease in natural resources have focused the attention to this requirement. Consequently, production updating seems to be a must.

Perception management comes at the first place of the change. It is very important to update the perceptions of designers, users, practitioners, suppliers and decision makers individually.

Considering the point that landscape architecture has rapidly reached in our country in 20 years, we must accept the fact that the perception formation will take some specific time. It is necessary to start perception management with design and decision-making managements because people relate to what they see. Human beings interact with their sensory and visual perceptions through the process. The fact that people are physically and psychologically healthy in the place they live show their satisfaction with the environment they interact with.

Urban structures have a great impact on human health and productivity. Cities need to offer an efficiency that will not create the effect of breaking away from nature while urbanizing.

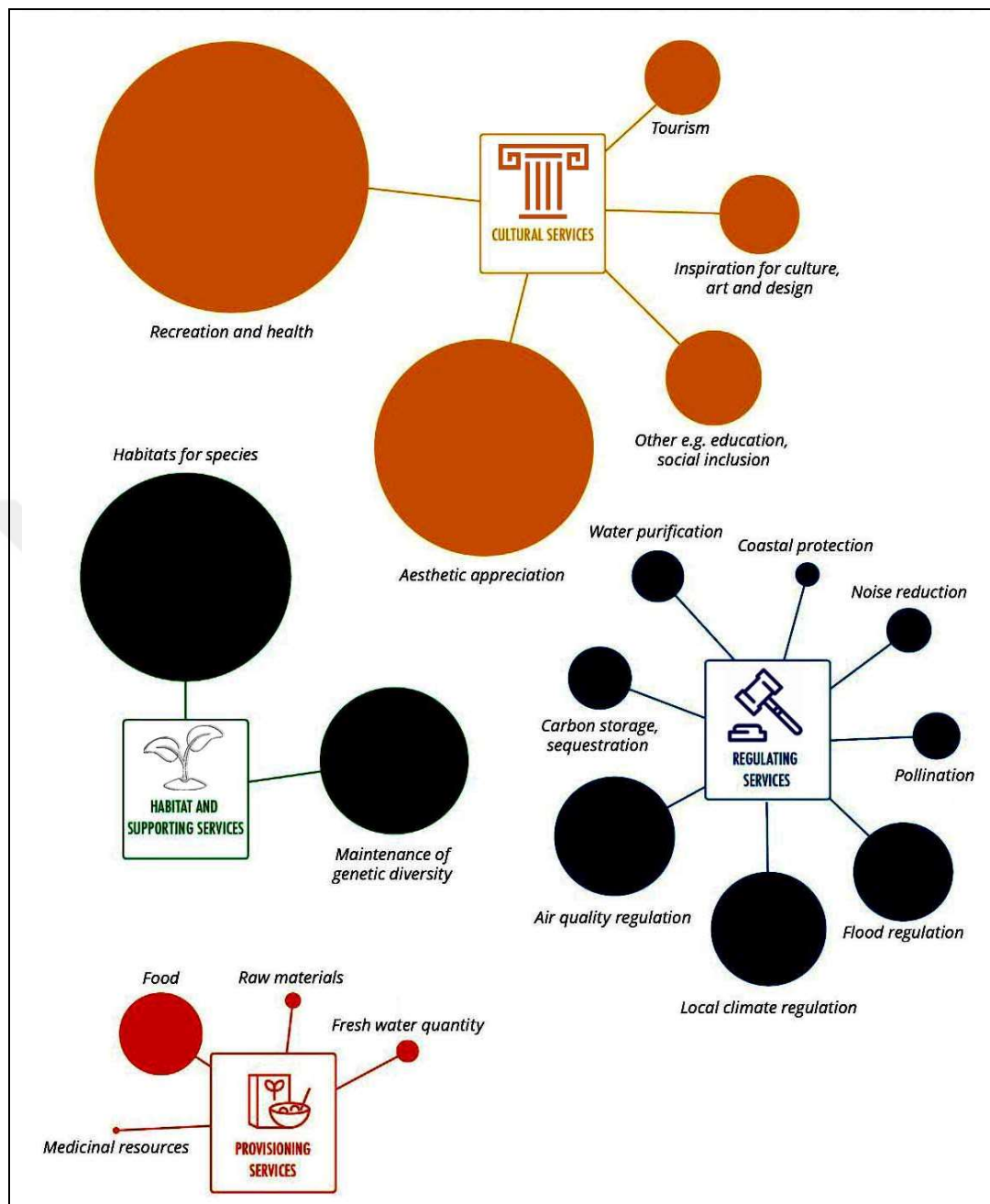


Figure 5.1. Nature-based ecosystem services, adopted by Sibel Senna [113]

This is why the perception and method measures of designers and rule-making administrations are important. To change the result, the reasons must be affirmed. It is indeed ironical that the designing and rule-making administrations consist of people who are both influential and influenced by living in their environment. But this irony is also the strongest force for perception change.

It is important that the rule-making administrations differentiate the human-nature relationship from politics and popularity. Designers, on the other hand, need to approach with the awareness that we are a part of nature and we have to place ourselves in that nature.

In landscape designs, it is necessary to move away from popular culture and to be balanced. In fact, a kind of bargaining should be made in the cities. Bargaining is two-sided and there is a common ground.

At the moment the other party, which is nature, is not given any right to speak. Balance is important here. It is not about turning cultured landscape areas into fields or rural areas all of a sudden but achieving a common point through bargaining.

Many analyzes can be made on this subject, but in Istanbul, urban vacant spaces have great potential in terms of the return of nature to the city and the 4th nature proposal. Both industrial area transformations, habitats left on the periphery, forgotten areas with a rent value in the city, and the median and highway edges are all areas with potential in the city.

While making new productions, it is important to determine the natural data of the environment, climate data and ecosystem value. Efforts should be made to give up on being made by human hands and to bring the consciousness of staying natural. Local plant use is important for the preservation of ecological diversity. Biodiversity is the greatest strength of cities in the fight against climate change. In the name of economic savings, minimizing resource use and sustainability, areas that are designed naturally and where local species are used provide an advantage to the city.

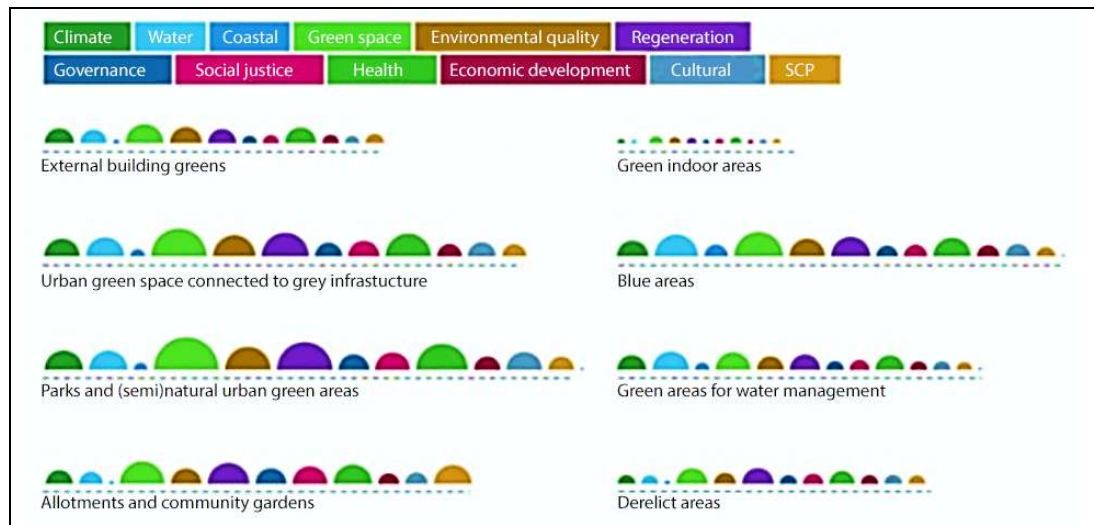


Figure 5.2. Sustainable challenges addressed in different urban setting, adopted by Sibel Senna [113]

Landscape architects or designers, with the support of lawmakers, should be able to say that nothing can be done at some sites of production in the name of protection, heritage, for the ecosystem formation and repair or the natural balance. The system should always be directed to a content that is aimed at protecting, leaving it natural and maintaining it rather than a new design. Green washing period should be completed, applications with appropriate content should be brought. Proactive actions should be taken and plans should be turned into action.

Since the process is long, it would be beneficial not to postpone the actions.

It is seen that a certain awareness has been reached in the current production and landscape architecture approaches as academic, local administrations and professional disciplines. The biggest problem at the moment is to ensure that this perception reaches decision makers and the public.

We see in the newly planned productions such as Atatürk Urban Forest that studies have been started in order to bring wildlife into the city and to create awareness and observation of biodiversity at the scale of Istanbul Metropolitan Municipality. Conservation of forest vegetation in the urban forests without intervention, planning of educational signs and directions encouraging wildlife are positive practices initiated to protect nature in the city. Again, we can talk about the development of this awareness on the basis of the approach and the suggestions developed in the recent competition projects. With studio-based lesson

planning in terms of academic curriculum, we see that the process has started to be progressed with formulas that can technically be discussed in detail.

The most important issue to be proposed in the upcoming period is to increase the operational attitude of the public and law-making administrations. In the current process, it is observed from the reactions given when vertical garden arrangements were abandoned that the public is not that conscious. The fact that the people still demand them poses a threat for some municipalities and delays the process.

It is important for the administrators to change their attitudes towards evaluating the spaces in the city as rental areas for structures. As a result of the researches, the idea that the most practical and realistic thing is to evaluate the spaces in the city where people are not very demanding has emerged. It is important to start from a certain point in order to create a perception. So, the process can be managed by identifying pilot areas and performing perception management. At the scale of municipalities, taking wildlife into the city can be considered as an attitude. Highway edges, old train tracks, mining areas, etc. can be left natural instead of cultural landscaping and these areas can be starting points in the cities. Art productions, outdoor education and pop up events can be used in the natural areas to raise awareness and educate the public on this issue.

It is also crucial to set a starting point in order to create a healthy environment where long-term economic, social, cultural, biodiversity and ecosystem related services can be met. Process is an issue of management and requires holistic approach. It is possible to meet with nature again in the city with a positive attitude as a result of firstly ensuring the development of perception by the professional disciplines, the public, local governments and users, and then taking action with policies supported by the rule makers.

REFERENCES

1. Armstrong SJ, Botzler RG. Environmental ethics. Divergence and convergence. 1993:275-6.
2. Fromm E. The anatomy of human destructiveness. Random House; 1975.
3. Pollan M. Arzunun Botaniği. Domingo Yayınevi; 2022 Jan 19.
4. Kellert S. Biophilia and biomimicry: evolutionary adaptation of human versus nonhuman nature. Intelligent Buildings International. 2016 Apr 2;8(2):51-6.
5. Sedes İ. Babil Kraliçesi. İstanbul: Kum Saati Yayınevi; 2013.
6. Marx K. Capital volume 1. Lulu. com; 2018 Jul 21.
7. Frederick Law Olmsted and the Boston Park System. [cited 2023 Jan 21]. Available from: <https://www.tclf.org/places/city-and-regional-guides/boston/about>.
8. Howard E. Garden cities of to-morrow. Mit Press; 1965 Mar 15.
9. Howard's Garden City. [cited 2023 Jan 21]. Available from: <https://www.semantic-scholar.org/paper/Victor-Gruen-and-the-Construction-of-Cold-WarMennel/f26-4acd5e7d50d91529183827977a8344d6f57ff>
10. Boyacıoğlu C, Ayıran N, Gökmen GP. Doğayla Çekişme, Tüketimle İşbirliği: Antroposen [cited 2022 Nov 29]. Available from: www.mimarlikdergisi.com/-index.cfm?sayfa=mimarlik&DergiSayi=426&RecID=4979.
11. HighLine Landscape [cited 2023 Jan 21]. Available from: https://www.baunetz.de/-meldungen/Meldungen-High_Line_II_in_New_York_eroeffnet_1640265.html.
12. Foster N. Architecture and sustainability. [cited 2021 Dec 1]. Available from: <https://www.fosterandpartners.com/media/546486/essay13.pdf>.
13. Ichimura M. Urbanization, urban environment and land use: challenges and opportunities. In Asia-Pacific Forum for Environment and Development, Expert Meeting 2003 Jan 23 (Vol. 23, pp. 1-14).
14. Singh RL. Introduction to environmental biotechnology. Principles and applications of environmental biotechnology for a sustainable future. 2017:1-2.
15. Chamie J. World Population [cited 2022 Dec 1]. Available from: <https://yale-global.yale.edu/content/world-population-2020-overview>.
16. Arthur M, Liu G, Hao Y, Zhang L, Liang S, Asamoah EF, Lombardi GV. Urban food-energy-water nexus indicators: A review. Resources, Conservation and Recycling. 2019 Dec 1;151:104481.

17. Roszak T. The voice of the earth: Discovering the ecological ego. The Trumpeter. 1992 Jan 2;9(1).
18. Zari MP. Regenerative design for the future. Build. 2010;115:68-9.
19. Kindel PJ. Biomorphic urbanism: A guide for sustainable cities [cited 2021 Dec 2]. Available from: <https://medium.com/@SOM/biomorphic-urbanism-a-guide-for-sustainable-cities-4a1da72ad656>.
20. Beatley T. Biophilic cities: integrating nature into urban design and planning. Island Press; 2011.
21. Kara D, Oruc G. Birey-Doğa İlişkisinin Yeniden Kurgulanması Bağlamında Ekoterapötik Mekânlar. Tasarım+ Kuram Journal. 2020;16(31):257.
22. Momsen JH. Gender and biodiversity: a new approach to linking environment and development. Geography Compass. 2007 Mar;1(2):149-62.
23. Çepel N. Çevre koruma ve ekoloji terimleri sözlüğü: Türkçe-Almanca-İngilizce. TEMA Vakfı; 1996.
24. Hansen AJ, Knight RL, Marzluff JM, Powell S, Brown K, Gude PH, Jones K. Effects of exurban development on biodiversity: patterns, mechanisms, and research needs. Ecological applications. 2005 Dec;15(6):1893-905.
25. Ljungkvist J, Barthel S, Finnveden G, Sörlin S. The urban Anthropocene: Lessons for sustainability from the environmental history of Constantinople.
26. Hilty JA, Lidicker Jr WZ, Merenlender AM. Corridor ecology: the science and practice of linking landscapes for biodiversity conservation. Island press; 2012 Feb 13.
27. Gordona A, Simondson D, Whiteb M, Moilanenc A, Bekessya SA. Integrating conservation planning and landuse planning in urban landscapes [J]. Landscape and Urban Planning. 2009;91:183-94.
28. Pickett ST, Cadenasso ML, Grove JM, Nilon CH, Pouyat RV, Zipperer WC, Costanza R. Urban ecological systems: linking terrestrial ecological, physical, and socioeconomic components of metropolitan areas. Annual review of ecology and systematics. 2001 Nov;32(1):127-57.
29. Araújo MB. The coincidence of people and biodiversity in Europe. Global ecology and biogeography. 2003 Jan;12(1):5-12.
30. De Oliveira JP, Balaban O, Doll CN, Moreno-Peñaranda R, Gasparatos A, Iossifova D, Suwa A. Cities and biodiversity: Perspectives and governance challenges for implementing the convention on biological diversity (CBD) at the city level. Biological Conservation. 2011 May 1;144(5):1302-13.

31. Aouissi HA, Petrisor AI, Ababsa M, Bostenaru-Dan M, Tourki M, Bouslama Z. Influence of Land Use on Avian Diversity in North African Urban Environments. *Land* 2021, 10, 434.
32. Kowarik I. Novel urban ecosystems, biodiversity, and conservation. *Environmental pollution*. 2011 Aug 1;159(8-9):1974-83.
33. Kühn I, Brandl R, Klotz S. The flora of German cities is naturally species rich. *Evolutionary ecology research*. 2004;6(5):749-64.
34. Aysel US, SHAKOURİ N. Kentsel peyzajda yeşil altyapı ve biyolojik çeşitliliği destekleyecek olanaklar. *Türk Bilimsel Derlemeler Dergisi*. 2013(1):46-50.
35. Elmqvist T, Fragkias M, Goodness J, Güneralp B, Marcotullio PJ, McDonald RI, Parnell S, Schewenius M, Sendstad M, Seto KC, Wilkinson C. Urbanization, biodiversity and ecosystem services: challenges and opportunities: a global assessment. *Springer Nature*; 2013.
36. Lepczyk CA, Aronson MF, Evans KL, Goddard MA, Lerman SB, MacIvor JS. Biodiversity in the city: fundamental questions for understanding the ecology of urban green spaces for biodiversity conservation. *BioScience*. 2017 Sep 1;67(9):799-807.
37. Opoku A. Biodiversity and the built environment: Implications for the Sustainable Development Goals (SDGs). *Resources, conservation and recycling*. 2019 Feb 1;141:1-7.
38. A University District and Science Park For The 2000's. *City Plan Dep*. 1999;7.
39. Forman TT. *Applying landscape ecology in biological conservation*. Springer Science & Business Media; 2011 Jun 27.
40. Council NC, Council CB, District D, Council EN, Council KB, Council NB, Council SN, Borough W. An ecological footprint analysis of.
41. Notenboom J, Van Veen MP, Wesselink LG. Halting the loss of biodiversity in the Netherlands. Bilthoven (The Netherlands): Netherlands Environmental Assessment Agency (MNP). 2006 May:16.
42. İklim Değişikliği Çerçeve Sözleşmesi. [cited 2022 Dec 1]. Available from: <https://unfccc.int/resource/docs/convkp/conveng.pdf>
43. Sınmaz S. Yeni gelişen planlama yaklaşımları çerçevesinde akıllı yerleşme kavramı ve temel ilkeleri. *Megaron*. 2013;8(2):76.
44. Burton E, Jenks M, Williams K. *The compact city: a sustainable urban form?*. Routledge; 2003 Sep 2.
45. Uncu BA. İklim için kentler yerel yönetimlerde iklim eylem planı. *Dijital Düşler Basım San. ve Tic. AŞ*. 2019;93.

46. Gümüş A. Türkiye’De çevre Koruma Ve Ekonomik Büyüme ilişkisi (Doctoral dissertation, Marmara Üniversitesi.
47. Folke C, Carpenter S, Walker B, Scheffer M, Elmqvist T, Gunderson L, Holling CS. Regime shifts, resilience, and biodiversity in ecosystem management. *Annu. Rev. Ecol. Evol. Syst.*. 2004 Dec 15;35:557-81.
48. KUNDAK S. Dirençliliğin Temeli. *Resilience*. 2017;1(1):55-69.
49. Tosun E. Sürdürülebilirlik Bağlamında Ekolojik Kent Söylemi. *Bolu Abant İzzet Baysal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*. 2017;17(4):169-89.
50. Gerdes J. What Copenhagen Can Teach Cities About Adapting To Climate Change. [cited 2022 Dec 5]. Available from: <https://www.forbes.com/sites/justingerdes/2012/10/31/what-copenhagen-can-teach%02citiesabout-adapting-to-climatechange/#5fae9d371e89>
51. Register R. *Ecocity Berkeley: building cities for a healthy future*. North Atlantic Books; 1987.
52. Çetinkaya Ç. Eko-kentler: kent ve doğa ilişkisinde yeni bir sistem tasarımı. *Türk Bilimsel Derlemeler Dergisi*. 2013(1):12-6.
53. Lee SJ, Hwang S, Lee D. Urban voids: as a chance for sustainable urban design. In *Proceedings of the 8th Conference of the International Forum on Urbanism D 2015 Jun 9 (Vol. 7)*.
54. Accordino J, Johnson GT. Addressing the vacant and abandoned property problem. *Journal of Urban Affairs*. 2000 Sep;22(3):301-15.
55. Davidson M, Dolnick F. *A Planners Dictionary*. Washington: American Planning Association; 2004. 521–522
56. Trancik R. *Finding lost space: theories of urban design*. John Wiley & Sons; 1991 Jan 16.
57. Bowman AO. *Terra incognita: Vacant land and urban strategies*. Georgetown University Press; 2004 Apr 6.
58. Kim G, Miller PA, Nowak DJ. Assessing urban vacant land ecosystem services: Urban vacant land as green infrastructure in the City of Roanoke, Virginia. *Urban Forestry & Urban Greening*. 2015 Jan 1;14(3):519-26..
59. Pearsall H, Lucas S, Lenhardt J. The contested nature of vacant land in Philadelphia and approaches for resolving competing objectives for redevelopment. *Cities*. 2014 Oct 1;40:163-74.
60. Németh J, Langhorst J. Rethinking urban transformation: Temporary uses for vacant land. *Cities*. 2014 Oct 1;40:143-50.

61. Kremer P, Hamstead ZA, McPhearson T. A social–ecological assessment of vacant lots in New York City. *Landsc Urban Plan.* 2013;120:218–33.
62. King KL. Designing vacancy: vacant land and urban systems in Detroit, MI. Master Thesis, University of Michigan; 2006.
63. Weilacher U. *Between Landscape Architecture and Land Art.* Boston: Birkhäuser; 1996.
64. Bütüner FB. Doğayla Çekişme, Tüketimle İşbirliği: Antroposen. *Mimar Derg.* 2020;412.
65. Heizer M. Double Negative [Internet]. [cited 2021 Dec 2]. Available from: <http://doublenegative.tarasen.net/double-negative>
66. Fox LW. *Mapping the Empty.* Nevada: University of Nevada Press; 1999.
67. Sonfist A. Time Landscape. [cited 2021 Mar 1]. Available from: <https://www.nycgovparks.org/parks/greenstreet-mz31/history>
68. Coleman A. Dead Space in the Dying Inner City. *Int J Environ Stud.* 1982;19(2).
69. Greenberg MR, Popper FJ, West BM. The TOADS: A New American Urban Epidemic. *Urban Aff Rev.* 1990;25(3).
70. Kivell P. *Land and The City: Patterns and Processes of Urban Change.* London and New York: Routledge Publishing; 1993.
71. Methods S in. *Glossary of Environment Statistics.* Ser F. 1997;67:United Nations, New York.
72. Berger A. *Drosscape: Wasting Land in Urban America.* New York. NY Princet Archit Press. 2006;5(1):44–60.
73. Drosscape. [cited 2023 Jan 21]. Available from: <https://en.wikipedia.org/wiki/Drosscape>
74. De Sousa CA. Turning brownfields into green space in the City of Toronto. *Landsc Urban Plan.* 2003;(62):181–98.
75. Popescu G, Patrascioiu R. Brownfield Sites – Between Abandonment and Revelopment Case Study: Craiova City. *Hum Geogr.* 2012;6(1):91–7.
76. Li X-P, Fan S-X, Kühn N. Residents’ ecological and aesthetical perceptions toward spontaneous vegetation in urban parks in China. *Urban For Urban Green.* 2019;44.
77. Li X-P, Fan S-X, Guan J-H, FanZhao. Diversity and influencing factors on spontaneous plant distribution in Beijing Olympic Forest Park. *Landsc Urban Plan.* 2019;181:157–68.
78. Kowarik I. Cities and Wilderness A New Perspective. *Int J Wilderness.* 2013;19(3).

79. Skinner J. Thoughts on Things: Poetics of the Third Landscape. *Eco Lang Read*. 2010;9(50):23–50.
80. Miller JR. Biodiversity conservation and the extinction of experience. *Trends Ecol Evol*. 2005;20:430–4.
81. Dunn RR, Gavin M, Sanchez C, Solomon JN. The pigeon paradox: Dependence of global conservation on urban nature. *Conserv Biol*. 2006;20:1814–6.
82. Kowarik I. Natürlichkeit, Naturnähe und Hemerobie als Bewertungskriterien. Konold W, Böcker R, editors. *Handbuch für Naturschutz und Landschaftspflege*. 1999.
83. Umwelthilfe D. A New Relationship Between City and Wilderness. *A Case Wilder Urban Nat*. 2014;8.
84. Lokman K. “Vacancy As a Laboratory: Design Criteria for Reimagining Social-Ecological Systems on Vacant Urban Lands.” *Landsc Res*. 2017;42(7):728–46.
85. Bakshi A, Gallagher F. Design with Fourth Nature. *J Landsc Archit*. 2020;24–35.
86. Uyanık C. Sürdürülebilirlik Bağlamında Endüstri Alanlarının Yeniden Kullanımı ve Adapazarı Örneği. Mimar Sinan Üniversitesi; 2011.
87. Yurtseven B. Kentsel Yenileme Sürecinde Endüstri Alanlarının Ekolojik Yaklaşım ile Değerlendirilmesi: Emscher Park Örneği. *Kent Akademisi*. 2020 Feb 19;14(1):260-77.
88. Geographical Location of Ruhr. [cited 2023 Jan 21]. Available from: <https://dergi.park.org.tr/tr/download/article-file/1474714>.
89. Annen G. The Emscher Park-A Model of Integrated Water Management in An Urbanized Area: Problems and Challenges.
90. Eraslan İ. Yönetim Mekanizmalarının Kentsel Dönüşüm Algısı ve Uygulamaları Üzerindeki Etkisi: İngiltere, Almanya ve Türkiye Örnekler. Yıldız Teknik Üniversitesi; 2007.
91. Karabaş B. Endüstriyel Alan Dönüşümleri. [cited 2022 Dec 1]. Available from: <https://v3.arkitera.com/g70-peyzajmimarligi.html?year=&aID=889&o=886>.
92. Kunzmann R. A History and A Future Industrial Heritage For The Whole World International Symposium. 2019;.
93. Vallentin D, Scheck H. Technology and nature factored in together. Emscher 3.0 From grey to blue-Or, how the sky over the Ruhr region fell into the Emscher. [cited 2021 Dec 14]. Available from: <https://climateadapt.eea.europa.eu/metadata/case-studies/a-flood-and-heat-proof-green-emscher-valley-germany/11305620.pdf>.
94. Perini K. Emscher River, Germany-Strategies and Techniques. 1st ed. John Wiley and Sons Ltd. Publisher.

95. Briffett C, Sodhi N, Yuen B, Kong L. Green corridors and the quality of urban life in Singapore. In Proceedings 4th International Urban Wildlife Symposium 2004 May (pp. 56-63).
96. Akdeniz N, Çelik A, Ender E. Kentsel Ekosistemlerde Biyotopların Önemi: Bursa Kenti Örneği. Tarım Bilim Araştırma Derg. 2015;8(1).
97. Duisburg-Nord Landscape Park [Internet]. [cited 2023 Jan 21]. Available from: <https://inhabitat.com/10-landscape-design-projects-that-turn-damaged-and-neglected-spaces-into-healthy-beautiful-environments/landscape-park-duisburg-nord-in-duisburg-germany/>
98. Tabak D. Endüstriyel Miras Alanlarında Peyzaj Tasarımı Yaklaşımı Yedikule Gazhanesi Örneği. İstanbul Teknik Üniversitesi; 2011.
99. Latzund. NODU Duisburg Nord Landscape Park. [cited 2022 Dec 5]. Available from: <https://www.latzundpartner.de/en/projekte/postindustrielle-landschaften/landschaftspark-duisburg-nord-de>.
100. Aviv T. Park Ariel Sharon. [cited 2022 Dec 5]. Available from: <https://www.latzundpartner.de/en/projekte/klassische-landschaften/park-ariel-sharon-tel-aviv-il/>.
101. Mordas-Schenkein L. 8 incredible parks created from landfills [Internet]. [cited 2022 Dec 5]. Available from: <https://inhabitat.com/8-incredible-parks-created-from-landfills/>.
102. Aviv T. The Hiriya Landfill [Internet]. [cited 2022 Dec 5]. Available from: <https://www.latzundpartner.de/en/projekte/postindustrielle-landschaften/hiriya-tel-aviv-il>.
103. Shuo YA, Xiu WA, Yuanyuan GA, Liping CH, Changyuan ZH, Hanjie DO. Design of on-line seed spacing monitoring and miss seeding warning system for maize precision planting. Nongye Jixie Xuebao/Transactions of the Chinese Society of Agricultural Machinery. 2021;52(3).
104. Jackson KT, Keller L, Flood N, editors. The encyclopedia of New York city. Yale University Press; 2010 Dec 1.
105. Stein J. Friends in High Places. Time Magazine. 2007 Jun;11.
106. Loughran K. Imbricated spaces: The High Line, urban parks, and the cultural meaning of city and nature. Sociological Theory. 2016 Dec;34(4):311-34.
107. Huyssen A. The voids of Berlin. Critical inquiry. 1997 Oct 1;24(1):57-81.
108. Langer A. Pure Urban Nature: Nature-Park Südgelände, Berlin. Urban Wildscapes. 2012;152-9.
109. Colomb C. Pushing the Urban Frontier: Temporary Uses of Space, City Marketing,

- and the Creative City Discourse in 2000s Berlin. *J Urban Aff.* 2012;34(2):131–52.
110. Cupers K, Miessen M. Spaces of Uncertainty. *Colomb*; 2002. 131–152 p.
 111. Kowarik I, Langer A. Natur-Park Südgelände: Linking Conservation and Recreation in an Abandoned Railyard in Berlin. *Wild Urban Woodlands.* 2005;287–99.
 112. Langer A. Veranstaltungen im Natur-Park Schöneberger Südgelände [cited 2022 Dec 1]. Available from: <https://gruen-berlin.de/natur-park-sudgelande/veranstaltungen>.
 113. Crowe N. Nature and the Idea of a Man-Made World: An investigation into the evolutionary roots of form and order in the built environment.

