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Green Cities

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Urban green spaces are the areas which were established with recreational, aesthetic and ecological goal. Green areas in the city, along with architectural structures, are the locations which determine the general character and the image of cities and provide many benefits for the city and the people living in the city. Population rapidly increases with migration and industrialization and this rapid population growth comes with several problems. Today, the squares, streets and neighborhoods are the elements of urban spaces, but they have begun to lose their identity due to heavy population growth, lack of planning and unsystematic administrations. It is obvious that the living conditions in urban areas cannot accommodate to the environmental quality required by the people (natural beauty, clean air, uncontaminated soil, comfort and quietness, diversity, freedom, etc.). Population density, air pollution, noise and tiredness lead to a psycho-physiological imbalance in humans. In this study, properties and classification of urban green areas, design principles used in the formation of green cities and the importance of green areas for the cities and the variety of their use were emphasized.

Key Words: Green cities, ecology, green area, environment

Yeşil Kentler

Kentsel yeşil alanlar, dinlenme, estetik ve ekolojik amaçlar doğrultusunda oluşturulmuş yeşil alanlardır. Kentlerdeki yeşil alanlar, mimari yapılarla birlikte, genel karakteri belirleyen yerlerdir ve kent ve kentte yaşayan insanlar için birçok yarar sağlarlar. Nüfus, göçlerle ve sanayileşmeyle hızlı şekilde artar ve bu hızlı nüfus artışı beraberinde birkaç problemle birlikte gelir. Bugün, meydanlar, sokaklar ve mahalleler kent alanlarının öğeleridir ancak yoğun nüfus artışı, planlama eksikliği ve sistematik olmayan yönetim nedeniyle kimliklerini kaybetmeye başlamışlardır. Kent alanlarındaki yaşam koşullarının, insanların istediği çevre kalitesine (doğal güzellik, temiz hava, kirlenmemiş toprak, konfor ve sessizlik, çeşitlilik, özgürlük, vs.) uyamadığı açıktır. Nüfus yoğunluğu, hava kirliliği, gürültü ve yorgunluk insanlarda psikolojik-fizyolojik dengesizliklere yol açar. Bu çalışmada, kentsel yeşil alanların özellikleri ve sınıflandırılması, yeşil kentlerin oluşturulmasındaki tasarım ilkeleri ve yeşil alanların kentler için önemi ve bunların kullanımının çeşitliliği vurgulanmıştır.

Anahtar Kelimeler: Yeşil kentler, ekoloji, yeşil alan, çevre

Introduction

Urban green spaces make up most dynamic parts of urban open-green belts with their ever changing-developing live plant material structure, which actually form them. In addition, these are the most interesting rural sections for planners and users, providing more habitable environmental conditions to urban people without any regard to gender, age and socio economic level differences and owing to their characteristics such as the ability to differentiate within the whole structure of outer spaces, and recreational potentials, in addition to limiting and surrounding characteristics and properties that regulate the rural ecological structure.

People have tended to struggle to reach for the nature, although superficially, owing to longing for

the greenery and with the desire to become a part of the nature, and having grown away from the natural environment and having forced to live in modern settlement areas made of hard, cold and nonliving material. As a result, parks, play grounds, open spaces and roads where the greenery is most widespread within modern cities of our time are the areas that beautify cities and make them livable which are essentially made up of stones, concrete and asphalt.

Material and Methods

Green spaces are important spatial elements of urban areas and they affect the urban ecosystem in various ways. This effects are defined under three main headings; social, recreational and

ecological effects. Determination and use of ecologically based standards for the establishment of green areas provide significant contributions to both the environment and human health.

Green areas were considered within the keywords of this study, their features and standards were emphasized and they were investigated through a variety of books, articles and thesis. In this study, the facilities of the Ankara University, the Library of the Department of Landscape Architecture, National Library, The Council of Higher Education, National Dissertation Center and Internet were used. The method used was the evaluation of the properties of green areas in detail and also examination of the definitions, classifications, functions, standards, and the importance of green areas for the cities.

Discussion

Green City Concept

Green Cities refers to nature within the urban environment, the integration of designed natural environments, the preservation of nature, and the celebration of nature in public art within the urban context. Surrounding green spaces and open spaces within our cities is an infrastructure of community support, outreach, interpretation and political action that are necessary for their survival. "Green" also refers to the sustainable processes of cities in our evolving built urban environments.

Significance of Rural Green Spaces

Population density generated by migration from rural areas to cities along with the urbanization structure has led to unearned land incomes and irregular structuring. Thus, open and green spaces located in cities have turned into areas where urban people can rest. People have more spare time as a result of technological developments and they have increased needs for open-green spaces during these time periods (Özkır, 2007).

- They minimize hard textures of monotonous geometrical structures or structural masses of cities, soften their sharp lines and animate them.
- They check up and regulate the microclimate. For instance; they clean up the air in the rural environment, elevate oxygen amount, hold up dust or polluted

material in the air, provide air circulation, regulate air flow and atmospheric humidity, prevent heat increase, cool off the air, limit wind speed and direct it to the desired direction.

- They form a limit, hindrance and curtain, and direct and relieve vehicle- and pedestrian traffic. They ease up inner city circulation, and eliminate reflecting or sparkling light. They play a significant role in informing and raising awareness in nature and environmental matters. They either absorb or decrease noise. They camouflage undesired objects or noise. They also provide soil and water protection by covering the upper part of soil and improve soil fertility (Müftüoğlu, 2008).

Classification of Urban Open-Green Spaces

There are many classifications made for urban open-green spaces. Urban planner Samuel Zisman divides the open areas into three groups;

- Benefited spaces (dam reservoirs, drainage and flood control fields, transportation areas)
- Green open spaces (park and recreation areas, green belts, green roads, spaces, building surroundings, nature and landscaping protection areas)
- Corridor spaces (movement, transportation and passage places) (Bilgili, 2009).

Landscape Design Principles within the City

Plants have the most significant part in landscaping studies. They have an important role in the generation of especially aesthetical and functional places, and they take part in softening of hard grounds and materials such as stone, wall and structures used in landscaping. Plants soften up hard materials and make them more natural and close to humans. Plants render these functions within time only and provide the fourth dimension in landscaping which is the time (Korkut, et.al. 2010).

Design Factors

The most vital design factors are point, line, dimension, shape, color and texture.

- **Point**

It is the beginning factor of the design. It defines a position and status as the creator of the line and shape. The point does not have any direction and is the center of no-direction.

- **Line**

It is the most significant tools in description of our perceptions. The line has a language and description power. The composition generated by design starts with points and lines formed from points. Horizontal and vertical lines and curves express different meanings.

- **Dimension**

Dimension perception is made based on a comparison between objects. Dimensions of an object are perceived proportionally when it is compared with smaller objects. In other words, dimensioning is made by proportioning an object with other objects (Müftüoğlu, 2008)

- **Form**

An object which is defined by its surrounding or limits has a form or shape. The shape is the most important factor in a design.

- **Color**

Color is one of the most important factors in the composition of structural factors in landscape architecture. Having knowledge in flower, leaf and stalk colors, and in flowering seasons and periods are important for appropriate color combination generation.

- **Texture**

Smoothness felt when we touch an object or a material makes up the texture. The texture is the outer view of the interior of an object (Aliasghari, 2010).

Landscaping Design Principles

There are design principles that need to be acknowledged along with the design factors for carrying out landscaping design studies.

- **Functionality**

Function means availability, practicability or convenience for purpose. Landscaping design

projects may be attractive and exciting with their plan views.

Rhythm, Repetition

Objects organized in a location with the aid of a human-being consciously are arranged with a certain order, rhythm and repetition. A movement starting at a point within a design and objects surrounding it must display a course according to a logical sequence and the result must be attained. Rhythm is an expression of movement.

- **Adaptation and Situation**

It is provided by mutual or similar characteristics of living-nonliving objects present within a design. Adaptation among these objects may be in terms of any one or many of their shapes, dimensions, colors and textures. In addition, directions of the objects and their distances may provide adaptation as well. Environmental adaptation is called situation. Each environment more easily accepts objects and factors that are apt for their own structure, character and physiognomy (Korkut, et.al. 2010).

- **Contrast**

Contrast is generated for making an important and definitive characteristics of a living or nonliving object more strong with the aid of another living-nonliving object, which is opposite to it.

- **Hierarchy**

A bridge connecting the opposite two ends to each other with proper levels in a design is called hierarchy. Hierarchy may be in terms of dimension, shape, color, shade and texture.

- **Balance**

Balance which is the rule of the nature is an expression of safety and durability sense. The tool enabling balance formation is the axial. Axial is the plan factor connecting two or more points in the same direction and is in the form of a mass, surface or line (Aliasghrai, 2010).

- **Dimension and Proportion**

Relationship and ratio that is required to be present between parts making up the organization in a design space in terms of area, mass and volume is called proportion.

• Collectiveness- Composition

It is to display a balanced unity by the collectiveness of structural and plant elements present in a design. Collectiveness is to provide perception of the designed place as a whole. Unity or composition is to display an organization by completion of the factors one another that are located within a place. It is one of the most important principles among design principles (Korkut, et.al. 2010).

Green Utilization Areas in Cities

• Roof Gardens

In recent years, matters in landscape architecture have gained emphasis in industrialized countries and urban areas. Hospitals, schools, universities, social utility areas and private sector utility areas increase gradually everyday within extremely limited building and land resources, and on the other hand, sensitivity for cultural and natural landscaping and need for green areas increase gradually. This means repair of the defected areas and planning of park and nature reserves, protection of rural, historical and cultural landscaping and space planning and design for landscape architects and environmental planners. In urban areas, on the other hand, inner space organization and roof garden formation matters are put in the agenda additionally.

People in urban areas have been directed to search for new green spaces as a result of high unearned income in urban areas and city centers and as a result of fast urbanization, and in the end, roofs of the structures started to be used as green spaces and roof garden samples have been created. In addition, high inner-city open space costs have led designers to utilize roofs for this function (Barış, et.al. 2003).

• Vertical Gardens

Vertical planting is situating a garden on the wall of a building and brings a new understanding for current modern architecture. It provides significant contribution to urban ecology due to vertical surface planting in structures in addition to its aesthetic function and protection of structures, making the climatic effects more appropriate for human beings, improving environmental conditions and minimizing some of the environmental conditions due to its functions (Kemaloğlu, et.al. 1991)

• City Parks

Parks are a kind of green space that include maximum natural factors and provide various passive and active recreation needs such as resting, entertainment, meditation, free games, etc. in a general sense.

Tumer (1976) reports the open green space need for recreation purposes in cities as da/100 persons, and dimensions these areas in terms of their size, quality and their distance to the buildings(Table 1) (Bilgili, 2009).

A city must have standards valid for outer spaces and must have healthy conditions and people must be able to move within this area easily and safely. It must be able to maintain the connection among the settlement, working and meeting environments, and must maintain the relationship of humans with the nature and cultural surroundings at a maximum level. Lastly, it must be a place where the aesthetic, economic and technical functions are solved. Parks are dimensioned according to the building unit that they serve and settlement unit and their size (Table 2) (Bilgili, 2009).

Table 1. Dimensions and Locations of Open Green Spaces(Özkır, 2007).

Çizelge 1.AçıkYeşil Alan Ölçüleri ve Konumları

Park Areas	Population Dimension Da/person		Space Dimension Dimension (da)		Place within Recreation Areas
	Minimum	Most app.	Minimum	Most app.	
District park	6	12	20	40	Separate or within local parks
Local parks	6	14	200	400	Separate or within local parks
City park	1	2	400	1000	Main recreation area within city texture
Regional park	4	12	3000	4000	1-2 hour drive to city surroundings

Table 2. Numbers showing dimensions of park areas within a city (Özkır, 2007).

Çizelge 2. Kent içindeki Park Alanlarının Büyüklükleri ile ilgili Rakamlar

Parks	Building unit it serves	Required settlement unit	Size
District park	700-1000	Elementary school	1-4 ha
Local park	1000-5000	County, township	4-20 ha
City park	5000-10000	Province	20-50 ha
Regional park	20000-30000	Region	Over 200 ha

- **Functions of City Parks**

Basic function of the parks is to please their users and in other words, it is to provide entertainment opportunities by seeking public interest. Well-managed parks provide services that are not rendered by any other means. Parks must be able to be used by many people and serve for many years.

Functions of city parks are as follows;

- **City Forests**

City forests are spaces that are established naturally or superficially within the city and in its surroundings. They make contribution aesthetically and functionally, and provide recreation opportunities to people in urban areas and provide short-distance transportation opportunities.

Significance of City Forests

Purpose of city forests is to make functional and aesthetic contributions ecologically, recreationally, socially, economically and psychologically for urban environment and people in the urban areas. City environment is embellished due to adverse effects such as illegal housing and environmental pollution because of population increase and density. Therefore, city forests are important for improvement of city landscaping and city identity and for the establishment of city image. Furthermore, forests and trees are important for the improvement of city climate and softening of city ecology (Aklan, 2006).

Green spaces within a city increase land costs. City forests contribute greatly to economic value of city areas and lands as well. In addition, due to environmental pressures and reactive demands

caused by urbanization, they are insufficient in terms of current active open and green spaces qualitatively and quantitatively. City forests are vital recreation spaces for meeting ever increasing green area needs of people (Bilgili, 2009).

Conclusion

Industrial revolution which began in the 18th Century has been an important factor rapidly increasing the urban population in the world. The problems of the cities which grew due to the industrialization also increased incrementally and started to show world-wide influences. The important issues such as wastes, climate changes, acid rains, water pollution, air pollution etc. are not regional problems, but global problems today.

It is now a scientific fact that all of these environmental impacts occurred as a result of human activities, resulted from the carbon-based industrial life, fed by unconscious and excessive use of resources. It became necessary to get rid of fossil fuel technologies immediately and perform the transition to natural and renewable energy sources.

One of the most important concepts of our time is of course the concept of sustainability. This concept is a concept envisaging a continuing social, economic or environmental system implementing its function effectively without consuming its source which is the basis of its existence. Unlimited usage and unplanned consumption of the resources rendered the environment uninhabitable by filling it with waste and also brought the concept of sustainability into question by creating trouble due to the necessity of supplying raw materials for production.

Some studies that can be implemented for the energy use and urban planning in the cities taking

the sustainable urban model as a mission for them are as follows;

- The amount of energy used is reduced by solar energy utilization and insulation in the existing and new buildings.
- A city planning allowing people to keep their homes close to their businesses by designing settlements which are intense enough to perform public transportation,

but scattered to protect the green spaces.

- Greening of roofs
- Environmentally-friendly transportation, public transportation to reduce emissions
- Renewable energy sources such as wind turbines, solar cells and biogas obtained from sewage treatment plants are used as much as possible.

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